

Leadership or Chaos: The Heart and Soul of Politics¹

Norman Schofield and Maria Gallego, with Jee Seon Jeon and Ugur
Ozdemir

November 23, 2011

¹For Phoebe Ahn Schofield, born February 28, 2011.

Contents

| | | |
|----------|--|------------|
| 1 | Political Economy: Risk and Uncertainty | 1 |
| 1.1 | Democracy and Autocracy | 3 |
| 1.1.1 | The Constitution of the United States | 6 |
| 1.2 | Economic and Political Change in Britain | 12 |
| 1.2.1 | Summary of Changes in the British Polity | 19 |
| 1.3 | Political Transformations in the United States | 20 |
| 1.3.1 | Summary of Changes in the U.S. Polity | 34 |
| 2 | Limited Access Society | 39 |
| 2.1 | Rome and Byzantium | 43 |
| 2.1.1 | Competition between factors | 48 |
| 2.2 | Structural Stability and Chaos | 49 |
| 2.3 | The Malthusian Constraint and Points of Inflection | 54 |
| 2.4 | Cultural and Scientific Change: East and West | 61 |
| 2.4.1 | Monarchs and Merchants | 64 |
| 2.5 | Concluding Remarks | 68 |
| 3 | Social Choice | 71 |
| 3.1 | Introduction | 71 |
| 3.2 | The Political Economy | 87 |
| 3.3 | The Arrovia Research Program | 99 |
| 3.4 | The Condorcetian Research Program | 106 |
| 4 | Models of the World and Society | 109 |
| 4.1 | Cultural and Linguistic Evolution | 109 |
| 4.2 | Chaos in the Market and the Heavens | 112 |
| 4.2.1 | The Market | 112 |
| 4.2.2 | The Heavens | 118 |
| 4.3 | Climate and Evolution | 122 |
| 4.4 | Quandaries | 127 |
| 5 | Elections in the United States | 129 |
| 5.1 | Introduction | 129 |
| 5.2 | Activist Support for the Parties | 137 |
| 5.2.1 | The Lead-up to the 2008 election | 139 |
| 5.3 | The Election of 2008 in the United States | 144 |

| | | |
|----------|---|------------|
| 5.3.1 | Empirical Analysis | 144 |
| 5.3.2 | Estimation of Political Equilibria | 146 |
| 5.4 | After the Election: 2009-2011 | 152 |
| 5.4.1 | The 2010 Election | 156 |
| 5.5 | Concluding Remarks | 161 |
| 5.6 | Appendix 1: Questions for the 2008 ANES | 164 |
| 5.7 | Appendix 2: Tables for 2008 | 166 |
| 5.8 | Appendix 3: Tables for 2000 and 2004 | 170 |
| 5.9 | Appendix 4: The Formal Stochastic Model | 172 |
| 5.9.1 | Model with Multiple Activist Groups | 178 |
| 5.9.2 | The Model without Activist Valence Functions | 180 |
| 5.9.3 | The Spatial Model with Agent Policy Preferences | 182 |
| 5.9.4 | Extension of the Activist Model: Targeting Voters | 183 |
| 5.10 | Appendix 5: Computations for the Empirical Model for the U.S. in 2008 | 187 |
| 6 | Elections in the United Kingdom | 189 |
| 6.1 | Introduction | 189 |
| 6.1.1 | Activist Influences | 193 |
| 6.2 | The Election in 2005 | 195 |
| 6.2.1 | Pure Spatial Models for Great Britain in 2005 | 200 |
| 6.2.2 | The Spatial Model with Traits in 2005 | 203 |
| 6.3 | The Election of 2010 | 204 |
| 6.3.1 | Modelling the election of 2010 | 205 |
| 6.3.2 | Pure spatial models for Great Britain and the regions in 2010 | 208 |
| 6.3.3 | Traits Models for 2010 | 210 |
| 6.4 | Conclusion | 211 |
| 6.5 | Appendices: Tables for the British Elections in 2005 and 2010 | 213 |
| 7 | Elections in Canada, the Netherlands and Belgium | 231 |
| 7.1 | Introduction | 231 |
| 7.2 | Elections in Canada | 232 |
| 7.2.1 | A Brief Political History | 232 |
| 7.2.2 | The Election of 2004 | 239 |
| 7.2.3 | Elections after 2004 | 247 |
| 7.3 | Elections in the Netherlands in 2003 and 2006 | 250 |
| 7.4 | Elections in Belgium | 252 |
| 7.5 | Concluding Remarks | 253 |
| 7.6 | Appendix 1: Tables for Canada | 256 |
| 7.7 | Appendix 2: Computations for Canada | 262 |
| 8 | Elections in Poland 1997-2005 | 267 |
| 8.1 | Introduction | 267 |

| | | |
|-----------|--|------------|
| 8.2 | The Electoral Model | 268 |
| 8.3 | Modelling the Elections | 275 |
| 8.4 | Concluding Remarks | 276 |
| 8.5 | Appendices | 279 |
| 8.5.1 | Appendix 1: Question Wording for the Survey and Factor Loadings | 279 |
| 8.5.2 | Appendix 2: Tables for Pure Spatial Models | 282 |
| 8.5.3 | Appendix 3: Computation of Equilibria for Poland | 284 |
| 9 | Elections in Russia and the Caucasus | 287 |
| 9.1 | The Election of 2007 in Russia | 287 |
| 9.1.1 | Equilibrium under the Logit Model | 291 |
| 9.1.2 | Discussion | 295 |
| 9.1.3 | Concluding Remarks on the Russian Election | 296 |
| 9.2 | Georgian Politics and the Presidential Election 2008 | 297 |
| 9.3 | The Election in Azerbaijan in 2010 | 305 |
| 9.4 | Appendices | 309 |
| 9.4.1 | Appendix 1. Tables for Russia | 309 |
| 9.4.2 | Appendix 2. Tables for Georgia | 312 |
| 9.4.3 | Appendix 3. Tables for Azerbaijan | 315 |
| 10 | Elections in Israel and Turkey | 319 |
| 10.1 | Elections in Israel | 319 |
| 10.1.1 | Legislative Bargaining | 319 |
| 10.1.2 | The Election of 1996 | 321 |
| 10.1.3 | Elections in 2003, 2006 and 2009 | 327 |
| 10.1.4 | Concluding Remarks about the Israel Elections | 330 |
| 10.2 | Elections in Turkey 1999-2007 | 331 |
| 10.2.1 | The Spatial Model for Turkey 1999-2002 | 337 |
| 10.2.2 | Extension of the model for Turkey | 341 |
| 10.2.3 | General Remarks on Turkish elections | 343 |
| 10.2.4 | Concluding Remarks on Turkish elections | 345 |
| 10.3 | Convergence and Fragmentation | 346 |
| 10.4 | Appendix: Tables for Turkey | 351 |
| 11 | Institutions and Development | 355 |
| 11.1 | Institutions and Democratization | 355 |
| 11.2 | Oligarchies and Autocracies | 358 |
| 11.3 | Trade and Development | 370 |
| 11.4 | Activist Coalitions and Policy Switches in Latin America | 376 |
| 12 | Chaotic Leadership Transitions | 387 |
| 12.1 | An economic theory of leadership turnover | 388 |

| | | |
|-----------|---|------------|
| 12.1.1 | The model | 388 |
| 12.1.2 | Equilibrium | 390 |
| 12.1.3 | The kingmaker's best response function | 391 |
| 12.1.4 | Dictator i 's best response function | 392 |
| 12.1.5 | The equilibrium probability of a coup | 393 |
| 12.1.6 | Comparative statics | 395 |
| 12.2 | Leaders, élites and citizens | 396 |
| 12.3 | Empirical studies of leadership transitions | 398 |
| 12.3.1 | Estimating leadership transition probabilities | 399 |
| 12.3.2 | The hazard of overthrow | 404 |
| 12.3.3 | Constitutional and Unconstitutional (CU) Transitions | 406 |
| 12.3.4 | Leader's support groups under different regimes | 409 |
| 12.3.5 | Leadership transitions in different political systems | 412 |
| 12.3.6 | Transition probabilities and duration dependence | 415 |
| 12.3.7 | Negative Duration Dependence | 420 |
| 12.3.8 | Duration Models with Growth Covariates | 422 |
| 12.4 | Anocracies | 424 |
| 12.5 | Concluding Remarks | 427 |
| 12.6 | Appendix | 429 |
| 13 | Concluding Remarks on Knowledge of Science and Society | 433 |
| 13.1 | Moral Sentiments | 433 |
| 13.1.1 | Beliefs | 435 |
| 13.2 | Uncertainty | 438 |
| 13.2.1 | The future | 445 |
| 14 | References | 447 |

Preface

The bases of modern social and natural sciences are due to Thomas Hobbes in his *Leviathan* of 1651 and Isaac Newton in his *Philosophiæ naturalis principia mathematica* of 1687. Newton's work, particularly the *Optiks* (1704), as well as his underlying philosophy of science, was transmitted throughout Europe by Voltaire's book on the *Elements of Newton's Philosophy* (published in 1738).

The human sciences, and especially political economy and moral philosophy, were developed further in France by Etienne Condillac's *Essay on the Origin of Human Knowledge* (1746) and Turgot's *Reflections on the Formation and Distribution of Wealth* (1766), and in Scotland by David Hume's *Essays Moral, Political, and Literary* (1742) and *A Treatise of Human Nature* (1752), culminating in Adam Smith's *The Theory of Moral Sentiments* (1759) and *Wealth of Nations* (1776). Finally in 1785 and 1795, the Marquis de Condorcet first published his *Essai sur l'application de l'analyse à la probabilité des voix* (*Essay on the Application of Analysis to the Probability of Decisions*) and then *Esquisse d'un tableau historique des progrès de l'esprit humain* (*Sketch for an Historical Picture of the Progress of the Human Mind*).

In one sense, this present work is an attempt to extend the Condorcetian logic as expressed in the formal apparatus of the *Essai* in an effort to judge whether the optimism of the *Esquisse* is justified in a world where a large proportion of humanity lives in what has been termed the Malthusian trap of growing population, poverty and tyranny.

The formal apparatus of economic theory has developed apace since the time of Adam Smith's *Wealth of Nations*, in the work of Ricardo, Pareto, Walras and Marshall, culminating in the mathematical existence theorems for a competitive equilibrium. (von Neumann, 1932; Arrow and Debreu, 1954; McKenzie, 1959).

In contrast to the theoretical efforts on the *economic* side of political economy, almost no work on formalizing Condorcet's insights, in his *Essai* on the *political* side of political economy, was attempted until the late 1940's, when Duncan Black and Kenneth Arrow published seminal papers on this topic. In 1948, Duncan Black published his paper "On the Rationale of Group Decision Making," and specifically addressed to the question of existence of a voting equilibrium. He followed this in 1958 with his monograph on *The Theory of Committees and Elections*. The monograph emphasized the importance of Condorcet's work in voting theory, but paid much less attention to the Condorcet Jury Theorem. In contrast, recent research has suggested that this latter theorem gives a justification for majority rule as a "truth seeking" device.

Arrow's paper, "A Difficulty in the Concept of Social Welfare." (1950) derives from quite a different tradition of formal political economy, namely the work in welfare economics of von Mises (1920), Bergson (1938), Lange (1938), Schumpeter (1942), von

Hayek (1944) and Popper (1945). Arrow shows essentially that any social welfare function (that maps families of individual preferences to a weak social preference) is either imposed or dictatorial. To obtain what Arrow termed this “possibility theorem,” he assumed that the social welfare function had universal domain and satisfied a property of positive association of preferences.

As Arrow commented in his paper, the negative result of the “possibility theorem” was “strongly reminiscent of the intransitivity of the concept of domination in the theory of multiperson games” as presented in von Neumann and Morgenstern (1944). Arrow also emphasized that he viewed the theorem as relevant to a situation where individuals make value judgements, rather than to the more typical economic context where agents make choices based on their tastes. Since all political choices are based, to some degree or other, on the aggregation of values, we further infer that the “possibility theorem” addresses not just the traditional questions of welfare economics, but the larger issue of the interaction between the political and economic realms. In other words, the relevance of the theorem is not simply to do with the question of voting cycles, or intransitivities, but concerns the larger questions of political economy.

The formal exercise of proof of existence of an economic equilibrium (obtained between 1935 and 1954) leaves unanswered many questions. For example, can the existence proof be extended from the domain of private commodities to include public goods? More particularly, can democratic procedures be devised to ensure that preference information be aggregated in an “efficient” fashion so that social choice is welfare maximizing. Arrow’s possibility theorem suggests that democracy itself may be flawed: indeed it suggests that democratic institutions may (as Madison foresaw in *Federalist X*) be mutable or turbulent.

Thus difficult questions of institutional design need to be addressed. These questions come back in one sense or another to an interpretation of Arrow’s Theorem. In the rest of this volume we shall attempt to outline our sense of the current state of the debate.

Chapter 1 first sketches one way of interpreting Arrow’s theorem. Since the theorem refers to the aggregation of *preferences*, we argue that any society or legislature can potentially fall into disorder. However, if social decisions also depend on the aggregation of beliefs, then it is possible, as Madison argued in *Federalist X*, that voters will base their judgement of political leaders on the perception of the leaders’ inherent or intrinsic quality. This suggests analysing elections using the formal idea of *valence*. This electoral model is presented as a heuristic device to examine what are called *social contracts*, instituted at times of social quandary. The chapter briefly discusses social quandaries in Britain and the USA in the period from 1688 to the present.

One purpose of Chapter 1 is to interpret the understanding of the Founders in terms of the Scottish and French Enlightenments. In the works of Adam Smith and David Hume, the Scots focus on decentralized institutions – markets and civil society. They use their understanding of these institutions to talk about what policy should be. But they do not take the next step, and give an extended discussion of the political system that will support this policy. Instead, their writings on politics are shorter and more practical than their writings on markets and civil society.

Condorcet, in a sense, fills the gap between the French and Scottish theorists, by giving a systematic account of the virtues (and vices) of democratic decisions. He shows that democratic decisions need not mimic individual decisions. Most of the focus of social choice has been on Condorcet's discovery of the *vices* of democracy – voting cycles – which show “rational man but irrational society.” There has been less focus on the Jury Theorem, which shows, instead, the *virtue* of democracy. The Jury theorem shows that when the Scots theorists are right and individuals are fallible, then the best way to make social choice is to vote. In fact, voting can get close to the truth, something that no individual (and thus no autocrat) can guarantee. In other words, voting, like market exchange, leads to better decisions than could be made by any individual, especially an autocrat.

Chapter 2, deals with the other extreme of “Limited Access” or autocratic societies before democracy is fully developed. This chapter, in large part, is an extended rumination on the work by North, Wallis and Weingast (2009)

Chapter 3 surveys general models of social choice, and contrasts Arrowian and Condorcetian ideas. Chapter 4 considers modelling complex systems such as the economy and draws parallels between such models and those of weather and climate. Chapter 5 begins the analysis of democratic elections with a formal model of presidential elections in the United States. The next six chapters use the same method of analysis, first, in Chapters 6 and 7 for the developed polities, Great Britain, Canada, the Netherlands and Belgium, and then for the younger democracies: Poland, Russia, Georgia, Israel, Turkey, and Argentina. Chapter 11 focuses on the recent revolutions in the Middle East and North Africa and the nature of “belief cascades” while Chapter 12 addresses leadership transitions. In this chapter we first discuss an economic theory of leadership transition in autocratic regimes, and then estimate transitions using a world-wide sample for leaders who exit by both constitutional and unconstitutional means. The last chapter in the volume discusses moral sentiments, social beliefs and uncertainty.

We are grateful to various coauthors. Guido Cataife, Chris Claassen, Sebastian Galiani, Jee Seong Jeon, Micah Levinson, Marina Muskhelishvili, Ugur Ozdemir, Carolyn Pitchik, Evan Schnidman, Margit Tavits, Gustavo Torrens and Alexei Zakharov have given permission to make use of joint work. Versions of a number of chapters were presented at the Conferences on Political Economy, Wilfrid Laurier University, Waterloo, April 2008, the Hoover Institution, May, 2009, and later at Baiona, Spain, at the ISNIE conference, Stirling, at APET, Istanbul, and at a symposium in Baku, Azerbaijan, the last four all in June, 2010. Later versions of these chapters were presented at conferences at Bilgi University, Istanbul, in May 2011, and at Udine, Italy, and Priorat, Spain, in June 2011.

A number of chapters of this book use some figures and tables from previous work. Cambridge University Press kindly gave permission to use material from Miller and Schofield (2003, 2008). Wiley-Blackwell gave permission to use material from Schofield and Miller (2007), Schofield (2007) and Gallego (1998), Sage gave permission to use material from Schofield (1995b), Elsevier gave permission to use material from Schofield and Cataife (2007), Gallego and Pitchik (2004), and Schofield et al. (2011c). Olden-

bourg Verlag (Munich) kindly gave us permission to use some material from Schofield (2009a). Princeton University Press gave permission to reprint Figure 1.3 from *War, Wine and Taxes* by J.V.C.Nye. We have also used material from Schofield (2006b, 2010), Schofield and Zakharov (2010) and Schofield et al. (2011a,b,e,f), all of which are under copyright with Springer.

This work was supported by National Science Foundation grant SES 0715929 and by a number of research grants from the Weidenbaum Center at Washington University in Saint Louis. The first version of the manuscript was completed while Schofield was the Glenn Campbell and Rita Ricardo-Campbell National Fellow at the Hoover Institution, Stanford, 2010. Many conversations with Andy Rutten were crucial for developing the ideas of the heart and the soul of a polity.

Norman Schofield
Washington University, Saint Louis, Missouri
Maria Gallego
Wilfrid Laurier University, Waterloo, Canada
August 4, 2011

Chapter 1

Political Economy: Risk and Uncertainty

For what shall it profit a man, if he shall gain the whole world, and lose his own soul?
(Mark 8:36. King James Bible)

For before constitution of Sovereign Power . . . all men had right to all things; which necessarily causeth Warre.

For by Art is created that great Leviathan called a Common-wealth, or State . . . which is but an Artificiall Man

The Artificiall Man maintains his resemblance with the Naturall; whose Veins receiving the Blood from the severall Parts of the Body, carry it to the Heart; where being made Vitall, the Heart by the Arteries sends it out again, to enliven, and enable for motion all the Members of the same. (*Leviathan*, Hobbes)

In August 1784, after the success of the revolutionary war against Great Britain, Thomas Jefferson had arrived in Paris as Minister Plenipotentiary, to take over from Benjamin Franklin. Condorcet had been appointed the Permanent Secretary of the Academy of Science, in August 1776, and had close contact with Franklin in that context. After his arrival in Paris, Jefferson was introduced by Franklin to Condorcet at the salon of the Comtesse d'Houdetot. From then on, Jefferson also frequented the salon of Sophie de Grouchy, Condorcet's wife. Sophie was later to translate Adam Smith's *Theory of Moral Sentiments*, adding a number of her *Letters on Sympathy* (de Grouchy, 2008.[1798]) to the translated volume. Jefferson's later writings on debt and the benefit of free trade indicate that the ideas of Turgot, Smith and Condorcet exerted a considerable influence on him.²

During his time in Paris, Jefferson communicated regularly with James Madison, particularly over the discussions in the Constitutional Convention. Moreover, in 1787, Jefferson sent Condorcet's *Essai* to Madison, together with a copy of a book by Jefferson's friend, Mazzei. Condorcet's *Essai* included what is now called the *Jury*

²See McLean (2003) and Schofield (2002, 2006a) for further explorations of the connections between the French and Scottish Enlightenments and the creation of the American Republic. These are discussed further below.

Theorem. This provides a formal reason why a committee or polity, using majority rule, will make a better choice than a single, average member. There is indirect evidence that Madison had this result in mind when he formulated the argument, in *Federalist X*, that the choice of a Chief Magistrate in the extended Republic will lead to the *probability of a fit choice*.

The immense debt that France had accumulated, partly as a result of the aid provided to the thirteen Colonies, obliged Louis XVI to call the Estates General, and eventually this led to the Revolution in France. In June 1789 or so Jefferson contributed to the drafting by Lafayette of the *Déclaration des Droits de l'Homme et du Citoyen*. In the midst of the Revolution, Jefferson and Condorcet had a farewell dinner on September 17, 1789. In 1791, after Jefferson had returned to the United States, Condorcet was elected to the National Assembly, and then became its Secretary. The Girondists, including Condorcet, lost the contest for a constitutional monarchy, and after the execution of Louis XVI on 21 January 1793, the Jacobins took power. In October, Condorcet was declared a traitor and forced to flee. In the next few months he wrote *Esquisse d'un tableau historique des progrès de l'esprit humain* (*Sketch for a Historical Picture of the Human Mind*), and after his death in March, 1794, Sophie de Grouchy had it published in 1795.

The *Esquisse* was used by Thomas Malthus as the point of departure for his pessimistic book, the *Essay on the Principle of Population* (1798), where he argued against what he saw as Condorcet's excessively optimistic, "Smithian," viewpoint.

In one sense, this present work is an attempt to extend the Condorcetian logic as expressed in the formal apparatus of the *Essai* in an effort to judge whether the optimism of the *Esquisse* is justified in a world where a large proportion of humanity lives in what has been termed the Malthusian trap of growing population, poverty and tyranny.

The idea behind this chapter is to provide an extended interpretation of Madison's argument in *Federalist X* (1999 [1787]), and to use ideas from social choice theory in an attempt to develop a "rational choice" approach to the evolution of society. This research program can be regarded as continuing the work of Madison's contemporaries, the Marquis de Condorcet and Pierre-Simon Laplace. In the later sections of the chapter, recent work on modelling elections is also discussed in an attempt to evaluate Madison's contention about the "probability of a fit choice" in the Republic.

We shall attempt to construct the beginnings of a theory of democratic choice that we believe can be used as a heuristic device able to tie together these differing historical accounts. The basic underlying framework is adapted from social choice theory, as we understand it, and later chapters will complement the social choice theory with a "stochastic" model of elections. This model is an attempt to extend the Condorcetian theme of electoral judgement. We shall argue that its logic was the formal principle underlying Madison's justification for the Republican scheme of representation that he made in *Federalist X*. While this logic does not imply a general will in the sense of Rousseau, it does suggest that Riker in *Liberalism Against Populism* (Riker, 1982a) was overly pessimistic about the nature of democracy. On the other hand, the social choice framework suggests that a democracy, indeed any polity, must face difficult choices over

what we call chaos and autocracy. These difficult choices are *constitutional quandaries* that societies have to face. In the next three sections we first discuss this quandary in the context of Madison's views about the Republic, and then consider in more detail the quandaries of power that first Britain, and then the United States, faced as they developed their institutions of political economy. In the second chapter we take a longer view and discuss quandaries of power and population in an historical context.

1.1 Democracy and Autocracy

In order to provide a motif for the topics discussed in this chapter, it is worth quoting Madison's argument in *Federalist X*.

[I]t may be concluded that a pure democracy, by which I mean a society, consisting of a small number of citizens, who assemble and administer the government in person, can admit of no cure for the mischiefs of faction. A common passion or interest will . . . be felt by a majority of the whole . . . and there is nothing to check the inducements to sacrifice the weaker party. . . . Hence it is that such democracies have ever been spectacles of turbulence and contention; have ever been found incompatible with personal security, or the rights of property; and have in general been as short in their lives, as they have been violent in their deaths.

A republic, by which I mean a government in which the scheme of representation takes place, opens a different prospect . . .

The two great points of difference between a democracy and republic, are first, the delegation of the government, in the latter, to a small number of citizens elected by the rest; secondly, the greater number of citizens and the greater sphere of country, over which the latter may be extended.

[I]t may well happen that the public voice pronounced by the representatives of the people, will be more consonant to the public good, than if pronounced by the people themselves

[I]f the proportion of fit characters be not less in the large than in the small republic, the former will present a greater option, and consequently a greater probability of a fit choice.

[A]s each representative will be chosen by a greater number of citizens in the large than in the small republic, the suffrages of the people will be more likely to centre on men who possess the most attractive merit.

The other point of difference is, the greater number of citizens and extent of territory which may be brought within the compass of republican, than of democratic government; and it is this . . . which renders factious combinations less to be dreaded in the former, than in the latter. Extend the sphere, and you take in a greater variety of parties and interests; you make it less probable that a majority of the whole will have a common motive to invade the rights of other citizens . . .

Hence it clearly appears, that the same advantage, which a republic has over a democracy . . . is enjoyed by a large over a small republic—is enjoyed by the union over the states composing it.³

We shall try to relate Madison’s justification for the Republican scheme of representation that he made in *Federalist X* to the social choice theory presented in Schofield (2008b) and the empirical work on elections discussed in later chapters.

The key to our understanding of a general theory of social choice is that any polity must, on occasion, face difficult choices over what we call *constitutional quandaries*. Simply put, a quandary is a choice situation where all possible options appear extremely unpleasant, and laden with risk and uncertainty.⁴ The constitutional feature of the quandary refers to the likelihood that opinion as regards the correct choice will typically be highly heterogenous. The actual choice will depend on the political mechanisms used by the society, and thus on the constitutional rules that govern political choice.

The results from social choice theory indicate that when preferences, or opinions, are sufficiently heterogenous, then disorder or *chaos* can ensue. The process of social decision-making is denoted by a correspondence, \mathbb{Q} , so $\mathbb{Q}(x)$ is the set of outcomes that can come about from a point x (in the space of alternatives, X) as determined by whatever social rule or political process is used by the society. The idea of *social chaos* is that there are conditions under which, starting from a point, x , it is possible to reach *many* possible outcome $y \in \mathbb{Q}^t(x)$ by reiterating the social rule. In contrast we can identify the *core* or *social equilibrium*, y , to be some stationary outcome such that $\mathbb{Q}(y)$ is empty. We write $\mathbb{C}(\mathbb{Q})$ for the core of \mathbb{Q} . An even stronger equilibrium notion is that of an *attractor* of \mathbb{Q} : that is a single outcome y with $y = \mathbb{Q}^t(x)$, which results from any x , after a sufficient number of iterations of the rule. A *voting rule* is a choice mechanism determined by a set, \mathbb{D} , of a family of winning coalitions. A *dictator* of \mathbb{D} is a single agent who belongs to every winning coalition and is also winning. An *oligarchy* is a group that belongs to every winning coalition and is itself winning, while a *collegium* is a group of voters that belongs to every winning coalition in \mathbb{D} , but need not be winning. Social choice theory suggests that when there is no collegium, then the core of \mathbb{D} , namely $\mathbb{C}(\mathbb{D})$, will generally be empty, but only if the dimensionality of the policy space is high.⁵ Because the core may often be empty, we can define a set, $\mathbb{H}(\mathbb{D})$, called the *heart*. Even when the core $\mathbb{C}(\mathbb{D})$ is empty, the heart will be non-empty. Indeed, under general conditions the heart will be guaranteed to be non empty, and when the core is non-empty, the heart and the core coincide. We shall give examples of the heart in various legislatures, in Chapters 7 to 10 in this volume.. For the moment we shall just say the heart of a general social process, denoted $\mathbb{H}(\mathbb{Q})$, is the set of potential outcomes.

³James Madison, *Federalist X* (1787) in Rakove (1999).

⁴The choice situation as regards Iraq and Afghanistan from 2003 to the present presents such a constitutional quandary.

⁵See McKelvey (1976), Schofield (1978) and Saari (1997).

From the social choice perspective, disorder or *chaos* means not only that the heart of the particular social process is very large, but that even though the trajectory of outcomes is constrained to the heart, the path itself seems random. Since the social choice trajectory will be generated by the formation of different coalitions, one after the other, how these coalitions make their decisions will be largely indeterminate. Another way of expressing this is that the trajectory will be associated with *uncertainty*. Chapter 4 discusses the relevance of uncertainty and the possibility of chaos in many economic and climatic systems, using the analogy of chaos in celestial mechanics.

While these results focused on voting rules, it seems just as likely that chaos can ensue in a society where there is an underlying degree of economic, political or religious conflict. Many less developed polities appear chaotic from this point of view. Indeed, Lee Smith (2010) argues that endless sectarian violence in countries like Iraq is the only alternative to authoritarian rule. For example, Bates *et al.* (2003) estimate that there have been over 400 cases of political instability in the period 1955 to 2002, including 39 cases of genocide, 62 revolutionary wars, 72 ethnic wars and 106 cases of “adverse” regime change such as coup d’etat.

Indeed, it is possible that any society can fall into chaos, unless some institutional device, such as a collegial veto (or “negative”) is constructed to prevent such a situation. The classic example of a fall into chaos is France, from the first meeting of the Estates General in May 1789, through the execution of King Louis XVI in January 1793, followed by the Terror and the deaths of Condorcet in March, and of Robespierre in July, 1794. The political instability was ended by Napoleon’s coup d’etat in November 1799. See Winik (2007) for example.

Madison was keenly aware that one way to lessen the possibility of such chaos was to institute a method of veto. As he says,

for the harmony of that [British] Empire, it is evident I think that without the royal negative or some equivalent control [*sic*] the unity of the system would be destroyed. The want of some such provision seems to have been mortal to the ancient Confederacies.⁶

Federalist X suggests that Madison certainly viewed direct democracy as subject to chaos. Since a legislative assembly can be understood as a direct democracy, social choice theory provides a formal basis for Madison’s argument about direct democracy and what he called “mutability” of the legislature.

This first method of mitigating chaos, as proposed by Madison, is to impose the concentration of power implied by the power of the president. Because we define a dictator to be someone who can control *every* choice, we must infer that it is very unlikely that such a degree of concentration of power can actually occur. However, we can use the term *autocrat* for someone who controls most of the levers of power of the polity, without being constrained by some strong form of political veto.

While an autocrat will constrain the heart, the danger of such concentration of power

⁶Letter to Jefferson, 24 October 1787, in Smith (1995: 498).

is that an autocrat is also likely to be a risk-taker. The credibility of this hypothesis is supported by the historical illustrations of the costs of autocratic-risk taking given in Kennedy (1987) and in Chapter 2 on “social orders.”⁷ The rule of Mao Zedong (Mao Tse-tung) from 1949 to 1976 is believed to have caused the deaths of 40 to 70 million people. Another example would be Kim Il-sung of North Korea who died in 1994 after 46 years in power, and his son, Kim Jong-il who officially took the title of General Secretary of the Workers’ Party of Korea in 1997, and has been in sole power since then.

Similarly, Saddam Hussein of Iraq and Muammar el-Qaddafi of Libya, and more recently Chavez of Venezuela, Mahmoud Ahmadinejad of Iran, and Robert Mugabe of Zimbabwe, have adopted the risky strategy of directly confronting the U.S., sometimes with a degree of success. Vladimir Putin has been in power in Russia since August 9, 1999, when President Boris Yeltsin named Putin as Russia’s acting Prime Minister, and since then has been President and Prime Minister.⁸

As Figure 1.1 suggests, there is a fundamental quandary in social choice, that chaos is a real possibility in the absence of a concentration of power. As this book goes to press, there are uprisings in many counties: Tunisia, Egypt, Libya, Sudan, Yemen, Jordan, Bahrain, and even Iran. Some of these countries have been ruled by an autocrat for up to forty years. The underlying rationale for such autocracy is to prevent the collapse into chaos, and the harsh response to these uprisings is perhaps due to the belief of the elite that autocracy is better than chaos.⁹

However, the second cost of autocracy is stagnation. Once power is concentrated in the hands of the autocrat and his supporters, the people will be denied the opportunities of a free, or open access, society.¹⁰ The dilemma of democracy is how to balance the possibility of chaos against the costs of autocracy. As many now fear, the overthrow of these autocrats may induce conflict between supporters of a secular society and one governed by *Sharia* the religious law of Islam.

1.1.1 The Constitution of the United States.

One way of understanding the U.S. Constitution is that the Presidential veto was designed to overcome Congressional mutability. Madison, of course, was concerned that the President would gain autocratic power, and to avoid this, the Congressional super-majority counter-veto was devised. However, even with the counter-veto, the President does have some autocratic power, and we shall use the term *weak autocrat* to characterize his power. It is evident that there is a tendency for U.S. presidents to display the degree of risk preference that characterizes what we term weak autocrats. The above hypothesis about risk suggests that even a weak autocrat will tend to be more risk-taking

⁷The chapter discusses Attila, Genghis Khan, Philip II of Spain, and Napoleon as risk taking autocrats. In the twentieth century, Hitler and Stalin caused an untold number of deaths (Snyder, 20110).

⁸Chapter 9 discusses Putin’s popularity in Russia, as well as autocracy in Georgia and Azerbaijan.

⁹Chapters 11 and 12 discuss autocracy and democracy in more detail, and model the overthrow of the autocrat.

¹⁰See North *et al.* (2009a,b).

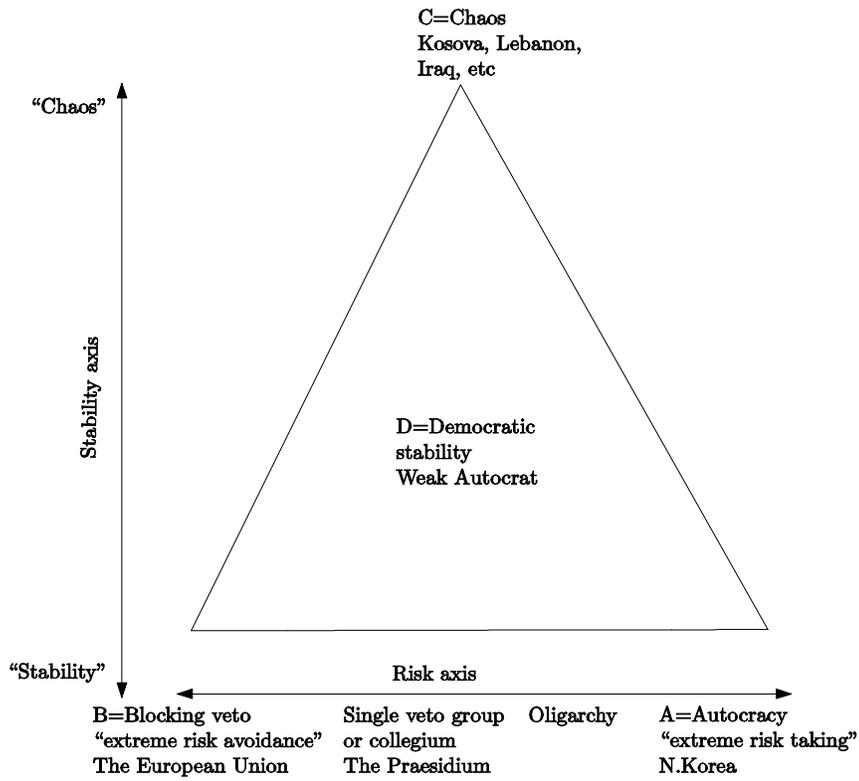


Figure 1.1: Uncertainty and Risk

than an oligarchy which in turn will tend to be more risk-taking than a collegium.

We judge that Congress will generally be risk-averse, which is why, we believe, power to declare war resides in Congress. From this perspective, the weak autocracy that we ascribe to the president is an important feature of the U.S. constitution because risk taking is an essential component of presidential power.¹¹ Moreover, Congressional risk-avoidance has the effect of delaying the resolution of fundamental constitutional quandaries. Typically, a *quandary* can only be faced if there is a risk-taking leader capable of forcing resolution. Below we discuss examples of risk taking by US Presidents, particularly Johnson in 1964, entailing conflict over civil rights between the president and Congress. At the same time, the purpose of the Congressional veto, aside from restraining any tendency to full autocracy, is to cause the president to temper his risk-preference with caution.¹²

The fact that 41 members of the Senate have an effective veto (due to the possible use of the filibuster) means that important choices over climate change, economic regulation and health care, just to mention a few, are made very difficult. The uncertainty comes in because it is well nigh impossible to predict whether a counter-coalition of at least 60 can form. Chapter 5 discusses this issue in further detail.

We suggest that Madison's argument in *Federalist X* was that a balance between risk and uncertainty can be found by seeking leaders who "possess the most attractive merit." It is important for this constitutional balance that the president be elected by a method that gives what Madison called "a probability of a fit choice." This requires that the electorate use their judgment in making a "fit choice" for president. Madison clearly hoped that the selection of the president would be founded on judgment, rather than preference.

It can be argued that Madison developed his argument in *Federalist X*, on the basis of his reading of Condorcet's *Essai* of 1785. Condorcet's Jury theorem in the *Essai* refers to the probability that a jury makes a correct choice on the basis of majority rule. Schofield (2006a) argues that Madison received work by Condorcet from Jefferson in Paris, and acknowledged receipt on 6 September 1787. This suggests that Madison adapted Condorcet's idea during the Fall of 1787, while writing *Federalist X* for publication on 22 November 1787.¹³ In constrained situations where we may assume that judgments predominate, and voters evaluate the options in a clear-sighted fashion, then their choice of Chief Magistrate may indeed be well formed in the way that Madison thought possible.

Madison, in his earlier paper on the "Vices of the Political System of the United States" (April, 1787) had written

[An] auxiliary desideratum for the melioration of the Republican form is such

¹¹Many writers since Schlesinger (1973) have used the term "imperial presidency" for the weak autocracy of the president. See Wills (2010) for discussion of recent extensions of the autocratic power of the presidency.

¹²A good example of this is the caution displayed by Franklin D. Roosevelt in late 1941 as he moved the country to a war-footing, paying attention to public opinion and the concerns of Congress (Kersaw, 2007).

¹³It is also possible that Madison discussed the Condorcet result with Franklin, in Philadelphia after Franklin's return from France in 1784.

a process of elections as will most certainly extract from the mass of the Society the purest and noblest characters which it contains.¹⁴

Because the election of the Chief Magistrate involved the selection of a person, rather than an option (as in the passage of a law), there was some basis for Madison's hope that judgment rather than preference or interest would predominate. On September 4, 1787, the Constitutional Convention had agreed that the President be selected by a majority of an Electoral College, where the weight of each state was given by the sum of its members of the Senate plus the sum of its members of the House of Representatives. The Convention had rejected choice by Congress, by the legislatures of the states and by direct election by the people. We may infer that this system of decision making was adopted in order to refine the method of choice.¹⁵

McLean (2003, 2004, 2006b) has argued that the influence of the Scottish Enlightenment thinkers, Francis Hutcheson, David Hume, and Adam Smith, and their concern for *Moral Sentiment*, is very pervasive in the thought of both Jefferson and Madison. As McLean (2009b) points out, Madison attended the College of New Jersey (now Princeton), where the Scot, John Witherspoon, was principal. Jefferson attended the College of William and Mary and was taught by another Scot, William Small. McLean argues that the political settlement of 1707 created a free-thinking intellectual climate in Scotland that was very different from that of Enlightenment France.¹⁶ As a result, any sensible Scot would rationally fear the tyranny of monarchy or autocracy. The basis of the Scottish Enlightenment thought is thus much more skeptical than the French Enlightenment with its emphasis on reason.¹⁷ Whereas Condorcet exhibits this optimism in both the *Essai* and *Esquisse*, Madison, just like a Scot, had doubts, but also hope, that social choice could be fit.¹⁸

Von Hayek (1976 [1948]) made a similar point when he divided social theorists into two camps: British or Scottish, on the one hand, and the Continental on the other. The British argue that social processes, such as markets, make better decisions than would any individual. The Continental theorists talk about society as if it was an individual. This leads them to chase after a variety of political and economic utopias. According to von Hayek, Descartes (1637) is typical of the continental approach, as in his *A Discourse on Method*, where he says:

the pre-eminence of Sparta was due not to the pre-eminence of each of its laws in particular, but to the circumstances that, originated by a single individual, they

¹⁴James Madison, in Rakove (1999:79).

¹⁵However, in Madison's speech on electing the executive, made on July 19, 1787, he argues that the people at large would be likely to choose "an Executive Magistrate of distinguished Character." (Rakove, 1999:127).

¹⁶See Buchan (2003) and Herman (2001) on the Scottish Enlightenment, and McLean (2006b) and Ross (1995) on the life and thought of Adam Smith.

¹⁷Obviously enough, the French belief in the rationality of politics turned out to be invalid.

¹⁸See Adair (1974, 2000) on the influence of Hume (particularly the essay "That Politics may be reduced to a Science") on Madison. See also Rothschild (2001) for a comparison of the *philosophe*, Condorcet, and Adam Smith.

all tended to a single end.

Hayek suggests that “the British, on the other hand, celebrate the common law,” and then alludes to Adam Ferguson’s *An Essay on the History of Civil Society* (1996 [1767]),

nations stumble upon establishments, which are indeed the result of human action, but not the execution of any human design.¹⁹

Gordon Wood (2006) has made the additional point that both Scotland and the American Colonies were on the British periphery.

[England, the] center of the empire was steeped in luxury and corruption... had sprawling poverty-ridden cities, overrefined manners, gross inequalities of rank..., widespread manufacturing of luxuries, all symptoms of over-advanced social development and decay.

In contrast, gentlemen of Scotland and the Colonies, and particularly the Founders,

struggled to internalize the new liberal man-made standards that had come to define what it meant to be truly civilized-politeness, taste, sociability, learning, compassion, and benevolence—and what it meant to be good political leaders: virtue, disinterestedness, and an aversion to corruption and courtierlike behavior.

Doubts about the ability of political choice to display common sense means that politics requires caution in the creation of the institutions. As we discuss below, Jefferson, after his stay in France, from 1784 on, was clearly influenced by Condorcet, particularly over the virtues of free trade and the possibility of political liberty. The Madisonian - Jefferson focus on Republican virtue is explored by many authors including Wood (1969, 1991, 2002, 2009) and Rakove (2010). Kramnick (1968, 1990) and Burt (1992) have sought for antecedents in the early part of the eighteenth century in the writings of Henry St. John, Viscount Bolingbroke, a country Tory.²⁰

Madison’s hope over the possibility of a fit choice found vindication in the first president, George Washington, who said:

We have now a National character to establish; and it is of the utmost importance to stamp favourable impressions upon it; let justice then be one of its characteristics, and gratitude another.²¹

Wood (2006:34) writes

Washington epitomized everything the revolutionary generation prized in its

¹⁹These quotes are from “Individualism: True and False,” Chapter 1 of von Hayek (1976, [1948]). See also Chapter 6 on the rule of law in von Hayek (2007, [1944]).

²⁰Bolingbroke was Secretary of State under Queen Anne, but fled the country on the accession of George I. Burt notes that Bolingbroke continued his writings against Walpole on returning to England in 1726. See also the comments of Pocock (1972) on Bolingbroke and on the other British political author, Harrington (1992 [1656]).

²¹Letter of April 4, 1783, in Rhodehamel (1997:506)

leaders. He had character and was truly a man of virtue. ...Washington was a self-made hero, and this impressed an eighteenth-century enlightened world that put great stock in men's controlling both their passions and their destinies. Washington seemed to possess a self-cultivated nobility.

However, Scottish scepticism would lead to the inference that there is no necessary reason that electorates would always have the ability to judge candidates by these high standards, and that the chosen presidents would have the requisite characteristics of leadership.²²

Indeed, any selection of a president must be accompanied by *risk*, by the possibility that the chosen individual fails miserably. An individual who has the quality of "honor" can be perceived as one likely to minimize the risk of failure. Thus the perception by the electorate of this risk of failure is a fundamental characteristic of the Republic. Washington, himself had showed his qualities in the years of the Revolutionary War. Indeed, it can be argued that the War was brought to a happy conclusion for the Colonists because Washington gambled *successfully* that the French Fleet under de Grasse could bottle up the British Fleet, thus trapping the British, under Cornwallis, at Yorktown in 1781.²³

All elections in democratic states turn on the electoral assessment of risk. Madison's argument can be interpreted along these lines. Notice that the uncertainty induced by the potential instability of coalitional preference is quite different from the nature of risk embedded in any electoral process.

One of the themes of this book is the interpretation of social choice in terms of the requirement to balance the quite different features of risk and uncertainty.

We shall show in Chapters 5 and 6 that the response by voters in modern elections in the United States and the United Kingdom depend on the voter perceptions of the candidates' *traits*. In the United States, these perceived traits include whether the candidates are moral, honest, strong, optimistic, "care about the people", and intelligent. The first five of these are character traits. Certainly intelligence is a useful trait for a president, but not a moral one.

These traits can be interpreted as qualities that determine whether a candidate is a fit choice. Voter estimates of these traits belong to the realm of beliefs rather than preferences. Thus democratic choice depends on the aggregation of *preferences* (delineated by what we term the heart) combined with *beliefs* about the qualities of political leaders. We shall use the term, the *soul* of the polity, as a convenient shorthand for the distribution of these beliefs in the polity. In the following sections we attempt to combine these two notions of the heart and the soul in a discussion of politics over the long run

²²The founders, particularly Madison were clearly fascinated by Rome, and were well aware that the Republic explicitly depended on the choice of leaders with the required character traits of *dignitas, pietas, virtus and auctoritas*: honor, diligence, confidence and authority or prestige. See the discussion of the importance of these traits in the political life of the Roman republic in Goldsworthy (2006).

²³See Nelson (2010). Indeed O'Shaughnessy (2000) suggests that Washington's gamble paid off because Admiral Rodney's greed led him to take half the British fleet from the Caribbean back to Great Britain. As a result, the British fleet in North America was too weak to defeat de Grasse.

in Great Britain and the United States.

1.2 Economic and Political Change in Britain

The experience of the people after the execution of King Charles I in 1649, followed by the rule of Oliver Cromwell, as Lord Protector of the Commonwealth from 1653 until his death in 1658, must have caused them to fear any risk-loving autocrat. While Cromwell had conquered Ireland and Scotland, and invaded Catholic France, he had also massively increased the debt of the country. After the Restoration and reign of Charles II, his brother James II came to the throne. The birth of a son to James and Maria of Modena in 1688, together with James's clear intent to create a "modern" catholic state in the image of France meant that Protestantism in Europe was endangered.²⁴ The Dutch Republic was faced with the possibility of war in the future with the two powerful Catholic states of Britain and France. Prince William of Orange (1650 – 1702) had governed as Stadtholder of the Dutch Republic from 1672, as William III, and had already successfully battled with England, under Charles II, and France, allying himself with Spain and Brandenburg in 1672-3. The Anglo-French fleet had been defeated three times, forcing Charles to end England's role in the war.

William had a claim to the British throne in his own right, and through that of wife, Mary, daughter of James II, and he began to build a fleet to invade England. The invasion force eventually comprised fifty three warships and four hundred transport ships for the 14,000 infantry and cavalry, much larger than the ill-fated Armada of 1588. The States General of Holland supported the invasion, with loans to William of about half a million pounds sterling. The fleet landed at Torbay in the south west on November 5, 1688. James fled to France, and by December the Dutch army had taken London, without opposition. Jardine (2008) calls the invasion "a brilliantly stage-managed sequence of events" that led to the coronation of Mary, and her husband, William, as co-rulers of Great Britain in 1689.

We may assert that the political economic equilibrium in a society is the result of a bargain between the elite holders of factors of production, and those who govern the institutions. A political leader, whether democratically elected, or holding onto power by force, must have enough support from the elite or the people, or both, to stay in power. For North and Weingast (1989), the quandary facing Parliament after 1688 was first whether to engage in a long war with France, as William III wished, and if so, how to fund the war.

War would require a standing army, which could give too much power to the monarch, endangering liberty. To depend on a militia could well induce France to attack. The solution was to divide control of the standing army between Parliament and the monarch

²⁴For background on 1603-1714, see Kishlansky (1996). For the Restoration of Charles II in 1660 see Harris (2005), and for the Glorious Revolution of 1688 see Harris (2006) and Pincus (2009). Chapter 2 provides some additional background on the conflict between Protestant and Catholic polities from 1540 to 1688.

(Humphrey, 2009). Although William had the potential to be autocrat, this Parliamentary strategy restrained his power. We may use the term, *collegium*, introduced above, to describe this power of Parliament to veto or restrain the weakened autocrat.

The creation of the Bank of England in 1693 provided a method of imposing credible commitment on Parliament. The dilemma facing any government of that time was that war had become more expensive than government revenue could cover. Consequently, governments, or monarchs, became increasingly indebted. Risk-preferring, or war-loving, monarchs, such as Philip II of Spain or Louis XIV of France, were obliged to borrow. As their debt increased, they were forced into repudiation, thus making it more difficult in the future to borrow. Since the Bank of England “managed” the debt in Britain after 1693, there was an incentive for Parliament to accept the necessary taxation, thus avoiding the temptation of repudiation. This had the effect of reducing the cost of public debt.²⁵

However, the cost of war kept increasing. The War of Spanish Succession (1701-1714) brought war weariness, and the governing party, the Tories, sought to avoid the costs (and taxes) induced by war (Stasavage, , 2002, 2003,2007). Contrary to the argument of North and Weingast (1989), the escalating war debt had made repudiation an increasingly attractive option by 1710. It was not obvious why Parliament would choose to commit to fiscal responsibility.

The fundamental problem was that the majority of members of both Commons and Lords were of the landed interest. The obvious method of funding government debt (which had risen to 36 million pounds sterling by 1710) was by a land tax. Indeed the land tax raised approximately 50 percent of revenue.

In a desperate attempt to deal with debt, the government “sold” the debt to the South Sea Company in 1711. After Queen Anne died in 1714, and the Hanoverian, George I, became sovereign, increasing speculation in South Sea Company stock and then the collapse of the “bubble” in September 1720, almost bankrupted the country. Walpole, Chancellor of the Exchequer and First Lord of the Treasury, stabilized confidence in the Company by a swap arrangement with the Bank of England. In April 1721, Walpole began his scheme to further control government debt by instituting a complex system of customs and excise (Hill, 1989).

By restricting imports, mostly foodstuffs and land intensive commodities, this system had the effect of supporting the price of the scarce commodity, land. Thus the key compact (between the Tory landed elite, and the Whigs, the capital elite) to create a long run political equilibrium involved the protection of land via increased customs and excise. Figure 1.2 provides a schematic representation of political preferences of Whigs and Tories in the 1700’s.

This enabled the government of Britain to dramatically increase its borrowing so as to prosecute the continuing wars with France. This compact not only raised food prices, but was associated with the concentration of land ownership (leading to the beginning of

²⁵Quinn (2001) suggests that there was a crowding out, in the sense that while the cost of public debt fell, the cost of private debt rose, at least until 1705.

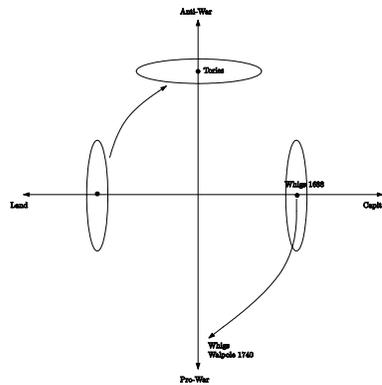


Figure 1.2: Walpole's position between 1721 and 1740

the agricultural revolution). Moreover, the compact required restriction of the franchise. Thus the compact created benefits for land and capital, at the cost to labor, maintained by a relatively autocratic or collegial power arrangement. These excise taxes and customs raised an increasing share of government revenue.²⁶

O'Brien (1988: 16) comments that these data on tax revenue

provide some statistical support for suggestions that the burden of taxation on the aristocracy declined during the eighteenth century. Not until they confronted Napoleon did the upper classes once again undertake the kind of sacrifices for the defence of property that they had made under William III. [W]ith the repeal of the Pitt's income tax in 1816 the situation reverted to the status quo ante bellum.

As Brewer (1988) has described, the system required a sophisticated and skilled bureaucracy. The Walpole system of finance created a compact between the "commercial" Whig interests and both Whig and Tory "landed" interests, securing their Parliamentary support for continued war with France.²⁷ This compact had a number of other effects. First, it ushered in a period of Whig dominance until 1783.²⁸ By supporting land prices, the bargain led to increased investment in agriculture.²⁹ Although agricultural output increased in Britain (by 76% between 1740 and 1860), the population grew even more

²⁶Tax receipts as a percentage of national income rose from 10.8% in 1720 to 18.2% in 1810. The share of customs and excise in government income was about 73% in 1720 and 82% in 1800 (O'Brien, 1988:15).

²⁷As Simms (2007) notes, Britain won three wars against France in the first part of the eighteenth century, but lost the War of Independence against the Colonies (and France) in 1776-1783.

²⁸From 1721 to 1783 eleven out of thirteen prime ministers were Whig. Tory prime ministers included the Earl of Bute (1762-3) and Lord North (1770-1782). In contrast, from the time of the Tory, William Pitt the Younger (1783-1801, 1804-1806), until Benjamin Disraeli (1868, 1874-80) there were fourteen Tory or Conservative prime ministers out of eighteen.

²⁹Allen (1988) estimates that the rental on land rose from about 0.5 pounds per acre in 1725 to 1.5 pounds

rapidly (increasing from about 6 million in 1740 to 29 million in 1860, according to Maddison, 2007).³⁰

Britain became increasingly dependant on food imports, particularly from the United States.³¹ However, the combination of protection of land and population growth led to an increase of the cost of living of 43% between 1740 and 1800, and a decline of the real wage.³² It is estimated that 80% of subsistence farmers were forced off the land between 1780 and 1810.

The continuing fall in the real wage must have contributed to the emigration of 80,000 from England and Wales, 115,000 from Ireland, and 75,000 from Scotland (including 15,000 highlanders) between 1700 and 1780.³³ As a consequence, the population of the thirteen colonies/ the United States had increased from about 200,000 in 1700 to 890,000 in 1750 to 2.8 million by 1790 and 5.3 million by 1800. The fall of real wages until the end of the Napoleonic Wars, coupled with a rise in GDP capita suggests that income inequality increased in this period.

The model of political economy proposed by Acemoglu and Robinson (2000, 2006a) suggests that the Walpole compact could only be maintained by a severe restriction of the franchise. It is true that it was not until 1867 that the franchise was extended to any great degree, and this extension was coupled with gains for labor. However, real wages started to rise after the end of the Napoleonic Wars, suggesting that economic inequality was slowly declining.³⁴ More importantly, protection of land was only maintained until the repeal of the Corn Laws in 1846. As Figure 1.3 shows, Great Britain maintained higher tariffs than France until about 1875.³⁵ We can infer that from about 1850, the compact between land and capital was no longer essential to British hegemony.³⁶

As discussed by McLean (2001a,b), this first significant decrease in protection of land in May 1846 was effected by the Tory, Robert Peel, together with Wellington in the Lords, against the interests of the majority of their party. "The entire opposition-Whig, Radical and Irish-supported Peel, as did about one- third of the Tories. The other two-thirds under Bentinck and Disraeli voted against Repeal."³⁷

per acre in 1825.

³⁰Mokyr (2010) provides an extensive account of the growth in the British economy in this period, including the effect of the enclosures and the slow increase in agricultural and then industrial product.

³¹Clark (2007a) estimates an increase of agricultural imports from zero in 1730 to 22% of GDP in 1860.

³²Clark (2005: 1325) estimates that the real wage in the decade 1800-1809 was about 10% below that of 1730. See also Floud and McCloskey (1994).

³³Harper (2003)

³⁴Clark (2005) estimates an increase of 66% between 1815 and 1860. He accounts for this with an evolutionary account model population growth leading to selection of attributes of thrift, thus causing the increase in productivity that became quite apparent in the mid 1850s.

³⁵See Nye (2007) on protection of land in the 19th century. Mokyr and Nye (2007) provide an account of the ability of the landed interest to continue protecting land and their wealth until about 1850. They argue that the development of a centralized party system (Cox, 1987) prevented the formation of rent seeking coalitions that could have slowed technological development.

³⁶Clark (2007a) estimates that real farm rents/acre increased until about 1880 and then fell rapidly, indicating that the landed interest was still able to protect itself to some degree after the collapse of the compact.

³⁷McLean, 2001b: 115. It would be twenty-eight years before a Conservative Prime Minister again had a majority in the House of Commons.

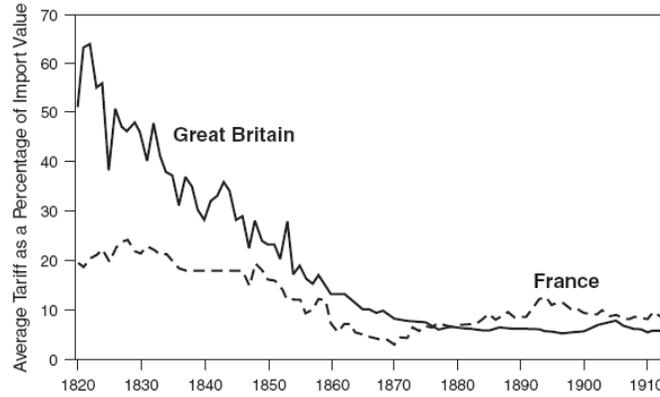


Figure 1.3: Tariff revenue as a fraction of all imports (Nye, 2007), with permission of Princeton University Press.

Famine in Ireland made it obvious to Peel and Wellington that unless food prices were lowered then social unrest could lead to civil strife. Notice that this observation differs from that of Acemoglu and Robinson (2006a), who suggest the franchise would only be expanded because of the fear of civil strife. It was *protection of land* that was lifted because of the fear of strife. Two million people emigrated from Ireland in the period 1846-1856, while the U.S. population jumped in this decade from 23 million to about 32 million, exceeding for the first time the population of Britain.

Schonhardt-Bailey (1991, 2006) suggests that the agrarian interests had diversified into industrial capital by 1846, and stood to gain from the expansion of trade that could be expected from Repeal. But this is difficult to reconcile with the Tory opposition to Repeal. It is more likely that Peel was able to put together a temporary winning coalition in the Commons, with Wellington's help in the Lords, using the two dimensionality of a policy space. This space involved not only the land-capital axis, but also the second labor axis.

By the 1860's, Britain's economic lead allowed for further reduction in the protection of land, in the form of Gladstone's budget of 1861, which reduced the duty on wine and repealed the paper tax (Aldous, 2006). McLean (2001a) also discusses the political maneuver of Benjamin Disraeli, who, as Chancellor of the Exchequer in 1867, was able to push through the Reform Act, doubling the enfranchised population (Himmelfarb, 1966).³⁸ Constituencies and boroughs with less than 10,000 inhabitants lost one of their MPs, and the forty-five seats made available were distributed by giving fifteen

³⁸The Act gave the vote to every male adult householder living in a borough constituency. Men paying £10 for unfurnished rooms were also granted the vote. This gave the vote to about 1.5 million men.

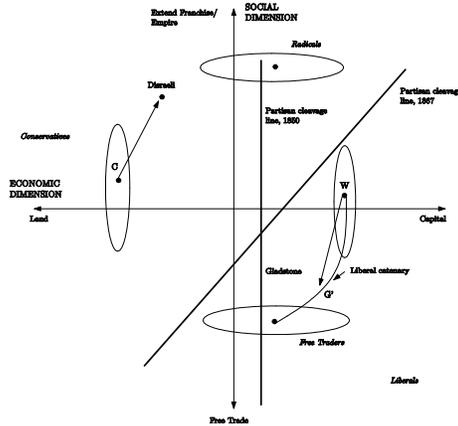


Figure 1.4: Tories and Liberals in Britain in 1867

to towns which had never had an MP and giving one extra seat to some larger towns - Liverpool, Manchester, Birmingham and Leeds. About 3 million factory workers, day laborers and farm workers were still not enfranchised³⁹ Whether as cause or effect, the real wage and real GDP/capita started to rise rapidly from the mid 1860s, with a further decline in income inequality.⁴⁰ Marx's extrapolation (Marx (1930 [1867])) from the recent past proved to be as wrong as Malthus's earlier argument, as applied to Britain at least (Nasar, 2011).

Figure 1.4 presents a schematic figure showing the opposition between the Liberals, led by Gladstone, and the Tories, led by Disraeli. The figure is meant to suggest that Gladstone adopted a position that was pro-capital, but also in favor of free trade. In contrast, Disraeli understood that the hold on the Tories by the landed interest had to be broken, in order to oppose the Whigs, or Liberals. Disraeli's maneuver was to join with electoral radicals to extend the franchise, essentially changing the "partisan cleavage line." The "partisan cleavage line" is a convenient way of showing the separation between the Whigs and the Conservatives, and how this changed from its position in 1850 to a new position in 1867, as illustrated in the figure. Disraeli faced opposition from his own party,

³⁹Lizzeri and Persico (2004) essentially present a different argument to Acemoglu and Robinson (2000, 2006a), suggesting that the franchise was expanded because the dominant commercial elite formed a coalition with labor to demand a system of public goods, particularly in the urban centers. This led to a more productive labor force and increased the real return of both capital and labor.

⁴⁰Maddison estimates that GDP/capita grew 22% in Britain, from \$2300 to \$2800 (in \$1990), in the decade 1850-1860. The population of the UK in 1867 was about 30 million. In the same decade GDP/capita in the United States grew from \$1800 to \$2100 (ie 16%), while the US population was about 38 million in 1867.

worried that too much democracy might leave them in a permanent minority, while Liberals were concerned that laborers might vote against the middle class.(Weintraub, 1993:443).

It is possible that Disraeli's maneuver. depended on beliefs about Empire. For industrial labor, "Empire" meant the opportunities for emigration and a better life in the Imperial Dominions of Australia, Canada, New Zealand and South Africa. By using the rhetoric of "Empire," Disraeli could hope to appeal to working class voters.⁴¹ These political changes laid the foundation for Britain's continuing hegemony in the late nineteenth century. Porter (2004) comments that

Disraeli calculated that here was a seam of potential support for the Conservatives that might trump the Liberals' conventional support among the lower middle classes[.] [He became] the first leading politician to try to appeal to the working-class electorate on imperial-patriotic grounds.

Earlier, Harcourt (1980) had written that it

was evident that a display of British power abroad had a special appeal for the working classes.⁴²

Note that this change in the nature of the political institution in Britain was highly contingent on a particular coalition put together by Disraeli, just as the Repeal of the Corn Laws in 1846 was also highly contingent on Peel's coalition. Together, these two policy moves defined the principal axis of political contention in Britain for the next century.

After World War I, when the British Empire began to decline, a vigorous political debate turned on whether Britain should maintain its hegemony through a system of Imperial Preference, so as to oppose the growing power of the United States. This imperial quandary was very much on Keynes's mind during the negotiations over the creation of the post World War II international institutions leading to the Bretton Woods Agreement in 1944 (Schofield, 2006a).

In the 1960's, the issue changed to the nature of the British Commonwealth, and the rights of Commonwealth citizens. To illustrate, in April, 1968, Enoch Powell (1912–1998), the Conservative Member of Parliament for Wolverhampton South West gave his infamous "Rivers of Blood" speech, criticising Commonwealth immigration, as well as proposed anti-discrimination legislation in the United Kingdom.⁴³ The title derived from its allusion to a line from Virgil's *Aeneid*:

⁴¹Later, in 1876, Disraeli as Prime Minister effected the Royal Titles bill, proclaiming Victoria *Regina et Imperatrix*.

⁴²Disraeli's maneuver probably allowed the Tories/Conservatives to vie with the Liberals over the next fifty years.

⁴³The speech is often regarded as contributing to the surprise Conservative victory in the election of June 1970. More recently, the speech was referred to with regard to a Labor leader, Ed Balls, after the 2010 election.

As I look ahead, I am filled with foreboding; like the Roman, I seem to see “the River Tiber foaming with much blood.”

In his book, Powell (1977) explains his logic: with the British Empire gone,

[t]he whole contraption [of the Commonwealth] was a humbug, a pretense and a self deception.

While the Commonwealth has become an irrelevancy, “nationalism” is still an important theme in British politics, but is now concerned with the role that Britain plays in the concert of nations, and in particular, with the nature of the relationship between Britain and the European Union.⁴⁴

1.2.1 Summary of Changes in the British Polity

In summary, the Walpole compact

- helped to maintain the Whig elite in power,
- allowed the Whig government to borrow the capital required for Britain to finance the long war against France,
- transformed agriculture, forcing people off the land and into the cities,
- caused the impoverishment of a considerable proportion of the population until 1815, inducing a large immigrant flow, first to the colonies and then the United States,
- facilitated rapid population growth, because of the availability of agricultural imports from the United States,
- led to the creation of efficient capital markets, and the eventual expansion of manufacturing,
- which paid for food imports, thus creating the possibility for further population growth as the basis for the growth of the empire.

At least until 1867, the compact necessitated the maintenance of a restricted franchise, since it was believed, even by Gladstone, that extending the franchise could lead to Parliamentary disorder.

It was also crucial for this dynamic path of Britain’s economic development that there be a plentiful and cheap supply of (land intensive) agricultural goods from the United States. This was made possible by the availability of land in the United States and by the growth of the American population. The next section discusses some aspects of this *synergy* between the United States and the British Empire.

⁴⁴See the empirical work on elections in the United Kingdom in Chapter 6.

1.3 Political Transformations in the United States

The Declaration of Independence by the thirteen colonies in 1776 was, in turn, triggered by conflict over land, specifically because of the attempt by the British to remove the Ohio Valley from settlement through the Quebec Act of July 1774.⁴⁵ This Act led almost immediately to the First Continental Congress in October 1774, and was denounced in the Declaration itself.

After independence in 1783, conflict between Federalists, represented particularly by Alexander Hamilton, and the Republicans, James Madison and Thomas Jefferson, focused on land versus capital. Hamilton's Reports of 1790-1 on Public Credit, Manufactures and The National Bank were all aimed at creating an American analogue of the British system of tariffs and excise. Since the United States exported land-intensive goods, the only feasible path to creating a commercial economy was to sustain manufactures either by tariff or by direct government assistance. Hamilton rejected the Madison-Jefferson view that the future of the U.S. economy lay principally in the cultivation of the land. Indeed, in the Report on Manufactures, Hamilton argued that the U.S. could grow only through an increase of productivity as a result of manufacturing.

By the 1790's, Jefferson was well aware of the implications of the Walpole compact in terms of impoverishment of the people and the concentration of power. His reading of the works of Henry St. John, Viscount Bolingbroke, led him to believe that the land-capital compact led to corruption, as well as the filling of Parliament by placemen.⁴⁶

In fact, Bolingbroke's arguments against the British compact were, to some degree, invalid, since the compact did make it possible for Britain to manage its debt, fight its wars and create an empire. Bolingbroke's logic was, however, valid for the U.S. Hamilton's attempt in 1793 to recreate Walpole's system of commerce would have necessitated both a land tax and tariff protection. Since U.S. imports were primarily manufactures, a tariff would protect the scarce factor, capital, associated with these imports. In Jefferson's view, this would have disadvantaged the landed interest.⁴⁷ Jefferson's "Empire of Liberty" meant the exact opposite.⁴⁸ His election in 1800 saw the victory of the Democrat-Republican trade-oriented coalition of the slave-owning elite and free agrarian labor against the more urban north east.⁴⁹ Essentially, Jefferson created a long-lasting compact under which the U.S. became the food supplier for Britain.⁵⁰ See Figure

⁴⁵See Schofield (2002) and Simms (2008).

⁴⁶Kramnick (1992.[1968]) quotes Bolingbroke as follows: "they (the corporations) have bodies but no souls nor consequently consciences."

See also Schofield (2006b) for further discussion.

⁴⁷We have argued above that Jefferson's view about this agrarian empire, and the possibility for trade, was much influenced by the ideas expressed by Condorcet in the *Esquisse* (1795).

⁴⁸See the discussion of this period in Wood (2009)

⁴⁹In this election, the Democrat-Republicans won 146 electoral college votes, with Jefferson and Burr, of New York, each receiving 73. The Federalists won 129 in total. Eventually Jefferson won the House with ten seats to four for Burr. The three fifths weight given to unfree labor in the south had proved crucial.

⁵⁰Of course, Britain also depended on food supplies from Europe. However, abundant land and productive labor in the United States led to a lower price of food, which obviously benefited Britain. It is possible that the general equilibrium model of Dakhli and Nye (2004) could be used to explore the synergy between the

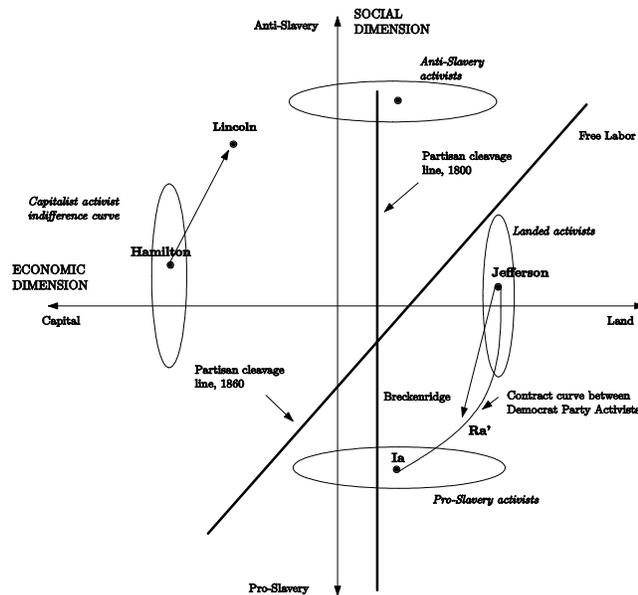


Figure 1.5: Changes in political realignment 1800-1860

1.5 for a schematic representation of the Jefferson/Hamilton conflict and the emergence of slavery as a fundamental political issue. The changing policy preferences of political leaders is shown by the transformation of the partisan cleavage line from 1800 to 1860.

Until the election of Lincoln in 1860, the political coalition structure was “intersectional” of eastern pro-capital Whigs against the agrarian Democrat south and west. Lincoln’s election was the result of the collapse of the agrarian coalition, triggered by the Dred Scott opinion of the Supreme Court in 1857. Figure 1.5 is intended to suggest that the position of Breckenridge was the result of a coalition of pro-slavery agrarian activists. In the period up to the 1860 election, Lincoln argued that the Dred Scott decision was a maneuver by the pro-slavery coalition to expand slavery to the Pacific. Such a move would clearly be against the interests of northern free labor, and the conflict that ensued can be represented by the new positioning of the fundamental partisan cleavage line.⁵¹

During the Civil War, the Tariff Acts of 1862 and 1864 were proposed as means

economies of Britain and the United States.

⁵¹Egnal (2009) suggests that the conflict between north and south was generated by the factors of land and capital, rather than labor, as a result of new transportation technologies of canal and railway. Figure 1.5 is meant to suggest that all three factors were relevant.

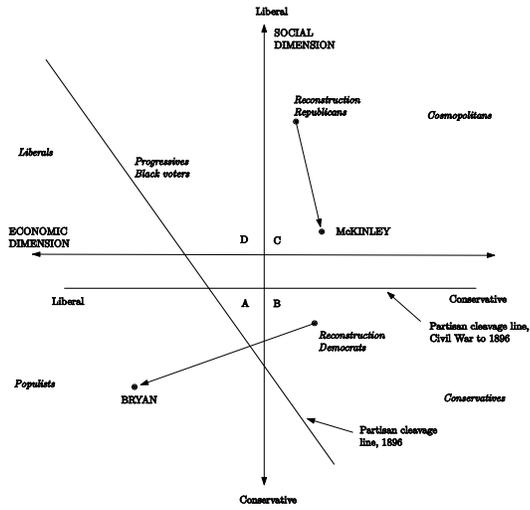


Figure 1.6: US realignments 1860-1896

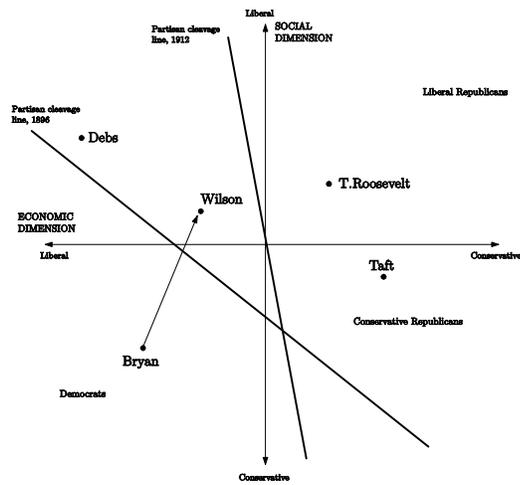


Figure 1.7: The election of 1912

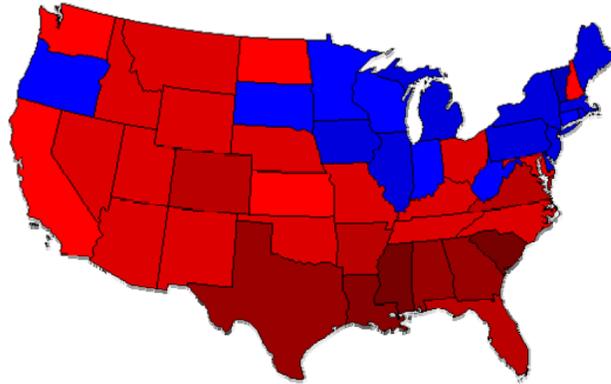


Figure 1.8: Republican States (in blue) and Democrat States (in red) in the election of 1916: copyright David Leip.

to raise capital for the effort against the south.⁵² After the Civil War, the Republicans became even more closely associated with pro-capital protectionism. As Taussig (1888) noted, in his classic treatise on the tariff,

Great fortunes were made by changes in legislation urged and brought by those who were benefited by them.

By the Tariff Act of 1883, the average duty on aggregate imports was of the order of 30%, mostly on manufactures.

The second half of the nineteenth century had seen an enormous growth of agrarian exports from the U.S to Great Britain. Brawley (1998) notes that U.S. exports of grain to Britain increased very rapidly after Britain repealed the Corn Laws in 1846. In turn the U.S. lowered tariffs on manufactures, paving the way for what we have called the U.S.-Britain synergy.⁵³ As Belich (2009) notes, grain exports increased from a million tons in 1873 to 4 million by 1900, with similar increases in dairy and meat products. However, by 1900, the Dominions (Canada, New Zealand and Australia) began to replace the United States as the agrarian suppliers for Britain. At the same time, the United States began its somewhat delayed process of industrial development, making use of the transport infrastructure, canals etc that had been put in place in the previous decades. Belich

⁵²Indeed, Lincoln's economic advisor, Henry Carey argued in his book of 1896, that the "American system" involving tariffs, was the only way to maintain equality, in contrast to the free trade British system of imperialism.

⁵³By this synergy we mean the equilibrium by which both Britain and the U.S. were advantaged by a flow of people and manufactures from Britain to the U.S. and a reverse flow of foodstuffs back to Britain, so the population and wealth of both countries could grow rapidly.

(2009) suggests that the decoupling of the United States from Britain took place about 1900, by which time the population of New York had reached 3.5 million.⁵⁴

This decoupling set the scene for the conflict between the manufacturing interests of the north east, and their preference for the protective tariff, against the free trade preference of the south and west of the country. The Democrat president, Grover Cleveland, was able to start a reduction in tariffs through the Wilson-Gorman Tariff Act, against strong Republican opposition. At the election of 1896, the Democrats chose the “silverite”, William Jennings Bryan, whose populist position for cheap money against the gold standard was strongly supported in the somewhat less populous agrarian south and west. The Republicans chose William McKinley, who stood for protection of the manufacturing interests of the north east. McKinley won 51% of the popular vote but 60% of the electoral college, taking the entire northeast along with California and Oregon.⁵⁵ McKinley, and his vice-presidential ally, Theodore Roosevelt, won the election again in 1900, with Roosevelt becoming President after McKinley’s assassination on 14 September, 1901. Roosevelt increased the Republican vote share to 56% against Alton Parker in 1904, and in 1908, the Republican Taft took 51% of the vote and 321 electoral college seats to Bryan’s 43% and 162 seats. As Figure 1.6 suggests, the importance of the social dimension, involving slavery, had declined, and the Republican Party had adopted a conservative, pro-capital position on the economic axis. This is reflected in the change in the partisan cleavage line from the Civil War to 1896.

The transformation of the US economy, the recent passage of the Payne-Aldrich protectionist bill (1909) and the growth of big business prompted Roosevelt to run against his old ally William Taft as the Republican candidate in 1912.⁵⁶ When he failed to be nominated he ran as a Progressive third party candidate in 1912 on a platform of the “New Nationalism.” In addition to Taft, his opponents were the Democrat candidate, Woodrow Wilson, and the Socialist candidate, Eugene Debs.⁵⁷ Because of the split, Wilson took 42% of the vote and an overwhelming majority of 435 electoral college seats, from southern and western states. Wilson essentially recreated a winning coalition of the agrarian south and west, and parts of the industrial north east, and began a process of transformation in the coalition configuration of US politics, as suggested by Figure 1.7. Again, the partisan cleavage line is rotated in a clockwise direction. In all the elections from 1896 to 1908, the Republicans took the north east states. After the split between Theodore Roosevelt and William Taft in 1912, the north east again became a Republican heartland. Figure 1.8 shows the Republican states of the northeast (in blue) and the Democrat states (in red) for the election of 1916. In a close election, Wilson took nearly 50% of the popular vote and 277 electoral college seats (52.%) against the Republican, Charles Hughes. “Third party” candidates took just over 4% of

⁵⁴According to O’Rourke and Williamson (1999), the US economy grew rapidly in the period 1870-1913. Real wages, GDP per capita and GDP per worker hour increased by 46%, 115% and 126% respectively. These figures suggest that inequality increased. See also Lears (2009) for the transformation of the US economy from 1877 to 1920.

⁵⁵See Kazin (2006).

⁵⁶See Wolman (1992) for a discussion of tariff policy, 1897-1912.

⁵⁷See Morris (2001), Chace (2004) and Gould (2008).

the vote.

In the post-World War I boom years, the Republican coalition, centered on the industrial north east, was dominant. Harding won with 60% of the vote in 1920, Coolidge with 54% in 1924 and Hoover with 58% in 1928.⁵⁸ In many respects, the period from 1880 to 1928 in the US is similar to that of Britain in the nineteenth century, with inequality first growing then declining.

However, the Wall Street crash of 1929 and the great Depression created the context for the Democrat realignment, started by Wilson, to be completed by Franklin Roosevelt after his election victory in 1932 with 57% of the popular vote and 472 electoral college votes from almost all states outside the core Republican stronghold of the north east.

The Smoot-Hawley Tariff Act of 1930 had raised average tariffs to about 20% and is generally considered to have contributed to the dramatic fall in both imports and exports. From Roosevelt's inauguration on March 3 to June 16 he pushed through the beginnings of the New Deal, including the Emergency Banking Act, the Economy and Beer-Wine Revenue Act (finishing Prohibition, and providing much needed government revenue), the Agricultural Adjustment Act (to deal with over production, but also with an amendment that essentially took the dollar off the gold standard), and the National Industrial Recovery Act. The CCC (Civilian Conservation Corps), the FERA (Federal Emergency Authority), the TVA (Tennessee Valley Authority), the NRA (National Recovery Administration), the PWA (Public Works Administration) and the AAA (Agricultural Adjustment Administration) were all created to attempt to deal with unemployment, partly through public works.

In September 1931 Britain had come off the gold standard, and the pound then floated on foreign exchange markets. On July 3, 1933, Roosevelt announced that the US was following suit. Kennedy (2001) writes that this announcement

killed any prospect of international cooperation. ... Like Japan in Manchuria, ... Germany could do what it wanted in Europe without fear of reprisal.

In 1935, Congress passed five Neutrality Acts, restricting trade with any combatant nations. Thus emboldened, Mussolini invaded Ethiopia from Italian Somalia in October, 1935, Hitler retook the Rhineland on March 7, 1936, General Franco invaded Spain from Morocco in July, 1936, and in November, 1936, the alliance between Germany and Italy was agreed, followed by the Anti-Comintern Pact between Germany and Japan. Japan then invaded China and took Nanking on December 12, 1937.

The great achievement of the Roosevelt administration was to pass the Social Security Act of August 1935. The retirement benefit was wage-determined and retirement benefits were to range from ten to eighty five dollars a month. In the 1936 election, Roosevelt took every state but Maine and Vermont. In 1935 and 1936, the Supreme court in a number of five to four decisions, had asserted that many of the initiatives implemented by Roosevelt were unconstitutional. However, Justice Owen Roberts changed

⁵⁸In 1930, out of a population of 120 million, 12 million were foreign born, and had migrated to the manufacturing centers of the north east. Kennedy (2001) notes however about 44% of the population were rural.

to the liberal side of the Court, and in the *West Coast Hotel v. Parrish* the Court upheld the constitutionality of a minimum wage law, and later of other New Deal legislation.

Roosevelt still depended on southern senators, since the South could still use the threat of filibuster to block legislation that was too liberal on the social axis. For example, the House had voted on an anti-lynching bill in 1937, but the Senate filibustered for six weeks. The Fair Labor Standards Act (FLSA) of 1937 was designed to implement a minimum wage, but southern opposition kept agricultural laborers and domestic servants off the bill. The New Dealers in the administration were of course enthusiastic about the new economic strategies proposed by Keynes in his *General Theory of Employment*, and Keynes in his turn had welcomed Roosevelt's rejection of the gold standard. However, the New Deal was still hemmed in by the fear of budget deficits and southern opposition to a change in the relationship of land and labor.

The Prime Minister of the United Kingdom, Neville Chamberlain agreed to the annexation of the Sudetland from Czechoslovakia to Germany, and this duly happened between October 1 and October 10, 1938. The Czech part of Czechoslovakia was then invaded by Germany in March 1939, followed by the invasion of Albania by Mussolini on April 9. In response, Roosevelt tried to revise the Neutrality Acts, and wrote to Hitler and Mussolini in April, 1939, to which Hitler replied with scorn in a speech to the Reichstag on April, 28. On August 23, it was revealed that Hitler and Stalin had signed a non aggression pact, under which they each took half of Poland, and the Baltic States and part of Finland fell under Soviet control.

On September 1, 1939, Germany invaded Poland, triggering the Second World War.

By 1941, British reserves were exhausted, and in March, the Lend-Lease bill was passed by overwhelming majorities in Congress, but it was only the attack on Pearl Harbor in December 1941 that brought the US into the war against Japan, and then Germany. Because of under-used industrial capacity, the United States was able to turn its full industrial might to a military footing. Kennedy (2001) notes that the first six months of 1942 saw \$100 billion (in nominal terms) of military contracts, paid for by the extension of income taxes, under the Revenue Act of 1942, to include 13 million new taxpayers. This military machine provided the apparatus for the eventual defeat of the U-boats in the Atlantic, the invasion of North Africa, in late 1942, and Sicily and Italy, in July and September, 1943. Churchill feared that a premature invasion of France could lead to defeat, and perhaps pressed for these Mediterranean invasions to gain time. Roosevelt wanted a promise from Stalin that Russia would turn against Japan in the event the German invasion of Russia was repulsed. In their meeting in Tehran in November, Roosevelt had to mollify Stalin for the delay in opening up the second front in France, by effectively acknowledging a post-war Russian sphere of interest in Eastern Europe.

The US and British armies invaded Normandy on June 6, 1944, but by January 1945 were still stalled west of the Rhine. However, massive bombing raids had destroyed most of Germany's war production, and on April 11 the Americans reached the Elbe, while the Russians took the Reichstag in Berlin on April 30. Hitler committed suicide, and the German High Command surrendered unconditionally, first in Rheims on May

7, and again in Berlin on May 8.

Roosevelt had won his fourth election victory in 1944, with Harry Truman as running mate, against Dewey, taking 54% of the popular vote and 81% of the electoral college. In February, 1945, Roosevelt again met Stalin, at Yalta and, in return for concessions to Russia in Eastern Europe and Asia, again wrung the promise of a declaration of war against Japan. Roosevelt died on April 12. The invasion of Okinawa, from April until mid-June, 1945 cost Japan over 100,000 troops, and the more than 50,000 Allied casualties, while one-quarter of the civilian population died during the invasion. Truman met Stalin at Potsdam, outside Berlin, on July 17. The two leaders, along with Churchill, signed the *Potsdam Proclamation*, requiring the unconditional surrender of Japan.

The British election results were announced on July 19, 1945. Labor had won in a landslide of 393 seats to 197 for the Conservatives and 21 for the Liberals. Churchill returned to the UK to resign as Prime Minister, and his place was taken in Potsdam by Clement Attlee, the new Prime Minister.

Fear of the likely death-toll of an invasion of Japan caused Truman to issue the order for the use of atomic weapons against Nagasaki and Hiroshima on August 6 and 8, and Russia immediately invaded mainland Manchukuo.⁵⁹ On August 8, Emperor Hirohito announced on radio that Japan had surrounded, and this was followed by the formal surrender on September 12, 1945.

The first problem that had to be dealt with at the end of the war was Britain's debt. The State Department wanted to force Britain to open up the Sterling bloc to U.S. interests, and, in particular, to oblige sterling to become, once again, fully convertible. A problem with this aim was the \$14.4 billion of sterling balances held by the member states within the British Empire (particularly India). The termination of Lend/Lease, the flow of U.S. capital to Britain, obliged the new Labor government (as of July 1945) to deal with a serious balance of payments problem. Keynes, as principal negotiator for Britain, requested \$6 billion from the US, but the amount was scaled down to \$3.75 billion, conditional on the commitment that the British would open the Sterling Area. Lend/Lease had cost the US \$22 billion, but the UK obligation to repay was cut to \$650 million. Canada provided a further loan of \$1.25 billion, and Australia and New Zealand canceled \$38 million of the debt. The total British debt obligation was thus still of the order of \$20 billion. The legislation passed in the House of Commons in December, 1945, by 345 to 98, would probably have failed in the Lords, had not Keynes spoken up for the arrangement as well as the Bretton Woods agreement to construct the post war international institutions. The loan agreement almost failed in the U.S. House of Representatives in July, 1946, as well, but passed partly because of the recognition of Britain as an ally against possible Soviet threats in Europe.

As required by the loan agreement, Britain started to move towards convertibility on July 15, 1947. Some of the U.S. loan had already been used by this time; conversion of sterling to dollars immediately drained the remaining dollars from the British account.

⁵⁹Manchuria and eastern Inner Mongolia. It had been seized by Japan in 1932.

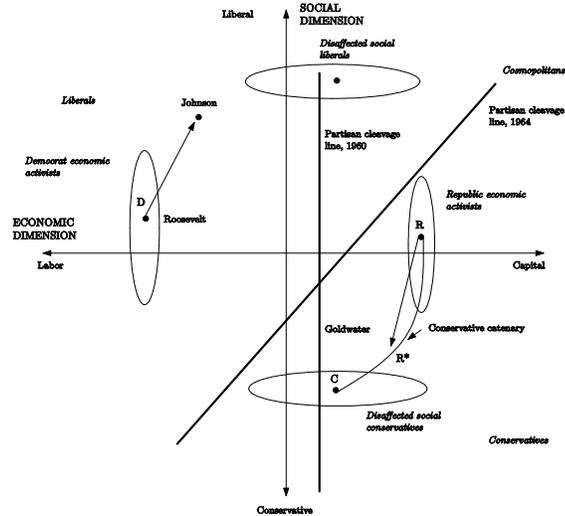


Figure 1.9: US realignments 1952 to 1964

On August 15, 1947, India and Pakistan became independent dominions. In Churchill's phrase, the British Empire, as well as the American loan had been "scuttled."⁶⁰

The estimates by Maddison (2007) of US GDP and GDP/capita clearly show the effect of the Great Depression, New Deal, World War II and the aftermath. In 1929, GDP was \$850 billion⁶¹, \$600 billion in 1933, \$800 billion in 1938⁶², and \$1.7 trillion⁶³ in 1944. After the war, GDP had fallen to \$1.3 trillion by 1947.⁶⁴

It took the reconstruction of Europe through the \$13 billion of Marshall Aid together with the international institutions created under the Bretton Woods system to reassert the pattern of economic growth in the US.⁶⁵ US GDP hit \$1.45 trillion⁶⁶ in 1950 and \$2 trillion⁶⁷ in 1960. Truman just gained a Democratic Party victory in 1948. In that year, however, Strom Thurmond, for States' Rights won 2.5% of the popular vote from the states of the south east, suggesting that the Democratic coalition could be broken: indeed Eisenhower won in 1952.

From the election victory of Eisenhower in 1952 to Kennedy in 1960, we may as-

⁶⁰Peter Clarke (2008: 464). As Ferguson (2010) remarks: "Within a dozen years, the United Kingdom had let go of its overseas possessions in Burma, Eritrea, Ghana, India, Jordan, Malaya, Newfoundland, Palestine, Sri Lanka, Sudan, and the Suez Canal Zone."

⁶¹\$6900/capita, both in 1990 Geary Khamis dollars.

⁶²\$6200/capita.

⁶³\$12,300/capita.

⁶⁴\$8,888/capita.

⁶⁵See Skidelsky (2000) for a description of the efforts by Keynes, in the closing years of the war, to create

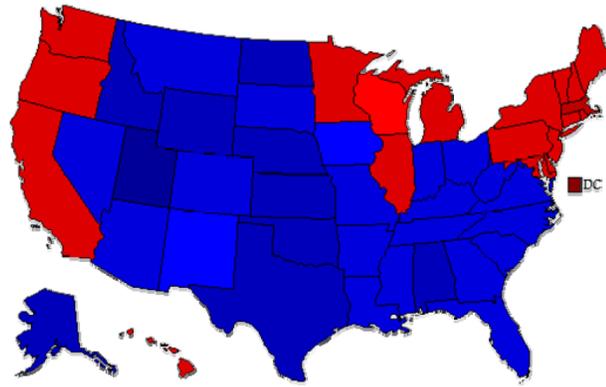


Figure 1.12: Republican States (in blue) and Democrat States (in red) in the presidential contest between G.W. Bush and Al Gore, 2000: copyright David Leip.

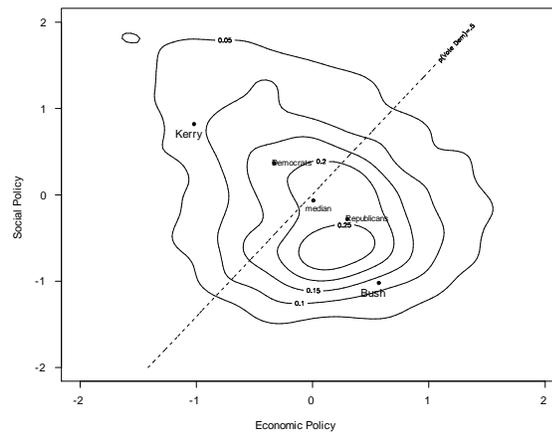


Figure 1.13: Electoral distribution and candidate positions in the United States in 2004

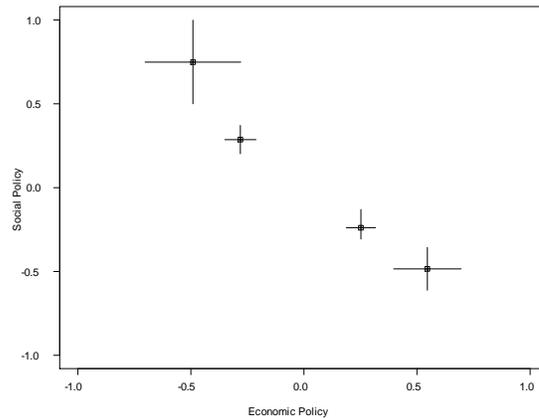


Figure 1.14: Activist and voter means for the two parties in 2004: Democrats upper left, Republicans lower right.

sume that the two main parties adopted positions close to those labelled D and R in Figure 1.9. However, the election of Johnson in 1964 indicated the beginnings of a new “realignment” involving the social dimension of civil rights. Again, this is indicated by the rotation of the partisan cleavage line. Figure 1.9 also shows an arc called the “conservative catenary” which indicates the possible bargains that can be effected between economically and socially conservative activist groups in support of Republican presidential candidates. A similar “liberal catenary” can be drawn in the upper left quadrant. The figure shows Goldwater located close to the conservative catenary, in the lower right quadrant, and Johnson located close to the liberal catenary, in the upper left quadrant. Figure 1.10 indicates the consequence in 1968 of Johnson’s move in the earlier election, as the states of the old confederacy (in green) switched from the Democrat, Hubert Humphrey, to the “states rights” independent, George Wallace.⁶⁸ In 1972, these states were captured by the Republican, Nixon, who took 60% of the vote against McGovern.

Figure 1.11 offers an estimate of US presidents’ policy positions from Kennedy to Bush, suggesting that the separation of candidates positions into opposite quadrants of the policy space is now a fundamental aspect of recent US elections.

lasting international institutions that would facilitate trade and maintain peace.

⁶⁶\$9500/capita

⁶⁷\$11,320/capita.

⁶⁸Wallace took over 13% of the vote and 46 electoral college seats.

Figure 1.12 shows the states (in red) that voted for the Democrat candidate, Al Gore, while the states of the south and west (shown in blue) voted for the Republican candidate, G.W.Bush, in the 2000 presidential election. This close election (with both Bush and Gore each gaining about 48% of the vote) resembled the election of 1916 in so far as there were “third party” candidates again, Ralph Nader, Patrick Buchanan and Harry Browne, with about 3% of the vote in total.

A comparison of Figures 1.8 and 1.12 indicates that the Republican heartland of the North East in 1916 had, by 2000, become the Democrat heartland. Figures 1.7 and 1.8 are based on the proposition that the populations of the north east states tend to be socially liberal. There is no reason to suppose that there has been a fundamental change in these social preferences. Instead, as conjectured by Miller and Schofield (2003), it is plausible that the parties have changed policy position in the long period from the end of the nineteenth century to the end of the twentieth century.

In a later Chapter 5, we present a formal model of this transformation. To suggest the results of this model, Figure 1.13 gives a representation of the 2004 contest between John Kerry and G.W.Bush. Again the election was fairly close (Kerry took 48% of the vote, and Bush took 51%, while “third party” candidates like Ralph Nader took less than 1%). As in previous figures, the Democrat candidate, Kerry, is located in the upper left quadrant and Bush in the lower right. The formal model for the three elections of 2000, 2004 and 2008 assumes electoral success depends not only on candidate positions but on the perceptions by the electoral about candidate characteristics. These can include “traits” such as whether a candidate is moral, caring, knowledgeable, strong, honest, optimistic, etc. These trait perceptions have considerable effect on the way people vote. There is additional influence because of sociodemographic characteristics.

Even so, modelling the elections still leaves unexplained the candidate positions. We could assume that candidates have intrinsic policy preferences. Instead, we assume that candidates are influenced by activists. The candidates need the resources, particularly in primary races, that are provided by the activists. The resources made available by activists depend on the preferences of the activists, and on the outcome of a bargaining game between activists and candidates. Moreover, activists differ in their policy preferences, so the electoral outcome will also depend on the result of a coalition game between activists. For example, the “conservative catenary” noted above in Figure 1.9 is a very simple way of representing the nature of the coalition of Republican activists. The previous diagrams suggest that policy changes over the long run are due to activists switching their support from one party to another. An important motivation for such switching between parties lies in the requirement for gaining support in Congress for policy initiatives.

We can infer from figures 1.11 and 1.13 that not only do presidential candidate positions lie in the two opposed quadrants, but that the various activist groups tend to be located in these quadrants. Survey data allows us to estimate the average position of Democrat and Republican voters, as well as average activist positions (those who provided direct support for one or other of the candidates) as shown in Figure 1.14 for 2004. (The average positions for activists in this Figure have the larger error bars).

Figure 1.14 shows clearly that the average activist positions for each party are more extreme than average voter positions.

It is plausible that over the long run, the economically conservative activists in the lower right have greater impact on policy implementation in Congress. For example, Hacker and Pierson (2010) provide evidence that the flow of resources from the economically conservative groups greatly exceeds that from the economically progressive.⁶⁹ As an illustration, attempts to pass a bill establishing a consumer protection agency in February 1978 failed in the House by a vote of 189 to 227, even though there was a Democrat majority. The US Chamber of Commerce was able to establish a powerful coalition of activists with the resources to kill the bill. Over the long run, Hacker and Pierson (2010) argue that the success of such conservative activism has been the fundamental cause of increasing inequality in the US economy, and the pushing back of the New Deal perception of government.

Conservative activism may also pull the Democrat Party towards the upper *right* quadrant of the policy space. For example, after winning the election in 1992, William Clinton pushed through North American Free Trade Agreement, in 1993. Free trade had, in the recent past, been a policy supported by Republicans. Finance capital was supportive of this policy initiative. Such a move leaves behind a considerable proportion of working labor. Many such voters are socially conservative, and may be inclined to switch votes to the Republicans, or to third party contenders (like Patrick Buchanan, in 2000). Other economically liberal Democrat voters may dislike pro-business policies and switch to other third party contenders, like Ralph Nader.

However, such third party contenders tend to have low *valence*.⁷⁰ Typically such third party candidates will have little likelihood of influencing policy, though they can give an indication of coalition shifts to come. However when there is a strong policy move, such as that of Johnson in 1964, there may be an important third party response, such as that of George Wallace in 1968. Miller and Schofield (2003) suggested that the Wallace candidacy of 1968 and the Anderson candidacy of 1980 represented two distinct groups of activists who had quite different perspectives about a re-orientation of the Republican Party. The Wallace candidacy is an example of a *leading* third party for the Republicans, indicating future choices, while the Anderson candidacy was an attempt to pull back the Republican party to more traditional policy objectives. The activists who supported Wallace are an example of leading edge activists, a harbinger of a change in the nature of the party coalition.

In 1992, the trade deficit of the United States, on the whole gave little cause for alarm. For example, that year imports from China totalled \$25.7 billion and exports \$7.4 billion, for a deficit of \$18 billion, in nominal terms. By 2009, imports had climbed to nearly \$300 billion, with exports of about \$70 billion, and a deficit of about \$230 billion. As a result, China had accumulated \$900 billion of US assets, and was accused of

⁶⁹This remark is substantiated below for the 2010 midterm Congressional election.

⁷⁰Throughout this volume we use the notion of valence of a contender to mean the general electorally perceived quality of the candidate. The term comes from sociology, and was introduced by Stokes (1963).

artificially devaluing its currency, the renminbi.⁷¹ In October, 2009, the House of Representatives passed a bill allowing for large retaliatory tariffs against Chinese imports. There was fear of the beginning of a trade war, as in the 1930's.

The brief period of rapid growth from about 1992 until 2007 that we call "Globalization," and its rapid end in 2008/9 has created many losers.⁷² As we discuss in Chapter 4, there are now severe problems over budget and trade deficits, and also a background fear of global climate change.

The Republicans had lost credibility by 2008, but by 2010 were able to create a coalition between such very different activist groups as "tea party anti-government libertarians" and pro-business finance (who fear a new era of government regulation). We conjecture that in general leading party activists will be more aggressive than trailing activists, which is why the tea party appears to strongly influence the Republican Party. After the November, 2010, mid term election, there were indications that the tea party radicals were also opposed to free trade and globalization. This may cause some portion of the pro-business finance group to change alliance, leaving the Republican Party in order to support the Democrats. However, the Democrats themselves also had difficulty maintaining their coalition of pro-business "centrists" and "progressives"

1.3.1 Summary of Changes in the U.S. Polity

This brief sketch of shifts in the dominant societal cleavages indicates how social choice in the United States will tend to be transformed as a result of essentially political changes in the balance of power in the earlier stage of development between agrarian and capital elites and different elements of labor. In the later stage of development, the policy space will become more complex, involving issues such as trade, globalization, nationalism, immigration etc. The simple two dimensional representation does however help in the visualization of this dynamic process. As we have emphasized, the partisan cleavage line separating the parties rotates at an uneven rate, sometimes jumping as a result of the creation of a new policy coalition. We suggest that this rotation is induced predominantly by activist strategies. As the cleavage line rotates, some activists find themselves far from the preferred position of the party to which they had been aligned. We can call these "trailing edge activists." For example, activist groups associated with finance capital have found themselves at the trailing end of the Republican coalition, and have the possibility of a new coalition with a Democrat president over the free trade NAFTA. Similarly other trailing end activist groups, concerned with civil rights but who had supported the Democrats up to 1964 found it more attractive to be "leading edge" Republicans. In the current situation, with the Republicans located in the lower right quadrant and the Democrats in the upper right, we may say that the *political heart* is the union of these two quadrants. The outer boundary of the heart will

⁷¹China's stock of foreign exchange reserves as of October 2011 are estimated at \$3.2 trillion. See Alpert, Hockett and Roubini (2011).

⁷²As at the end of the nineteenth century in the U.S., the recent period has been characterized by increasing income inequality.

be given by the “Democrat activist catenary” and the “Republican activist catenary.” The presidential election will be the result of the influence of the activists associated with these two catenaries, together with the electoral response determined by the perception of the traits of the candidates. Thus both the heart and soul are necessary to understand elections in the United States.

The thrust of the argument presented here is that what appears to be a stable political economic equilibrium may eventually create a constitutional quandary. Such a quandary may cause political leaders and activists to search for, and create, new coalition structures and political economic “compacts.” We can summarize some of the political economic transformations that have occurred in the Colonies and in the United States after 1776, as follows:

- the break between the Colonies and Britain in 1776-1783, caused by the conflict over the land of the Ohio Valley, induced by the offer of military support from France,
- the solution to the constitutional quandary of 1787, proposed by Madison, which balanced the potentially autocratic power of the President with the collegial veto power of Congress,
- the Jeffersonian compact of 1800 leading to the American agrarian empire, which allowed for the rapid expansion of the US population, but required the maintenance of slavery,
- the dissolution of the Jeffersonian compact by Lincoln after 1860, again due to the conflict between the slave owning Southern landed elite and northern industrial capital, allied with labor, over control of the west,
- the continuing conflict between eastern capital, still allied with industrial labor, against western agrarian populism in 1896, expressed by the presidential contest between the Republican, McKinley, and the Democrat, Bryan.
- the dominance of capital leading to continuing economic growth, so US GDP/capita reached \$4600 in 1905 and \$5500 in 1914, exceeding that of Britain ,
- the creation of the Democrat New Deal compact by Roosevelt, beginning in 1932, to protect labor from the effects of the economic chaos of the Depression,
- the creation of the Keynesian or Atlantic compact in 1945 under which the United States supported international institutions to promote growth and economic stability,
- the quandary over the extension of the franchise, leading to the Democrat compact associated with the Civil Rights Acts of 1964-65 during the presidency of Johnson,

- the response by the Republican party during the presidencies of Nixon and Reagan, leading to the capture of the southern states and eventually the collapse of the Roosevelt and Johnson compacts,
- the disappearance of the bipolar world after the collapse of the Soviet Union in 1989, and the beginning of “globalization” and economic growth in China and India,
- the creation of a new Republican compact by George W. Bush, in response to the fear generated by 9/11/2001, taking on autocratic power with the support of the New South, consolidating the dominance of capital, increasing inequality and attempting to make the United States the global hegemon,
- the quandary associated with the increasing dependency of the United States on imported oil and debt, and thus on the oil autocracies of Saudi Arabia, and Russia, as well as the financial support of China,
- the international quandary of a fractured world, with numerous failed states in the Middle East and Africa as well as the possibility of a resurgent Russia, willing to use its oil and military power to expand its sphere of interest,
- the economic quandary caused by the eventual collapse of the financial bubble in September, 2008, increasing the Federal debt to an estimated \$17 trillion (or 117% of GDP) by 2011,
- the global imbalance with an indebted EU and USA and an exchange rich China
- the attempts to resolve these quandaries by Barack Obama, in the first stage of his administration, by recreating the American New Deal compact, and possibly the global Keynesian compact, in order to deal with the possibility of economic collapse, catastrophic climate change and a fractured world.

The economic collapse in 2008/9 is reminiscent of the collapse of the South Sea bubble in 1720. The cause of the current collapse may be the kind of speculation that Keynes warned against. Indeed it has been suggested that one of the ancillary causes was the dominance of an economic/ technical elite.⁷³ Not only has inequality increased in the United States in the recent past, but since 1972 the median hourly wage for men has remained flat or declined, just as the real wage in Britain declined in the period from 1720 to the early part of the nineteenth century.

As regards debt, the Federal debt will be about \$17 trillion, in fiscal year 2011.⁷⁴ It has been rising by \$500 billion a year since 2003. This debt ratio was 120% of GDP in 1950, but had declined to 40% by 1980.⁷⁵ It is estimated that China holds \$900 of US

⁷³We discuss this in Chapter 4.

⁷⁴The debt ceiling of \$14.3 trillion was reached in May 2011.

⁷⁵It has been argued that some of the deregulatory strategies adopted in the 1980's during Reagan's presidency were part of the the fundamental cause of the current crisis.

Treasury bills, and it has been remarked that this can be regarded as a form of imperial tribute to the United States, similar to the tribute that flowed to Rome. The British Empire, in contrast, provided capital to the rest of the world in the 19th century. See Ferguson (2008).

Under vigorous pressure from Obama, the Copenhagen Accord was agreed to, in December 2009, by the United States together with four key emerging economies - China, Brazil, India and South Africa. It is non-binding, and faces opposition from many developing countries, but was hailed as a start in dealing with climate change.⁷⁶ Even though relations between Russia and the United States became difficult as a result of the short conflict between Russia and Georgia, President Obama and President Dmitri Medvedev agreed to a nuclear arms reduction pact on April 8, 2010. There remain very difficult problems with regard to the Middle East and North Africa, as well as the question of trade balance with China and debt overhang in countries such as Greece, Ireland, Estonia etc.

The general argument is that the theoretical accounts, posing chaos against centrist equilibrium, miss the underlying feature of dynamic stability, in the U.S. in particular. For example, the transformations in the United States, listed above, led Miller and Schofield (2003) to suggest that political parties in the U.S. slowly cycle in the two-dimensional policy space, created in the period just prior to the Civil War. In certain periods (such as 1896-1920) the principal axis is one of land/capital. However, in the more general situation, which has held from 1964 to the present, a second dimension, *the social axis* (a reflection of the free labor/slave axis) is also necessary for understanding political change.

When the economic axis is predominant, then private interest is of greater electoral concern. When the social axis predominates, then public purpose is more important. We thus find that the shifting balance between the principal axes of social choice generates the kind of cycles that Schlesinger (1986) perceived in American politics. Schlesinger followed the suggestion made by his father, Schlesinger (1939), and considered a thirty year cycle, as illustrated by the following cycle: first the post Civil War period of economic dominance (1869-1901), followed by a progressive era (1901-1919), then the Republican restoration (1919-1931), and finally the New Deal (1931-1947). He perceived later peaks in public purpose in 1961-4, and peaks in private purpose during the presidencies of Ronald Reagan (and Bush) in the 1980s. Figures 1.5-1.9 match Schlesinger's notion of cycles, but are more compatible with the suggestion by Keller (2007) that there have been three fundamentally different regimes in U.S. politics. The first period, until the 1820's is one where the social dimension was suppressed, and the principal conflict was between land and capital. From the 1830's the slavery issue becomes increasingly important, and the Republican party adopted a position in the upper right hand quadrant of the policy space, opposed by the Democrats in the lower left quadrant. By 1912, the Democrats had begun to move into the upper left quadrant,

⁷⁶However, as we mention below, the Senate Democrats decided in July 2010 that they would not be able to push through an energy/climate bill, because of Republican opposition to a carbon tax.

and this position was consolidated by the election of Roosevelt in 1932. The final period, especially since the election of Johnson, is one where the Republicans respond by beginning to move into the lower right quadrant.

The analysis of recent presidential elections in the United States, presented in Chapter 5, suggest that both economic and social considerations are currently equally important. These opposed dimensions set the context for activist conflict. Instead of a continuing cycle, we currently see oscillation between the two quadrants of the policy space, generated by a polarization of preferences and beliefs.

The narrative presented in this chapter suggests that preferences and beliefs interact to maintain a kind of *structural stability of the polity*, balanced between chaos and the rigidity of permanent equilibrium. The driving force behind the resulting political rotation is provided by activists who continually attempt to pull one or other of the parties towards them (Montgomery, 2010).

Whereas this chapter has discussed the evolution of democracy in Great Britain and the United States, the next chapter focuses on the logic of the economic notions of the factors of labor, land and capital, and discusses the nature of quandaries of power and population in earlier societies, as well as in present day non-democratic or partially democratic polities.

Chapter 2

Limited Access Society

Violence and Social Orders by Douglass North, John Wallis and Barry Weingast (2009) continues the research program that has engaged these three authors for many years. The key purpose of the book is to understand the two great transitions that have occurred in human society. The first, the agricultural revolution resulted in a transition from *hunter-gather society* to what North, Wallis and Weingast (2009) call *limited access society*. This first transition occurred at various times and places, but generally about 10 KYBP. (1 KYBP means 1000 years before the present.) The second revolution, the social/industrial/ technological revolution, from limited access to what North, Wallis and Weingast (2009) call *open access*, occurred initially in a few societies, Britain and the United States, within a fairly brief period between about 1600 and 1860, as discussed in Chapter 1.

North's early work with Thomas (North and Thomas, 1970, 1973, 1977) presented an economic explanation of this first agricultural transition. Since then, much work has been done in anthropology in terms of understanding the evolutionary consequences of this transition. First of all it led to a very rapid increase in population growth. The population is estimated to be between 250,000 and 500,00 in 62KYBP, slowly increasing to about 6 million in 12KYBP, at the end of the ice age. After the transition, population increased to about 60 million in 3KYBP (the beginning of the bronze age) and then to about 240 million in 2KYBP.

Farming appeared in the Fertile Crescent about 11.5KYBP with wheat, barley, then peas and lentils. It spread to Egypt by 9.5KYBP, and had independent origin in China and India about the same time, but much later in the New World (Diamond, 1997). Pastoral agriculture appeared about the same time: goats were tamed in Iran by 12KYBP, sheep in Iraq by 9KYBP, and various breeds of cattle in the middle east and India by 8KYBP. Pre-urban communities, of the Ubaid period (7.5KYBP to 6.0KYBP), in what is now Syria and Iraq are only now being excavated. The later Uruk period (6.0KYBP to 5.2KYBP) gave rise to the ancient cities of Ur and Nineveh, and writing on clay tablets.

Recent research has emphasized the importance of the domestication of the ass or donkey (Marshall and Hildenbrand, (2002) and particularly the horse . Anthony (2007) suggests very plausibly that the domestication of a "gentle" horse, about 4.5KYBP, together with the technological innovation of the wheeled chariot/cart, provided the

impetus for a people, speaking a proto-Indo-European language, to spread out of an area in the southern Russian grasslands, near the Black Sea, to “colonize” Western Europe and India.⁷⁷

It is possible that this expansion was coupled with an evolutionary advantage associated with lactose tolerance. These pastoral Indo-Europeans depended for much of the calorie intake on cow, sheep and goat milk (as did the later Mongol conquerors under Genghis Khan) and this is a very efficient way of obtaining calories.

Early Indo-European society was clearly limited access, with an elite consisting of a priestly caste together with a warrior class (expert in the war technology associated with wheeled horse driven chariots) while the remainder were the agricultural labor of herders/ farmers. Today, approximately three billion people today speak one of the various Indo-European languages.

Many of these anthropological accounts have a distinctly evolutionary flavor. For example, Cochran and Harpending (2009) note that while agriculture produces 10 to a 100 times more calories than foraging, the nutritional quality declined, leading to populations whose average height was smaller in the early agricultural societies than in the hunter forager societies they replaced.⁷⁸ We have not seen this point noted in the anthropological literature, but it is possible that the real average economic product/capita (in terms of calories) in *pastoral* societies tends to be higher than in *agricultural* societies, those based mostly on production of grain or rice, etc. For agricultural societies, increasing population density, urbanization and domestication of animals enhanced the effect of disease. In short, agriculture resulted in caries and disease, like the black death, that could in some circumstances be lethal.⁷⁹

Since this agricultural world that came into being is “Malthusian”, there may have been proportionally fewer deaths by violence but more by starvation and disease.⁸⁰ Diamond (1997) has emphasized the consequence of this evolutionary contest between agricultural societies and disease. When Europeans arrived in the New World they carried potentially lethal diseases, such as smallpox, measles, diphtheria, whooping cough, leprosy and bubonic plague. Against these diseases the invaders had developed defenses, but the invaded hunter/ gatherer or agricultural societies were completely defenseless. In return the Europeans picked up syphilis.

North, Wallis and Weingast (2009) focus on the societal and political consequences of the nature of limited access societies. Though they do not emphasize this point,

⁷⁷Other accounts based on statistical analysis of the daughter Indo-European languages favor an earlier origin in Anatolia about 8-9.5KYBP. See Gray and Atkinson (2003).

⁷⁸Tudge (1995) describes farming as “the end of Eden,” as agricultural peasants suffered from rickets and tooth decay.

⁷⁹Caries was due to the change to a diet based on carbohydrates. See Barrett et al.(1998) and Mummert et al (2011).The increase in western society of the incidence of diabetes II is due to a similar kind of diet.

⁸⁰Clark (2007a,b) refers to the tendency of population to rise to match food production as the “Malthusian Trap” after Thomas Malthus ([1798], [1830], 1970). Malthus wrote his essay to contradict the more optimistic views of Condorcet’s *Esquisse* (1795). On Condorcet’s *Esquisse* see Baker (2004). In this current paper, the Malthusian generic tendency for population to grow to match food production is seen as an important consideration that is neglected by NWW. Darwin read Malthus in 1838, and it was this Malthusian logic that provided the basis for Darwin’s theory of natural selection.

the invention of writing and the development of mathematics and astronomy seem to occur in limited access, agricultural societies. The earliest Sumerian cuneiform writing on clay tablets dates to 5.4KYB and Egyptian hieroglyphics to about 5.1KYB. Indo-European Hittite cuneiform documents are dated at 3.5KYB. A major innovation was the Phoenician script, with 22 symbols for consonants, about 3.3KYB. This semitic language was closely related to Hebrew. By 3.5KYB a Cypriot script was in place, and can be seen as ancestral to classical Greek (with symbols for vowels) as well as Latin, and thus English script.

The control of agricultural surplus requires the ability to keep records and to count, leading eventually to mathematics. Thus, agricultural societies need a scientific elite who have access to this astronomical and mathematical technology. It is also plausible that the elite will use this technology to predict the seasons, and thus to act as intermediaries to the gods.⁸¹ Moreover, agricultural societies depend on the factor of land, and there is likely to be a process, over time, of increasing concentration of land ownership, and thus the formation of an aristocracy, as well as hierarchy and tyranny, supported by a priesthood. So agricultural societies not only lead to disease, mathematics and astronomy, they tend to bring about state sponsored religion, priests and autocracy.

Pastoral societies seem to be somewhat different. While land is obviously important for grazing, pastoralism tends to be associated with nomadism, so wealth resides in herds or flocks, not land *per se*. Early nomad societies tended to be of small population, and were thus often subjugated by more populous agricultural tyrannies, witness the Jewish people in Babylon and Egypt.⁸²

Agricultural societies must balance the factors of land and labor in some fashion. Since population grows, under the Malthusian restraint of the supply of land, we expect the real price of land to rise, and the wage rate of unskilled labor to fall. In the extreme, we would expect slavery to be a component of a hierarchical agricultural society. Because of the importance of the particular kind of astronomical technology, we also expect the wage rate of scientifically skilled labor to rise. Thus, agricultural societies experience a bifurcation: there will be two elites, landed and priestly/technological, comprising what may be termed the oligarchy (Greek: *ολιγαρχία*), opposed to the masses, the *hoi polloi* (Greek: *οί πολλοί*) and the unfree (such the helots of Sparta: *ειλωτες*).

Agricultural societies engage in war with each other, and we therefore expect the landed elite to become a military elite. It is possible for some societies, like the Greek city states of the classical period or of Macedonia, to engage in highly profitable war. In this case there may develop a class of hoplites (Greek: *οπλίτης*), highly skilled military warriors, naturally allied with the landed elite. Hoplite military equipment cost approximately the equivalent of a year's income, so the existence of such a hoplite elite depends on high productivity, or real wage. The basis for this class system in the Greek

⁸¹For example, Schele and Miller (1986) and Hammond (1982) describe how the Mayan autocrat was implicitly bound up with the astronomical technology of the priestly class.

⁸²An interesting point here is that many nomadic pastoral societies tend to have little use for writing. However, Hebrew had a very early phonetic script, that may have been ancestral to Phoenician.

world was the form of mixed pastoral agriculture.⁸³

A point to be developed further is that a society based on pastoralism, and associated with a specialism of this kind, may prove superior in war to a society based purely on agriculture. As suggested above, pastoral society may be less subject to the inequalities induced by the creation of an elite who control most of the land.⁸⁴ We shall comment on this below, in a discussion of the Roman Empire in contest with pastoral invaders from Eurasia.

To illustrate the returns to this military specialism of what we call a pastoral society, consider the invasion of Persia by Alexander's Macedonian army of 47,000 in 333 BCE.⁸⁵ At Gaugamela in 331 BCE, 40,000 Greek and Macedonian hoplites and 7000 cavalry completely routed the army of Darius III, comprising approximately 200,000 infantry, 40,000 cavalry and 200 war chariots.⁸⁶ The treasury of Persepolis that fell to Alexander was worth 6,000 talents. A talent is 60kg of gold. The current price of gold is approximately \$27,000/kg so a talent can be valued at \$1.6 million in current terms. However, gold was much scarcer in the ancient world than in ours, and it is estimated that the true value ratio is approximately 14 to 1, indicating a talent was approximately \$22.4 million, and the Persian treasury worth \$134.4 billion. Since the population of Greece/Macedonia was about 3 million, the spoils of war were worth about \$45,000 per head of the Greek population.

It is said that Alexander transferred more than 100 years of the Greek GDP from Persia to Greece. The spoils were in fact distributed to his hoplites and military elite, on average about \$2 million per head. However, the limited access, military Macedonian society was unstable, since it depended on a godlike autocrat, Alexander himself.

Alexander's death brought about a period of chaos, as the various Greek leaders created Hellenistic kingdoms such as the Ptolemaic Kingdom of Egypt, Pergamum and Pontus in Asia Minor, and the Seleucid Kingdom, on the Euphrates and Tigris. Ptolemy's Alexandria and Seleucia on the Tigris were rich cosmopolitan cities.

The Hellenes brought mathematics to new heights, particularly in Alexandria, the city created by Alexander the Great in 331 BCE in Egypt. Euclid (323–283 BCE) wrote his *Elements* in Alexandria circa 300 BCE, laying the foundation for the later work in astronomy, and Archimedes (287-212 BCE) of Syracuse spent time there. Ptolemy (Klaudios Ptolemaios) of Alexandria, mathematician and geographer (87 CE to 170 CE) codified the geocentric view of the universe, by extending Hipparchus's system of epicycles and eccentric circles to construct a model of the solar system. This system

⁸³I believe the high productivity of the Greek peninsular was due to a mix of pastoralism with intensive agriculture of grapes, figs, olives etc.

⁸⁴I acknowledge that Greek society depended to some degree on an agricultural slave class such as the helots. Nonetheless, Greeks felt they were free, while they regarded Asian or Persian society as unfree. I suggest that the difference between these societies was due to the logic of their agricultures.

⁸⁵We use CE to mean Christian Era, or AD, while BCE means before the Christian Era.

⁸⁶The war chariot had been the standard military technology of Indo-Europeans for centuries, but it proved to be no match for the hoplite phalanx, coupled with Alexander's light cavalry. See Cartledge (2004) for a useful account of Alexander's life, and the later book, Cartledge (2006) for the earlier contest between Darius of Persia and the Greeks, and particularly at Thermopylae in 480 BCE.

of astronomy was accepted as empirically and conceptually accurate for approximately 1500 years. He was followed by Hypatia (370 to 415 CE) who studied mathematics and astronomy, and wrote on the philosophy of Plato and Aristotle.⁸⁷ The vast Alexandrian transfer of wealth from Persia to the Mediterranean litoral stimulated economic growth, but also caused inflation, and economic distress (Grant, 1982).

Rome, with a population base in Italy of about 4 million grew increasingly powerful, and the more sophisticated Roman military technology proved superior to the Greek phalanx. Eventually all the successor Hellenistic Kingdoms, except Ptolemaic Egypt were absorbed as Roman dominions. The population of Greece itself fell to two million in the next hundred and fifty years, after the military defeats inflicted by Roman legions in various Macedonian wars.⁸⁸

2.1 Rome and Byzantium

After the defeat of its enemy, Carthage, in the three Punic Wars (264 BCE to 241 BCE, 218 BCE to 201 BCE and 149 to 146 BCE),⁸⁹ Rome continued its expansion across the Mediterranean litoral, reaching a total population of about 8 million in 1 CE. By 200 CE the Roman empire encompassed 46 million people (roughly 20% of the world population), including 28 million of the 36 million living in Europe.

North, Wallis and Weingast (2009) argue that limited access societies must face and solve the problem of violence if they are to survive. From about 100 BCE, Rome faced what we shall call *quandaries over land and power*. Rome's growing population required new dominions, such as North Africa,⁹⁰ Greece,⁹¹ Pontus, on the Black Sea and Greater Armenia,⁹² Sicily and the Iberian Peninsula⁹³ These dominions provided tribute in the form of food for Rome, but also provided bases of support for competing military elites, triggering a sequence of civil wars.⁹⁴ In 60 BCE, the contending elite factions, led by Gaius Julius Caesar, Gnaeus Pompey Magnus and Marcus Licinius Crassus, had attempted to resolve their conflicts by creating the "The First Triumvirate." This compact only lasted until Crassus's death in 53 BCE. In 59 BCE Caesar left Rome to gain the resources of a great new dominion, Gaul. The task took 9 years.

⁸⁷Vrettos (2001) notes " the persecution of everything pagan culminated in the murder of Hypatia [by a mob, egged on by the patriarch Cyril] , and with her , the Greece of the spirit died." The famous Library of Alexandria was finally destroyed in 642 CE by the arab general Amru.

⁸⁸While Rome reached about 1 million by 100 CE, Alexandria also had a similar population.

⁸⁹Goldsworthy (2009a).

⁹⁰Carthage was finally destroyed in 149 BCE by Scipio Africanus the Younger.

⁹¹Philip V of Macedonia stood against Rome and allied with the Carthaginian, Hannibal, during the Second Punic War. However, the second Macedonian War (200-197 BCE) led to a Roman victory. All of Greece and Macedonia finally fell to Rome after the defeat of Philip's son, Perseus, at Pydna in 168 BCE. (Grant, 1982).

⁹²These fell after the three wars against Mithridates of Pontus by Sulla and Pompey *circa* 88 to 63 BCE.

⁹³These fell to campaigns by Pompey *circa* 82 BCE and 71 BCE. Julius Caesar was also active in extending Rome's dominion in Spain *circa* 62 BCE.

⁹⁴One "civil war" was the slave revolt led by Spartacus *circa* 70 BCE, which resulted in the crucifixion of 6000 by Crassus, and the final destruction of the revolutionary forces by Pompey.

Vercingetorix, his opponent, was able to unite the Gallic tribes and build a military force of between 80,000 and 250,000 Gauls. He was eventually surrounded and defeated at the city of Alesia in Northern Gaul, as a result of very sophisticated military technology and tactics by Caesar. This battle can be seen as one of the crucial contests in the expansion of Rome. It makes clear that Caesar was both risk loving and extremely skilled in the military arts.⁹⁵ His success opened Gaul up so it could be absorbed into the Roman dominions, eventually becoming a peaceful, agricultural supplier of food for Rome.

Crossing the Rubicon and returning to Rome in 49 BCE, Caesar then defeated his Roman opponent, Pompey, at Pharsalus in 48 BCE.⁹⁶ In the same year Caesar landed at Alexandria, Egypt, where he was presented with Pompey's head. To secure Egypt as a further dominion, he allied with Cleopatra Ptolemy, who bore him a son.⁹⁷ By 46 BCE he was back in Rome, in 44 BCE he was declared *dictator perpetuo*, and on March 15 of the same year, he was murdered by an opposed faction, led by Brutus. Initially, relations between Octavian, Caesar's adopted son, and Mark Anthony, Caesar's colleague, were a standoff, with both competing for the loyalty of the legions. Octavian courted the favor of the famous orator and politician, Cicero, who began a series of speeches, nicknamed the "Philippics"⁹⁸ against Mark Anthony. In April 43 BCE, it appeared that the Republic had been saved. Later, in the year, Octavian and Mark Anthony reconciled their differences, forming, with one Lepidus, "The Second Triumvirate." Cicero, the last Republican, was murdered that November.⁹⁹

The eventual conflict between Octavian and Mark Anthony, by then allied with Cleopatra, was eventually resolved at the Battle of Actium in September, 31 BCE, when Octavian's army of 80,000 legionaries, and 20,000 legionary marines, with a navy of 250 ships, defeated Anthony's similarly sized army and navy of 230 quinqueremes and 50 Egyptian warships.¹⁰⁰ One result of the battle was that Greece and Egypt became fully absorbed in the Roman Empire as dominions.

After the defeat of Anthony, Octavian restored the outward facade of the Roman Republic, with governmental power vested in the Roman Senate, but in practice he retained autocratic power. In 27 BCE, Octavian effectively became the Emperor, Augustus, with the approval of the Senate, the loyalty of his legions, and the respect of the people. The resulting *Pax Romana* lasted at least 200 years.¹⁰¹

Although the creation of an autocracy essentially resolved the power quandary, the

⁹⁵On Caesar's military skills see Lendon (2005).

⁹⁶See Goldsworthy (2006) and Holland (2003)

⁹⁷See the biography of Cleopatra by Schiff (2010), and the book on Anthony and Cleopatra by Goldsworthy (2010).

⁹⁸so named after the Athenian orator Demosthenes's speeches against Philip of Macedon.

⁹⁹Everitt (2001).

¹⁰⁰200 of Mark Anthony's galleys were sunk, (Everitt, 2006). This was the largest naval engagement of the ancient world, and remained the largest until the Battle of Lepanto, off Greece in 1571, between the Catholic Holy League (Spain, Venice, Genoa, Savoy, Malta and the Papal States) and the Ottoman Empire. In that battle, the 206 galleys and 6 huge galleasses of the League destroyed the 230 galleys and 56 galliots of the Empire.

¹⁰¹See Everitt (2006) on Augustus and Matyszak (2008) for the Julio-Claudian dynasty Augustus founded.

quandary over land remained. During the Empire, further expansion into dominions was accomplished by Augustus himself, who completed the conquest of Hispania.¹⁰² Trajan (52-117 CE) conquered Dacia, and invaded Parthia in 117 CE. Britannia was invaded in 43 CE by the army of Emperor Claudius, but in 60 CE, Boudica led a revolt against Roman rule, destroying Camulodunum (Colonia, now Colchester) and Londinium. Her army of about 50,000 was defeated by the 10,000 men of the legions of Gaius Suetonius Paulinus, possibly at Manduessedum (in what is now Warwickshire). It was not until Hadrian (76-138 CE) that Britannia was fully pacified and the northern boundary demarcated by the wall separating Britannia from Pictland (119-121 CE).¹⁰³

These various expansions, while making more land available, also made it more difficult for a single emperor to govern alone from Rome. The requirement that Rome maintain the supply of food also required that the empire control the supply lines from Egypt and Africa, and thus dominate the Mediterranean.

Marcus Aurelius (121-180 CE) partially solved this problem by creating the institution of *joint augusti* with Lucius Verus, under which Aurelius dealt with the Lombards and German tribes at the Danube, and Verus faced the eastern enemy, Parthia. The creation of the Eastern Empire in Constantinople (earlier and later called Byzantium), founded in 330 CE by Constantine the Great, took this solution one step further.¹⁰⁴

Although the Western Roman Empire survived until September 4, 476 CE, when the Scyrian chieftain, Odoacer, took Ravenna, then capital of the empire, and deposed the young emperor, Romulus Augustus, it had been under external pressure for many years. In 408 CE, Alaric the Goth spared the city for a ransom of 5,000 pounds of gold, and 30,000 pounds of silver. Then, in 451 CE, the Roman general, Aëtius, in coalition with the first Christian Visigoth king, Theodoric, was able to defeat Attila the Hun at Chalons in Gaul.

In 429 CE, the Vandal, Geiseric, had landed in N. Africa, taking Carthage in 439 CE, eventually sacking Rome itself in 455 CE. In 468 CE, Emperor Leo of Constantinople had chosen Basiliscus to lead a military expedition against Vandal Carthage. The purpose of the operation was to punish the Vandal king Geiseric for the sacking of Rome. It is said that the fleet that attacked Carthage consisted of over eleven hundred ships. A conservative estimate for the cost of expedition was 64,000 pounds of gold, greater than a year's revenue of Constantinople. The Byzantine fleet was destroyed by fireships, although later Basiliscus became emperor in the east in 475 CE.

Salvian (born 400 CE) had noted that even as the empire died, "the poor [were] dying of the increase in taxes that they already found too great for endurance" (quoted in Grant, 1998:26). As the Western Roman Empire died, the Eastern Empire began to flourish. In 488 CE, with the connivance of the eastern emperor, Zeno, a later Visigoth

¹⁰²Garnsey (1988) asserts that Augustus expanded Rome's control of food resources, by bringing Egypt into the empire. Egypt supplied 133,000 tonnes, sufficient for a population of about 600,000. Rome's population in this period was a million, requiring imports principally from North Africa. The loss of North Africa in 429 CE to the vandals meant that Rome was then doomed.

¹⁰³Everitt (2009).

¹⁰⁴It is possible that the great library of Alexandria was destroyed *circa* 391 CE, and that some of its treasures ended up in Constantinople.

ruler, also called Theodoric, invaded Italy and on March 5, 493 CE, forced Odoacer to capitulate. Until his death in 526 CE, Theodoric ruled Italy as Viceroy, essentially a vassal of the eastern emperor. In 527 CE, Justinian and Theodora, his wife, were crowned co-rulers of the Byzantine Empire. The Nika riots of 532 CE in Constantinople were vigorously put down by Justinian's general, Belisarius. Justinian, to reassert the majesty of the empire, ordered the rebuilding of the great church, Hagia Sophia, in Constantinople (consecrated in 537 CE), and determined to try again to reconquer the western empire. By 534 CE, Belisarius had destroyed Vandal Carthage, and in short order, took Sicily and southern Italy. After three years of war, Ravenna fell to the Byzantine army. The church of San Vitale, in Ravenna, although started under Theodoric, was completed by the Byzantines in 547 CE as a monument to Justinian and Theodora (Norwich, 1988: 181-226).

Many writers (and most importantly Gibbon (1994[1781])), have attempted to assess why the Western Empire fell in 476 CE, but the Eastern Byzantine Empire, centered in Constantinople, persisted until May 29, 1453 CE, when it was taken by the Ottomans under Mehmed II.¹⁰⁵

In 698 CE, Carthage had fallen to the the Muslim commander, Hasan ibn al-Nu'man, and a force of 40,000 men. After further attacks by the Arabs in the eighth century, there was a degree of peace between Byzantium and the Caliphates, until 934 CE when Byzantium took the offensive (Kennedy, 1986). After that, Byzantium slowly lost territory to the Arabs and Seljuk Turks. Even so in the mid 12th century CE, the Eastern Empire controlled half of Asia Minor and most of what is now Greece and the Balkans. By 1300 CE, however, all that remained of the Byzantine Empire was the city of Constantinople, and its population of about 100,000. Although shrunken, the Eastern Empire had lasted a millennium.¹⁰⁶

At the height of the Western Empire, the population was about 65 million. The elite consisted of approximately 600 Senators, while perhaps 30,000 men filled the roles of Equestrians (knights), or the second tier of the aristocracy. 10 to 30% or 6 million to 19 million people lived in the cities, leaving about 50 million people living in the country as tenant farmers.¹⁰⁷ Rome itself had over 1 million people, the largest city in the world until the industrial revolution 1500 years later. The slave population of Rome approached 500,000 on its own, probably half of whom were owned by the 600 men of the Senate. Additional estimates have suggested that of the total 65 million people, 2 to 10 million may have been slaves. After the plagues of the 160's to 170's CE, the population of the Empire fell to about 40 million. By the beginning of the 4th century,

¹⁰⁵Many recent authors have discussed the fall of Rome, including Burns (1994), Mattern (1999), Baker (2006), Heather (2006), and Goldsworthy (2009b). Luttwak (1976, 2006), in these two books, contrasts the military strategies of the Western and Eastern Empires.

¹⁰⁶It may also be the case that the parallel between the British Empire and Rome lies in the requirement that a populous center, whether Rome or London, must protect the sea lanes that supply the vast population from its overseas dominions. The supply lines for Constantinople were land based and maybe easier to control than those of the Western Empire.

¹⁰⁷This is consistent with Appleby (2010) which asserts that 80% of the population in such a society must work to produce the food for the whole society.

and the reign of Constantine, the population had grown again to about 55 million. By this time, the population of Rome was in decline and Byzantium (or Constantinople) was on the rise. By then, the west made up about 40% of the Empire's total population with the remainder in the east. By the mid 6th century, wars, disease and emigration brought the population of Rome as low as 30 to 100 thousand. By the time of Justinian in the 6th century, Constantinople may have numbered somewhere between 750,000 to 1 million people

Schofield (2009) suggests that the *Codex Justinianus*, prepared by order of Justinian the Great in Constantinople in 529 CE, while setting out a system of Roman Law that was the basis for the later Civil Law of Europe, gave legitimacy to the imperial or kingly autocrat, and it was this legitimation of the concentration of power that made it possible for the Eastern Byzantine Empire to solve the quandary of power and persist for so long. (Below, the quandary of power will be discussed more formally.)

Rosen (2007) suggests that one possibility concerning the eventual fall of the Eastern Empire was that it was continuously weakened by population crashes as a result of the bubonic plague. For example, in the year 542 CE the plague afflicted Constantinople during Justinian's reign, killing about 10,000 people every day. The plague appears to have started in the Egyptian harbor town of Pelusium, and it seems that climate change had opened up a pathway from Africa that gave the flea/rat invasion access to the Mediterranean littoral. It is possible that the eventual decline in the population of Constantinople was the underlying reason for the initial expansion of the Abbasid Caliphate (750-1258).¹⁰⁸

The Frankish kingdoms of Outremer (founded in 1096) in the Levant had grown rich by the twelfth century. The Sunni leader, Saladin, had first taken Egypt, then Damascus, and Syria in 1174, then Jerusalem in 1187, leaving only the Crusader cities of Tyre, Tripoli and Antioch. The Third Crusade, with Richard the Lionheart, retook Acre and Jaffe in 1191 but was unable to retake Jerusalem (Reston, 2001). In the Fourth Crusade of 1203, Constantinople proved an easier target than Jerusalem, and was conquered by Franks and Venetians. The city never fully recovered from the Latin occupation of 1204-1261. As noted below, the Holy Roman Emperor, Frederick II became King of Jerusalem in 1229, through negotiation rather than war. In 1258, a Mongol army sacked Bagdad, ending the Abbasid Caliphate.¹⁰⁹ In 1260, however, a Mongol army was defeated by the Mamluks, and most of the Middle East was divided up into various Turkic factions. Chief of these factions, the Ottomans, defeated a combined army of Serbs, Albanians and Poles, in 1389 at the "Field of Blackbirds," and the whole of Macedonia, and eventually Asia Minor, became part of the Ottoman Empire. By the end of the fourteenth century, as Pagden (2008) suggests, Byzantium lacked any strategic importance, but was still the "Golden Apple" that made Mehmed II "master of the world."

¹⁰⁸This suggestion does not provide a reason why Byzantine's opponents were less affected by the plague. It may be again a question of exposure and eventual resistance to the disease, or the higher level of urbanization in Constantinople.

¹⁰⁹Below we comment on the expansion of the Mongol empire, initially under Genghis Kahn (1162-1227).

North's (1981) reason for the fall of the Western Empire is a version of Salvian's observation, attributing the fall to institutional inefficiency, as a result of increasing demands on the tax structure combined with a decline in the tax base. While this argument is plausible for the Western Empire, it does not seem to account for the long period of about a thousand years that the Eastern Empire survived.

2.1.1 Competition between factors

The differences in the stability of the two Roman Empires may result from differences in the nature of the underlying quandaries of land and power that they faced. First, consider the nature of the landed elite, \mathbb{C} . As we have suggested, with population pressing against the Malthusian resource food boundary, land becomes relatively more expensive in terms of the average wage rate of total labor, \mathbb{L} .¹¹⁰ Some fraction of the landed elite, as exemplified by the Roman emperors Hadrian and Trajan, become military specialists, labelled $\mathbb{C}_m \subset \mathbb{C}$. This landed military elite would also include members of the landed equestrian or centurian order. Whereas members of $\mathbb{C} - \mathbb{C}_m$ will tend to be risk averse, members of \mathbb{C}_m will be risk-loving. Some fraction of \mathbb{L} , labelled \mathbb{L}_t , will specialize in the technological, engineering and legal skills required to run the empire.

As the empire expands, these skills will become more valuable. Since expansion requires military competence, a legionary class, $\mathbb{L}_m \subset \mathbb{L}$, will specialize in these skills. We might expect \mathbb{L}_m to be also risk-loving. In the initial phase of expansion, agricultural labor, $\mathbb{L}_a \subset \mathbb{L}$, in new dominions such as Gaul and Hispania, will also benefit from higher returns to land. Risk preferring military coalitions of $\mathbb{C}_m \cup \mathbb{L}_m$ will also demand more of the total product of the empire, and this can be accommodated by distribution of some of the new land to members of the legionary/military caste, \mathbb{L}_m , when they retire from service. Since land becomes more valuable over time, $\mathbb{C} - \mathbb{C}_m$ will also expect a greater share of the total product. Consequently the share of unskilled labor,

$$\mathbb{L}_u = \mathbb{L} - \mathbb{L}_m - \mathbb{L}_a - \mathbb{L}_t$$

in total product will fall.

Equilibrium can be maintained as long as the expansion of new land and its higher productivity matches the equilibrium or Malthusian population growth rate. However, when new land runs out, the share of \mathbb{L}_u may fall rapidly. If the productivity of land also eventually starts to fall, then the real return of $\mathbb{L}_a \cup \mathbb{L}_m$ must also fall, possibly resulting in a population crash.

The problem facing Rome as a result of this quandary may have been exacerbated by the characteristics of the various invaders, whether Hun, Visigoth or Vandal. Unlike Rome, these people were pastoralists, not agricultural farmers. While the invaders also

¹¹⁰The wealth qualification (census) for a senator was 1 million sesterces, where a sesterce bought a loaf of bread. The equestrian census was 250,000sesterces. A legionary maybe earned only 90 sesterces/annum. This compares with the bribes of 400 sesterces made by Mark Anthony to the legions in 44BCE and 2000 sesterces made by Octavian the same year to his legions (Everitt, 2001). A great estate, such as that of Crassus, who we mentioned earlier, was worth about 200 million sesterces (Milanovic 2011). Garnsey and Saller (1987) comment that the author and magistrate, Pliny the Younger (61-112 CE) was only worth 20 million sesterces.

sought land to feed their growing populations, they were not subject to the problem of high concentration of the ownership of land. Moreover, if this pastoralism was more efficient in terms of calorie creation per unit of labor than Roman agriculture, then the pastoralists real wage would be higher than the Roman.

Finally, almost all labor in the invading societies would involve a combination of military (risk taking) and agricultural expertise, so the drain on resources attributable to \mathbb{L}_u did not exist. It may be that the Eastern Empire depended more on pastoralism, in the Balkans and Asia Minor, and so avoided some of the consequences of the quandary over land that the West faced. It may also be that there developed a priestly class, say $\mathbb{L}_p \subset \mathbb{L}_t$, specializing in control of the masses, \mathbb{L}_u . Finally, because of Byzantium's position on the trade route between east and west, there developed a capitalist merchant class, \mathbb{K} , controlling not land, but capital, and this class would trigger economic growth through trade with the early city Italian states of Venice, Genoa and Palermo.

2.2 Structural Stability and Chaos

The above suggestions are in terms of an equilibrium concept of the economic and power transformations that faced the polities in question. North, Wallis and Weingast (2009) make no mention of equilibrium, possibly because their view of economic equilibrium theory (Arrow and Debreu, 1954; Arrow and Hahn, 1971) is that it is a static theory, unsuited to the study of dynamic change. We suggest that this view is incorrect, and that we can make use of equilibrium concepts, as well as the notion of factor groups, as presented above. The theory presented here is based on social choice theory, which is here regarded as a fundamental theory of social conflict (Schofield, 2006).

Definition 1 *Dynamic equilibrium.*

At time τ , there is a population \mathbb{N}_τ of size n_τ . This population is divided into various categories (or factor groups, to use the economic terminology):

$$\{\mathbb{C}_m, \mathbb{L}_m, \mathbb{L}_p, \mathbb{L}_u, \mathbb{L}_t, \mathbb{K}\}$$

as just described.

At this time, societal choices lie in a “state” space, \mathbf{X}_τ , a bounded (or compact) space. This space describes the total factors available, including land, capital and labor/population, as well as the distribution of total product to all the factor groups.

At τ , each individual, i , is described by a utility function $\mathbf{u}_i : \mathbf{X}_\tau \rightarrow \mathbb{R}$, so the population profile is given by $\mathbf{u} : \mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}$. Beliefs about the future $\tau + 1$ are given by a stochastic rule, \mathbb{Q}_τ , that generates a new profile for $\mathbb{N}_{\tau+1}$ at $\tau + 1$ given by $\mathbb{Q}_\tau(\mathbf{u}) = \mathbf{v} : \mathbf{X}_{\tau+1} \rightarrow \mathbb{R}^{n_{\tau+1}}$. The utility and beliefs of i depend on which subfactor i belongs to. In particular, risk preference is a key property of the factor groups.

Thus we obtain a transformation on the function space $[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}]$ given by

$$[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}] \rightarrow \mathbb{Q}_\tau \rightarrow [\mathbf{X}_{\tau+1} \rightarrow \mathbb{R}^{n_{\tau+1}}] \rightarrow [\mathbf{X}_\tau \rightarrow \mathbb{R}^{n_\tau}].$$

The second transformation here is projection onto the subspace $[\mathbf{X}_\tau \rightarrow \mathbb{R}^{n\tau}]$ obtained by restricting to changes to the original population \mathbb{N}_τ , and space.

A *dynamic belief equilibrium* at τ for \mathbb{N}_τ is a fixed point of this transformation. Penn (2009) shows that particular conditions on this transformation allow the application of Brouwer's fixed point theorem (Pugh, 2002) to show existence of such a dynamic equilibrium. This concept was first suggested by Hahn (1973) who argued that equilibrium is located in the mind, not in behavior.

North, Wallis and Weingast (2009) also emphasize the importance of what they call *causal beliefs*. Here a dynamic belief equilibrium refers to the stability of the utility functions for \mathbb{N}_τ as these individuals guess as future consequences of choices, on the basis of the causal beliefs about how society operates.

Definition 2 *Chreod or structurally stable dynamical path.*

The term chreod was used by Rene Thom ([1966], 1994) to describe a dynamical system that returns to a steady trajectory, as in evolutionary or biological processes. *Structural stability* refers to the property that the qualitative features of the path are not changed by small perturbations. The word is derived from the Greek word for "necessary" and the word for "pathway". The term is in contrast to the notion of homeostasis which refers to a stable equilibrium.

A *social chreod* is therefore a structurally stable path through all time, τ , where the state space $\mathbf{Z} = \cup_\tau \mathbf{Z}_\tau$ now involves not only characteristics, such as factor endowments, but also the beliefs of individuals, particularly as regards the risk postures that are embedded in their utilities. Over the long run, there may be selection for character traits and propensities.

A structurally stable path need not always exist. Indeed, the opposite notion to that of chreod is of *chaos*, when the dynamic path displays extreme sensitivity to perturbations. Even when a structurally stable path does exist, the path may exhibit points of inflection, where the dynamic process exhibits a small qualitative change. (See the notion of punctuated equilibrium path below). Major points of inflection occur at transitions in the fundamental structure of production and consumption of the society, and these will generally be associated with a qualitative change in the developmental path. The suggestion here is that these transitions are chaotic, and that different transitions exhibit very different forms of chaos.

Definition 3 *Major Transitions: from hunter gatherer society to agricultural society and from agricultural society to industrial society.*

These transitions occur in different societies at different times and locations, as briefly discussed in Section 1 and below. How they are triggered is subject to considerable controversy, but if the transitions are indeed chaotic, then the attempt to determine causality will be extremely difficult.

The historic examples discussed here suggest failure of existence of structural stability due to different kinds of chaos: Arrovian, Malthusian and Keynesian. These causes

of failure of structural stability are characterized in social choice theory by power relations, which are defined in terms of decisive coalitions.

Definition 4 *Decisive Coalition at τ .*

A decisive coalition, M_τ , is a subset of \mathbb{N}_τ , able to defeat its complement, $\mathbb{N}_\tau - M_\tau$. The set of decisive coalitions at τ is denoted \mathbb{D}_τ . For convenience, we now delete reference to τ .

Definition 5 *Autocrat.*

An autocrat is an agent, A , who with allies in $\mathbb{C}_m \cup \mathbb{L}_m$, belongs to every decisive coalition, and is also decisive.

Definition 6 *Collegium.*

A collegium is a subset of $\mathbb{C}_m \cup \mathbb{L}_m$, allied to an autocrat, which belongs to every decisive coalition, but is not itself decisive.

Definition 7 *Risk loving autocrat.*

An autocrat who is sufficiently risk loving that he may bring disaster to the society

Definition 8 *Benevolent autocrat.*

An autocrat whose risk preference is low enough that disaster is unlikely.

Although Augustus, Trajan, Hadrian and Constantine may be viewed as benevolent autocrats, since they succeeded in expanding the empire, this was partially because they controlled a military technology that brought about their success. Two of the Julian emperors, Nero and Caligula, who followed Augustus, cannot be so considered. Alexander is an example of an extreme risk loving autocrat whose military adventure was coupled with a very superior military technology. We may say he was munificent, at least in the short run.

Definition 9 *Arrovian Chaos.*

Social choice theory (Arrow, 1951; Schofield 1985; Saari, 1997) strongly indicates that if the state space is of sufficient complexity, and there exists no concentration of power in terms of existence of an autocrat or collegium, then the outcome of the exercise of power is unpredictable.¹¹¹

In situations of such Arrovian chaos, the people may choose an autocrat over other power distributions, as suggested by the Roman example of the peoples' preference for Octavian's exercise of power. A second example is the creation of the Empire by

¹¹¹In the illustrations above, the state space is sufficiently complex, since it involves all feasible distributions of total societal product to the various factor groups.

Napoleon, after the Terror following the French Revolution.¹¹² When distributional conflicts over land, for example, are paramount, and the elites are fragmented, so that power cannot be concentrated, then Arrovian chaos may lead to violence, sufficient to destroy the conditions for existence of economic equilibrium and thus of dynamic equilibrium.

Definition 10 *Malthusian chaos.*

If the pressure of population against the productivity of land means that the distributional quandary over land cannot be solved, then society may fall into Arrovian chaos and eventually collapse (Diamond 2005).

Definition 11 *Keynesian chaos.*

For non-agricultural societies, the uncertainty associated with distributional conflict between economic factors could make life so intolerable that the people would choose an autocrat, giving up their freedom for a believed security. Keynes (1936), in particular, argued that such uncertainty could arise from irrational speculation, which we might ascribe to high risk preference by capitalists.

Definition 12 *Chaos due to external autocrats.*

Invasion by enemies, whether Hun, Vandal, Visigoth, or later Mongol or Ottoman, will destroy belief equilibria. Moreover, the leaders of such peoples generally will be autocratic and extremely risk preferring. Schofield (2006) suggests that such leaders (for example Napoleon or Hitler) will be willing to take military risks that appear insane, or certainly unpredictable to their opponents.

Definition 13 *Decline or collapse due to an internal autocrat.*

A risk loving autocrat like Napoleon or Hitler can lead his people in acts of war that eventually destroy the society.

We discuss below the possibility that an autocrat, like Philip II of Spain, can engage his people in a long term war, resulting in massive debt and then decline. In the twentieth century, autocrats like Mao Zedong, the chairman of the Communist Party of China, or Stalin, in the Soviet Union, may launch internal programs that result in great loss of life. In the current period, poverty or disorder in poor societies allow autocrats, such as Mugabe in Zimbabwe, to come to power. Their risk preference helps them to retain power against all opponents, even when the polity has embryonic democratic institutions.

Definition 14 *Quandary or Bifurcation.*

¹¹²It is possible that the universal system of law put in place by Napoleon, and modeled on Justinian's code, provided him with the autocratic authority to build a citizen army, with the motivation to gather tribute from the conquered countries of Europe. Although Napoleon intended to be munificent, he was in fact tragic.

With chaos, it is impossible to rationally choose future actions with any certainty. Another way of characterizing belief disequilibrium is that the population faces a quandary, representable as a bifurcation in the set of possible courses of action to take.

As in the previous discussion, leaders like Octavian or Justinian may decide that there is a way to resolve the quandary, and by force of personality, persuade the society that this is the correct course. Other times, the quandary generates social conflict, with multiple leaders pressing for different solutions, leading to further Arrovian chaos.

Definition 15 *Madisonian Constitutional Quandary.*

A democracy may on occasion face aggression from a hostile power led by a military, risk preferring autocrat. Only a democratically elected leader, able to deal with such a threat, can respond in an appropriate fashion.

A solution to this quandary is to partially restrain the risk preference of the leader by the risk aversion of a political collegium. In Chapter 1 we have discussed this solution in terms of the restraint exercised by Parliament on the military autocrat, William III, in Britain. The genius of the American constitution, as proposed by Alexander Hamilton and James Madison, in the *Federalist* (1787) is that it allows for concentration of power by granting the President almost autocratic power, so as to deal with foreign aggression, yet constrains his power by the collegial veto capacity of a (risk averse) Congress.

Definition 16 *Quandary over the transition to Democracy.*

Before a collegium will relinquish power, by extending the franchise, it may be necessary to formulate a theory why this will not induce Arrovian chaos. Schofield (2005, 2006) argues that the work by Condorcet (1785) provided such a theory and that this was utilized by Madison (1787) in his notion of a “fit choice” by the people.

We have also discussed the resolution of this democratic quandary by Disraeli in Britain in 1867.

Definition 17 *Belief Cascade.*

Facing a social quandary of some form, a democracy may respond to the argument of a leader that there is only one way to deal with the quandary. An example might be that of William Wilberforce and the eventual *Slavery Abolition Act* of 1833, which abolished slavery in most of the British Empire. On the same question of slavery in the United States in 1860, the society bifurcated into two utterly opposed groups, with war between them the only method of choosing the future.

Definition 18 *Social Point of Inflection.*

Resolution of a quandary may create a minor point of inflection, or change in the political and economic path of development of the society. The illustrations from the Roman Empire, above, and from the discussion in Chapter 1 of political history in

Britain and the United States suggest that points of inflection are often associated with fundamental changes in the nature of political and social rights. The most important of these are to do with the extent and logic of the franchise.¹¹³

Definition 19 *Punctuated Equilibrium.*

There may be long periods of stable equilibrium, punctuated by sudden change in the qualitative nature of the evolutionary path, at a point of inflection (Eldredge and Gould, 1972; Denzau and North, 1994).

This notion has proved useful in evolutionary biology. It suggests that the social evolutionary path of a society can exhibit major break points where the developmental path is transformed because of some form of bifurcation. The major transitions of the agricultural and technological revolutions seem to have incorporated multiple points of inflection.

Definition 20 *Climatic chaos.*

Recent work in evolutionary biology (Calvin, 1991, 2006) suggests that climate can best be described as a dynamic process exhibiting punctuated equilibrium, where the bifurcations are associated with periods of climatic chaos. (See also Comin et al., 2011).

Calvin argues that the climatic equilibrium following the last ice age, about 15KYBP, was the reason for the development of agriculture. According to current evolutionary anthropology, anatomically modern humans evolved solely in Africa, between 200KYBP and 100KYBP, with members of one branch leaving Africa by 60KYBP. The last glacial period lasted from 110KYBP to between 10KYBP and 15KYBP, and so overlapped with the various migrations out of Africa. More importantly, inter-equilibrium climatic chaos during this glacial period had a profound effect on human evolution, driving rapid cultural adaptation in the long pre-agricultural period from 60KYBP to 15KYBP.

It would seem that a full account of the cultural and biological changes that occurred in this interval will depend on developments in evolutionary anthropology based on the Malthusian principle.

The next section examines population and GDP/capita estimates, as computed by Maddison (2007), using a standardized 1990 dollar as a measure of product/capita, to seek for points of inflection in the recent past, from 1KYBP to the present.

2.3 The Malthusian Constraint and Points of Inflection

In 1000 CE (1KYBP), world population is estimated to be 225 million, with 60 million in China, 75 million in India, 33 million in the rest of Asia, and only 31 million (or

¹¹³Chapter 1 has already discussed the origins of the Civil War, as well as the Civil Rights Acts in the 1960's in the United States, and the earlier extension of the franchise in Britain in 1867. From the discussion above, it should be obvious that the rights and obligations of citizenship in the Roman Empire were also crucial for its stability.

13%) in Western and Eastern Europe.¹¹⁴ GDP/capita had increased slightly in China from \$450 in 1 CE (in 1990\$) to \$466 in 1000 CE, while in Europe it had fallen from perhaps \$600 in 1 CE to \$425 by 1000 CE, with France the richest and most populous.¹¹⁵

By 1600 CE world population had increased to 600 million with 400 million in Asia (160 million in China and 135 million in India). Western and Eastern Europe had about 62 and 17 million respectively (again 13%) with 2.3 million in the English colonies and 8 million in Latin America. In Asia, GDP/capita had increased to \$600 in China, to \$570 in Japan and \$550 in India. In Europe, the highly developed Netherlands reached \$1380, with Italy at \$1100, England at \$980 and France at about the European average of \$840. Mexico, with its mineral wealth reached \$760. Asia was clearly growing in population but faced the Malthusian boundary, while most of Western Europe had crossed an inflection point.

By 1820 CE, world population was 1040 million with 710 million in Asia (China 380 million, India 210 million Japan 31 million, the rest of Asia 89 million). Latin America reached 22 million and Africa 74 million. Western and Eastern Europe were at 133 million and 36 million, respectively, (or 16% together), with France still the most populous (31 million) and Germany at 25 million. Russia had grown to 55 million, while the English off-shoots (the United States, Canada, New Zealand and Australia) had grown to 11 million.

In Asia, GDP capita was generally fairly constant (at \$580), slightly lower in India (at \$533) and somewhat higher in Japan (\$670), and \$600 in Africa. In Europe it had increased to \$1800 in the Netherlands, \$1700 in the United Kingdom, \$1135 in France, close to the European average of \$1200, and the United States at \$1250. Eastern Europe was far behind at \$680, close to the world average GDP/capita of \$667.

Although the population share of the West (Western Europe and the English off shoots) was about 17%, it generated about 27% of world product. The West had obviously overcome the Malthusian constraint that still bound the rest of the world. We could say that Condorcet in his optimistic *Equisse* of 1795¹¹⁶ had proved correct, but only for the West, while the much more pessimistic argument of Malthus (1798) appeared to be correct for most of the world.

By 2008, it was clear that there existed multiple population and GDP capita inflection points for different countries. World population was at 6.7 billion, with 4.0 billion in Asia (1.3 billion in China, 1.1 billion in India, 127 million in Japan), 950 million in Africa, 575 million in Latin America, 287 million in Russia, 400 million in Western against 120 million in Eastern Europe (or 7.6% of the total), while the English off-shoots had grown to 362 million (5.4%).

World average GDP capita according to Maddison is currently \$6500, with low av-

¹¹⁴These population figures are taken from Maddison (2007).

While they are no more than informed guesses, they do suggest that Europe's population had fallen considerably between 200 CE and 1000 CE. Note that Italy's population had fallen from about 8 million in 1 CE to 5 million in 1000 CE.

¹¹⁵GDP/capita is measured in 1990 international Geary Khanis dollars. See Maddison (2007).

¹¹⁶From now on we drop the notation CE.

erages of \$1500 in Africa, \$2100 in India, \$4800 in China, \$5300 in Russia, \$5700 in Latin America, \$6500 in Eastern Europe, and highs of \$20,000 in Western Europe (with Germany, France and the United Kingdom all very similar), \$21,200 in Japan and \$28,000 in the English off-shoots. With a population share of 13%, the West and Japan generated over 48% of world product. In contrast, Russia with 4.2% of world population generated only 3.4% of world product.¹¹⁷

The U.N. gives an estimate of a world population of about 9.2 billion in 2050. With economic growth continuing in Asia, there will be tremendous pressure on world resources, with a probable increase of CO₂ concentration in the atmosphere, and thus a catastrophic rise in temperature.¹¹⁸

Thus all the West European economies, as well the English offshoots and Japan have crossed (or are just about to cross) the economic threshold of \$20,000/ capita. Singapore and Hong Kong have crossed this economic threshold, but are limited access societies, while Taiwan and South Korea are close to the economic threshold, and we may infer that they will soon become open access societies.

Modern economic growth theory has in recent years moved from the classical theory emphasizing capital and labor productivity to the roots of productivity in the form of ideas and institutions.¹¹⁹ The key idea here is that ideas are non-rival, so increased population triggers more ideas. As world trade increases and markets become increasingly integrated, those countries that are open to ideas, invest in education, and create efficient institutions can benefit dramatically.¹²⁰ Even less developed countries like Korea in the 1960's or China in the 1980's and 1990's, can be transformed and grow at 6%/annum or more. Conversely, countries particularly in Africa and parts of the Middle East seem not to be open to ideas. Burgeoning population can then exacerbate the rivalness of factors of production, limiting the benefit of trade to such an extent that GDP/capita may even fall.

Inequality across the set of all political economies, is extreme. GDP/capita in Africa ranges from a low of \$212 in Zaire, to highs in countries like Botswana of \$5000. Some African countries, like Botswana, may be able to cross the Malthusian barrier, because of their control of scarce resources, but others will find it impossible (Collier 2007). The argument presented in this chapter is that such societies face a harsh form of the distributional quandary over land, as their populations grow rapidly. Their political leaders will tend to be extreme risk preferring, and violence will be endemic, as in regions like Darfur or the Republic of Congo.¹²¹ Bates *et al.* (2003) present a fairly dismal outline of the propensity to violence in poor countries.

¹¹⁷The pattern of economic growth is more or less consistent with macro-economic models of technology diffusion as discussed in Lucas (1988, 2000) and Romer (1986), but these models give no explanation why some countries suddenly develop and others do not.

¹¹⁸Climate change is discussed in Chapter 4.

¹¹⁹Romer (1986), Grossman and Helpman (1991), Hall and Jones (1999), Jones (2002), Jones and Romer (2009).

¹²⁰This argument is consistent with North (1993,1994) who emphasises institutions and beliefs. Shapiro (2008) focuses on human capital in the context of globalization.

¹²¹Prunier (2009).

Differing estimates by Friedman (2009) puts current global product at \$54 trillion, with the US share at \$14 trillion, Japan's at \$4.4 trillion and Western Europe about 11.2 trillion (so 55% in all). While China, India, Brazil and possibly Russia will grow in the future, it is unlikely that their population and GDP/capita will change the overall unequal pattern of economic power.¹²² Sachs (2008) gives figures which suggest that world income/capita has increased from about \$1200 in 1900 (about a 5 fold increase to the present), while total world output has increased from about \$2.5 trillion in 1900 (a 20 fold increase). This obviously means global inequality has increased. It is also probable that the share of Africa will decline further. There is an enormous literature on development in the Third World, much of it pessimistic (Collier 2009; Easterley, 2006).

Indeed, Nunn (2008) presents an empirical argument that the tendency towards ethnic fragmentation and violence, which certainly contributes to Africa's poor economic growth, is a consequence of it having suffered from the slave trade for many centuries.

Figure 2.1 gives a broad idea of the nature of these inflection points for the period from 1900, while Figure 2.2 illustrates the linear, indeed logistic growth of some western economies from 1950 to 1992.¹²³ Figure 2.3 gives another logistic curve, indicating the quandary generated by agriculture: very few countries with more than 10% of its population in agriculture can attain a GDP/capita of \$10,000. More to the point, there is a real possibility that climate change due to CO₂ and methane emissions will induce severe dislocations, particularly in poor countries (Stern, 2009). As Stern (2007) argues,

Climate change poses a real threat to the developing world. Unchecked it will become a major obstacle to continued poverty reduction. Developing countries are especially vulnerable to climate change because of their geographic exposure, low incomes, and greater reliance on climate sensitive sectors such as agriculture.

The effect of the climate changes that have already occurred are beginning to be a real concern. As Krugman (2011) recently noted, severe weather seems to have already had an impact on world food prices. Economic growth in India and China particularly has increased food demand, but China, usually self sufficient in food, and one of the world's major producers of rice and wheat has been hit by a severe drought. Russia, also a major wheat producer, had a record heat wave in summer 2010. The price of wheat doubled between summer 2010 and spring 2011, probably because of the record heat recorded in many countries. . The poor in the world spend the bulk of their income on food, so price increases have a severe impact on real income. Indeed, this effect may be the ultimate cause of the popular unrest in Tunisia, Egypt and other countries.

¹²²Of course there is much discussion of how China's growth will affect the world economy.

¹²³Figure 2.2 is taken from Schofield (2003), where it is argued that the growth curve is logistic in the sense of showing a decline over time. The current crisis has, of course, induced a profound drop in economic growth.

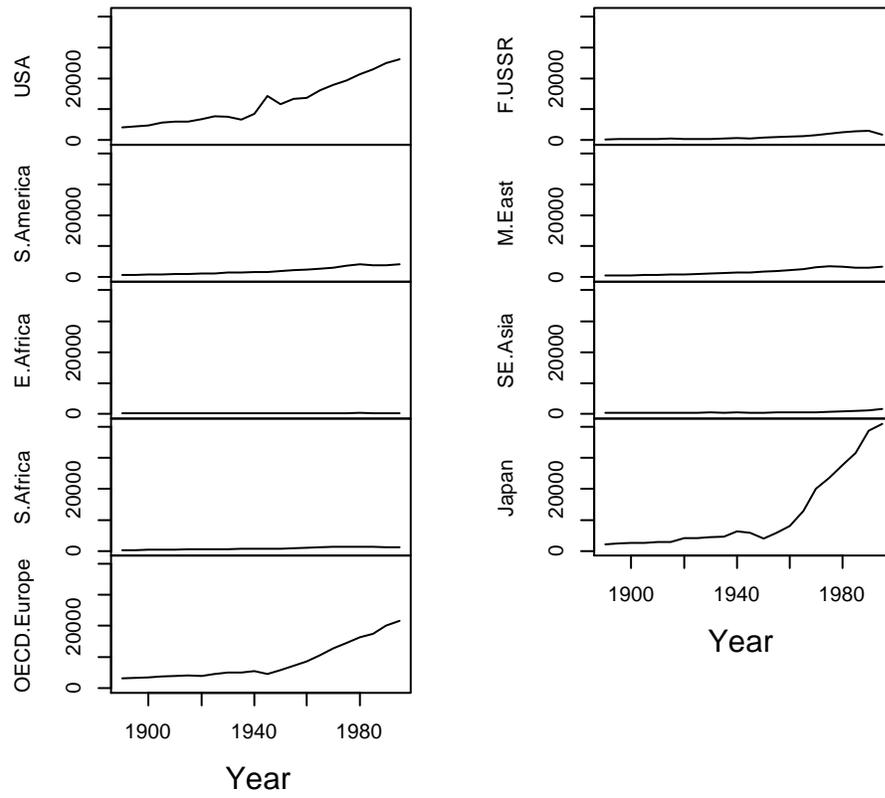


Figure 2.1: Malthus or Condorcet

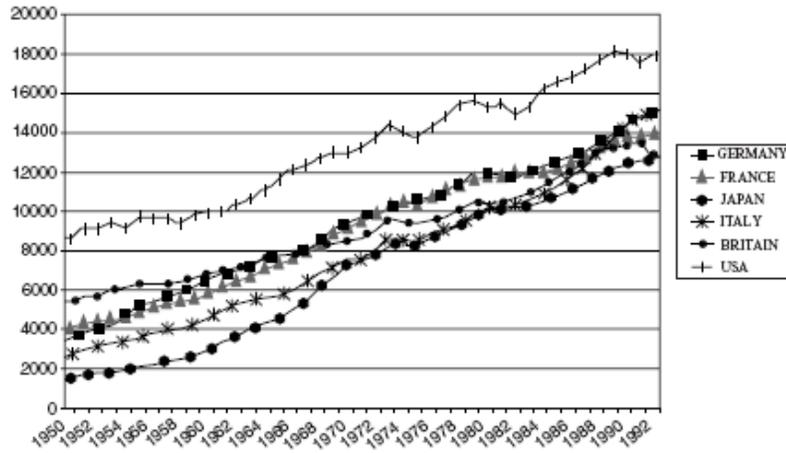


Figure 2.2: GDP per capita in six OECD countries (in 1985 dollars)

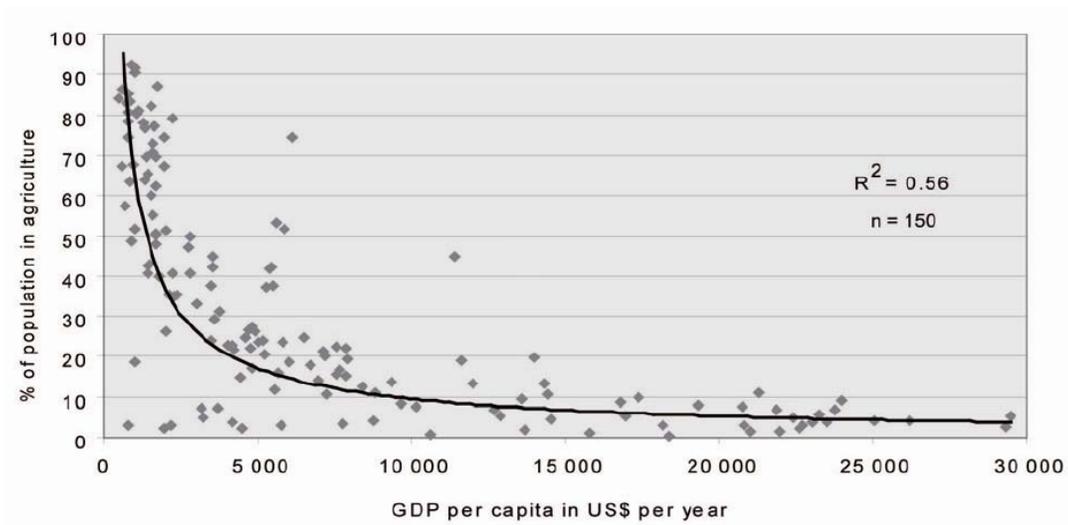


Figure 2.3: Agriculture and GDP/ capita (International Assessment of Agricultural Science and Technology for Development, 2008)

Whether the fall of the autocracies in these countries will result in chaos is an open question. We return to the question of climate change in Chapter 4.

The main challenge to political economy is to better understand the formation and transmission of ideas and knowledge through well designed institutions. North (1993) made a number of propositions governing this process:

- interaction between institutions in a context of scarcity induces institutional change,
- competition forces institutions to invest in knowledge which shapes perceptions,
- institutions generate incentives which dictate the nature of sought-after knowledge,
- perceptions derive from mental constructs (beliefs),
- institutional change is overwhelmingly path-dependent.

The idea of chreod, and of the ancillary notion of point of inflection, presented above, is an attempt to provide a possible way to formalize these earlier suggestions of North. The emphasis of North, Wallis and Weingast (2009) is very much on the nature and development of institutions, and in particular on extending North's earlier "neo-classical theory of the state," wherein "Leviathan" contracts to set up a system of property rights and taxes (North, 1981). An emphasis in North, Wallis and Weingast (2009) is on the ability of "Leviathan" to limit, or at least set bounds on, violence.

Although North, Wallis and Weingast (2009) discuss violence extensively, it can be useful to consider the roots of violence in terms of risk preference. First, a categorization of society into different factor groups, such as $\{C_m, L_m, L_p, L_u, L_t, K\}$, as in the discussion of Rome, would seem very useful. It is plausible that these classes or categories display very different risk postures. While this is simply a hypothesis, the work of Cochran and Harpending (2009) suggests that these postures are the result of rapid evolutionary selection. Recent work by Clark (2007a,b), discussed already, makes a similar argument. In what follows, we shall emphasize the consequences of differing risk postures of these factor groups.

As mentioned above, military leaders, such as Philip II of Spain, Napoleon or Hitler must be considered extremely risk preferring. Moreover, members of the military classes in Europe seem in general to be highly risk preferring, and this would suggest that war between states was a fundamental aspect of the family of closed access societies. Rather than attempting to control violence, the elite in such societies would specialize in the exercise of violence. North (1981) paid attention to large scale conflict, for example between the Ottoman Empire and Christian Europe (Pirenne, 1939). Schofield (2000) discussed some aspects of this, and we shall make a few more remarks below.

Much of North, Wallis and Weingast (2009) is concerned with the ways institutions work differently in closed and open access societies. Some of the conceptual apparatus used in this discussion was present in North's earlier work with Weingast (North and

Weingast, 1989) on the Glorious Revolution in 1688 CE in Britain. This social and economic revolution transformed Britain's ability to manage debt, fight wars (particularly with France), and develop an empire. But the Industrial Revolution that followed later in Britain was driven by a scientific revolution that first made its appearance about 1600. Although North (1993) discusses knowledge, there is little in North, Wallis and Weingast (2009) about knowledge-seeking institutions.¹²⁴ Mokyr (2002, 2010) emphasizes the extension in scientific knowledge and the changes in beliefs in this period.

The next section will make some observations about the cultural transformations that took place in Europe from about 1100.

2.4 Cultural and Scientific Change: East and West

One of the most interesting questions about social change concerns the role of "cultural transmission" in triggering the beginnings of economic growth.

By 1000, Al-Andalus, the Arab world in what is now Spain was an immensely sophisticated and wealthy culture, Cordova had a population about half a million, exceeding that of Byzantium.¹²⁵

It can be argued that the knowledge of Greek writings and philosophy, which had been kept alive in Al-Andalus and Byzantium, was transmitted to Europe through the court of Frederick II (1194-1250), Holy Roman Emperor and King of Sicily with his capital in Palermo.¹²⁶ Frederick was elected king of Germany in 1215, and crowned in Aachen by Pope Innocent III. In 1227, Frederick was excommunicated by Pope Gregory IX for failing to lead a crusade to the Holy Land, although he did lead the crusade the next year. Possibly because of his ability to speak Arabic, he was able to make peace in the Holy Land, being crowned King of Jerusalem in 1229. In Palermo, he created a court based on the combination of Jewish, Muslim and Frankish culture, that had some similarities to that of Granada and Cordova in Al-Andalus. He also built on the reform of the laws begun by his grandfather, Roger II, leading to a remarkable collection of laws, *Liber Augustalis*. It made the Kingdom of Sicily an absolutist monarchy, but also set a precedent for the primacy of written law.

The twelfth and thirteenth centuries were times of conflict between the Italian city states and the Holy Roman Emperors, Frederick I, or "Barbarossa," (1122-1190), his son, Henry VI, and grandson, Frederick II. Frederick I attempted to assert his rights at the second Imperial diet at Roncaglia, November 1158, by appointing imperial podestàs, "as if having imperial power in that place" and this was one of the causes of the formation of the "Lombard League" and the uprising against Frederick I in 1167.

The idea of a podestà, a man of foreign birth to act as a disinterested magistrate,

¹²⁴Indeed, there is nothing in the book about natural science or mathematics, although there is much discussion of social and political science.

¹²⁵Earlier, Arab armies had only been prevented from conquering a large part of Europe by the victory of the Frank, Charles Martel, over a Muslim army in 732 at Poitiers in France.

¹²⁶He was known as *Stupor mundi* ("wonder of the world").

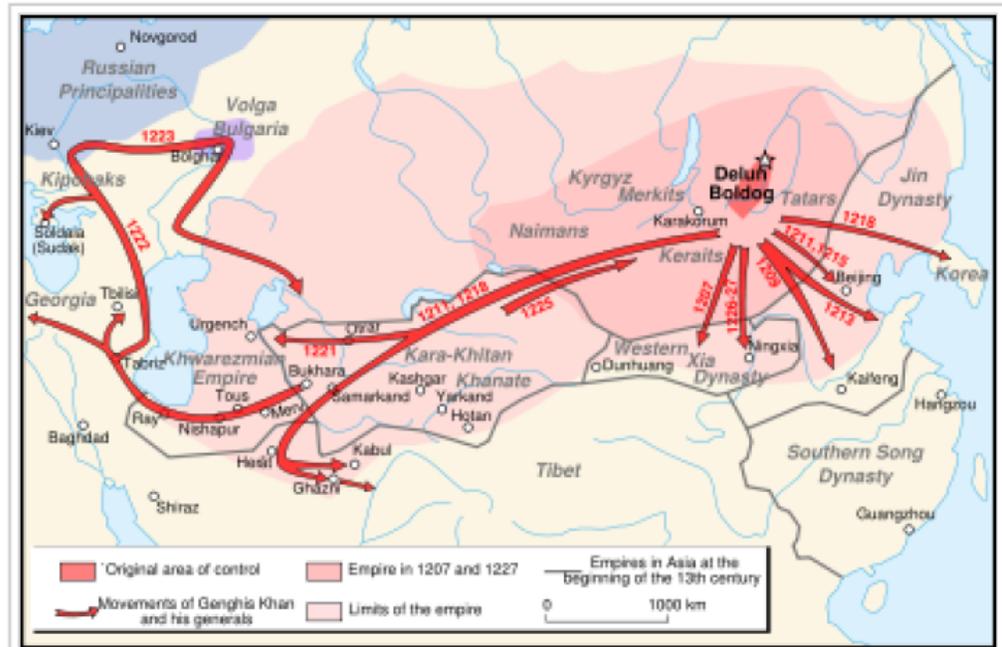


Figure 2.4: The Mongol Empire (1215-1300)

had first been tried in 1151. Although the imperial podestà was rejected, local podestàs became common about 1200. These magistrates were appointed by the citizens (or by the citizens' representatives) for a period of a year, and exercised power in foreign and domestic matters alike. Grief (2006) has argued that the podestà played an important role in the facilitation of trade by the city states in Italy.

Like his father and grandfather, Emperor Frederick II spent many years at war with the Pope, and a number of the city states, in an effort to consolidate Italy (Bordihb, 2005). As the example of the podestà illustrates, the indirect consequence of the actions of these three Emperors was the creation of a political and economic context in which trade in the Mediterranean could flourish. Moreover, it does seem to be the case that a number of agricultural and institutional innovations were put in place in Sicily by Frederick, and for a few hundred years the island was a source of great wealth. These innovations in the technology of commerce, banking and agriculture then spread to the rest of Italy. Even 350 years later, in 1600, Italy had a high GDP/capita of \$1100.¹²⁷

¹²⁷Maddison (2007), again in 1990 dollars.

The reason for the increasing wealth of Northern Italy was partly to do with trade with Byzantium, but also partly a result of the expansion of the Mongol Empire under Genghis Khan, born Temujin, (1162-1227). Genghis Khan conquered Yanjing (Beijing) in 1215, then the Khwarezid Empire, between the Caspian and Aral Seas, then Christian Georgia in 1221, and finally part of what is now Russia. His army, beginning the march east in 1219 numbered about 150,000, and used a new combination of military technology of armed nomadic cavalry together with Chinese siege machines (Man, 2004; May, 2007) See Figure 2.4 for the extent of the Empire.

The Empire was tolerant of differing religions, including Christianity. Trade flourished, with exotic goods and manufactures flowing from China to Europe. Printing presses were used with a simple alphabet, and the use of paper for books and money spread westwards. A consistent system of law was put in place. The empire eventually fragmented after Genghis Khan's death, just as did Alexander's empire, into the Yuan under Kubilai Khan in Cathay, the khanates of Iraq and Persia, the Moghul Empire (after Babur, descended from Tamerlane, conquered India in the early sixteenth century) and the Golden Horde of Russia (which lasted until 1480). Even so, the Mongols shattered a Polish Army in 1241 and the Hungarians in 1242. Their later invasion of Japan in 1281 was destroyed by a *kamikaze*, or *divine wind*.

Weatherford (2004) notes that

mongol administrators found both European and Chinese mathematics too simple... They adopted many useful innovations from Arabic and Indian mathematics.. and introduced the use of zero, negative numbers and algebra.

Chua (2007), in her analysis of empires past, comments that

Genghis Khan decreed religious freedom for everyone. He also embraced ethnic diversity, ... drawing into his service the most talented and useful individuals of all his conquered populations. Two generations later, his grandsons, Mongke, Hulegu and Khubilai followed the same strategy on an even larger scale.

It is reasonable to conjecture that the Mongol Empire contributed to the flow of new ideas that came from the scholars of the Muslim world, and of the many technologies from China, that began to have such an impact on Europe from this time on. Indeed, it is extraordinary that Frederick II and Ögedei Khan (1186-1241), the son of Genghis Khan, both great autocratic emperors, were fascinated by new ideas about how to rule. Frederick wrote a learned treatise on falconry, and built up Palermo as his capital. Ögedei built a new city of Karakorum in Mongolia. Had Ögedei not died in 1241, it is probable that the "golden horde" would have conquered Vienna, and then the rest of Western Europe. The heavily armored knights of the West had proved to be no match for the military tactics of the mongol armies.

Niccolo Polo and his brother Maffeo travelled to take advantage of the relative degree of freedom of travel to journey from Venice through Bukhara to China in 1260,

where they were greeted by Kubilai Khan. The Polos returned to Venice in 1269, and Marco Polo (1254-1324) then set off in 1271 on his own trip to China, returning by sea, sailing to Sumatra, round India to Hormuz, reaching Venice again in 1295. However, the growth of trade between Asia and Europe probably spread the Black Death from China to Europe in 1347-1351.

Morris (2010) notes that Kaifeng in northern China in the 1200's had been close to an industrial revolution, using coal to produce cast iron tools and weapons. Kaifeng fell to the Jurchen empire in 1127, which was in turn destroyed by the Mongols. The southern Song empire was then destroyed by Khubilai Khan in 1279. Disorder and the plague that followed slowed Chinese technological development. But many of the Chinese inventions, particularly gunpowder and printing, were transferred to the west, resulting in new technologies of war and information.¹²⁸

It is still something of a mystery why the "West", which was far behind the "East" until about 1600, went through a scientific and cultural Renaissance (Goldstone, 2009), and the East did not.¹²⁹

Whatever the reason, we might date the beginning of this revolution to the birth of Nicolaus Copernicus (1473-1543) in Thorn, Poland and Leonardo da Vinci (1452-1519), from Vinci just outside Florence. The reasons proposed for this transformation are very varied. As discussed below, one theory focuses on the development of representative assemblies restraining the monarch. Another emphasizes the flow of gold and silver from the Americas and the expansion of trade between Europe and Asia that followed. Mokyr, as mentioned above, emphasizes the beginnings of Enlightenment thought in the 1600's and the eventual scientific revolution that followed after Copernicus and Newton.¹³⁰ Lizzeri and Persico (2004) and Mokyr and Nye (2007) focus on the "institutional" transition to democracy in the 1800's. Against these institutional accounts it is worth noting the cultural and political impact of the autocrats, Genghis and Ögedei Khan from the East and Frederick II from the West, all living at precisely that point in time when East and West became connected. From this point on, increased trade led to economic growth, but population growth meant that societies, both East and West were still bound to the Malthusian logic.¹³¹ As we have discussed in Chapter 1, it was only after about 1800 that real income started to rise, and then initially only in Great Britain.

2.4.1 Monarchs and Merchants

Acemoglu, Johnson and Robinson (2005) argue that the countries that grew after 1500 or so were on the Atlantic rather than the Mediterranean litoral. However, the point

¹²⁸By the 1400's the Ming Empire was able to send out seven enormous treasure fleets under Admiral Zheng He to Africa, Arabia, India and Java.

¹²⁹One hypothesis has been put forward by Kuran (2010) who suggests the cause lies in Islamic Law.

¹³⁰The concluding chapter to this volume addresses some further remarks about the scientific revolution that occurred from 1600.

¹³¹See Goldstone (2009), Ferguson (2011) and the historical and economic analyses in Allen (2001, 2005, 2011).

made by Pirenne (1939) is relevant: the fall of Constantinople/ Byzantium in 1453 meant that the Mediterranean became an Ottoman lake, dangerous for Christian vessels even after the defeat of the Ottoman navy, at the Battle of Lepanto in 1571. The final collapse of the Byzantine Empire stopped trade between West and East, and this provided the stimulus for the Spanish, Portuguese and English attempts to find new passages to the East.

The “discovery” of the New World by Columbus in 1492 had two indirect causes. First was the reconquest of the Iberian Peninsula, and particularly of Granada, by Ferdinand and Isabella of Christian Spain, and their desire to expand their empire.¹³² The second was the fact that Columbus was wrong about the circumference of the globe, but had “scientific” knowledge of the North Atlantic’s great circular wind pattern. In particular, a brisk wind from the east, commonly called an “easterly”, propelled Santa María, La Niña, and La Pinta for five weeks from the Canaries. To return to Spain eastward against this prevailing wind would have required several months of arduous sailing needing huge stores of food and drinkable water. Columbus returned to Spain by following prevailing winds northeastward from the southern zone of the North Atlantic to the middle latitudes of the North Atlantic, where the winds curve southward towards the Iberian Peninsula. This clockwise circuit was used thereafter by Spanish and Portuguese explorers.

Within thirty years of Columbus’s voyages, all Europe had begun to be split asunder by the contest between Catholic Spain, its Protestant opponents and Islam. The conquest of the Aztec and Inca cultures by the Spanish conquistadores was due to a combination not only of their military technology and the diseases they carried, but most importantly of their military risk preference (Wood, 2000). The tribute from the Americas contributed to the imperial ambitions of the Holy Roman Emperor, Charles V. Charles, King of the Netherlands, Naples and Sicily, had become King of Spain, known as Carlos I, in 1516, and then Holy Roman Emperor in 1519.

Martin Luther (1483 – 1546) had obtained his Doctorate in Theology from Wittenberg, Germany, in 1512. His *95 Theses on Indulgences* of 1517, essentially denounced the Pope, and Luther in turn was denounced by *The Edict of Worms* issued on May 25, 1521 by Charles V.

While Francis I of France and the Pope, Clement II, battled against Charles V for control of northern Italy, the forces of Hungary and Bohemia, led by King Louis II, were defeated by the Ottoman, Suleyman the Magnificent, in 1526 at Mohács in Hungary. Three years later, an Austrian army under arch duke Ferdinand, Charles’s brother, was able to repulse Suleyman’s seige of Vienna (Reston, 2009). Charles V was officially crowned Emperor in Italy in 1530.

The catholic rulers had originally attempted to enlist Henry VIII of England in the contest with the Ottoman Empire. For personal reasons to do with the annulment of his marriage, Henry VIII of England chose to go against Catholic Europe, and forced

¹³²See Wheatcroft (2003) for example. An indirect consequence of the reconquest of Spain was the diaspora of Jewish people to cities in Northern Europe, including Amsterdam, contributing to the development of ideas such as those of Spinoza two hundred years later.

through Parliament an *Act of Supremacy* in 1534, declaring that the King was “the only Supreme Head in Earth of the Church of England.”¹³³ The *Treasons Act* of the same year made it high treason, punishable by death, to refuse to acknowledge the King as such. In response to his excommunication by the Pope, the *Peter’s Pence Act* was passed and it reiterated that England had “no superior under God, but only your Grace, Henry.”

After Henry’s death in 1547, and the short reign of Henry’s son, Edward, his daughter, Mary, became Queen in 1553. Almost 300 religious dissenters were burned at the stake in the Marian Persecutions.

On the abdication of Charles V in 1556, he left his son, Philip II, with a debt of 36 million ducats and an annual deficit of 1 million ducats. In 1554, Philip had become King of Naples, as well as King Consort of England on his marriage to Mary. Elizabeth, Mary’s half sister, became Queen of England after Mary’s death in 1558. Elizabeth well understood that England could not resist the naval might of Spain, and she managed to keep some sort of peace with Philip for 30 years, politely refusing his various offers of marriage.

Philip meanwhile occupied himself with rebellion in the Netherlands, and with the creation of the Catholic League against the Ottoman empire, leading to the Battle of Lepanto in 1571. In 1585, Philip made peace with the Ottomans, and turned his attention to England, angered by the execution of the Catholic, Mary Queen of Scots by Elizabeth, for treason. The Spanish Armada of 1588 comprised 108 armed merchant vessels and 22 galleons, against a defending force of 34 English warships and 163 armed vessels, with 30 Dutch flyboats. The storm that destroyed the Armada left perhaps 20,000 Spanish soldiers and sailors dead. For the religious people of England, this was an act of God.

Kennedy (1987) used the example of Spain under Charles V and Philip II as an illustration of the propensity of states to overstretch, to engage in expensive wars in order to extend their domains. As Chapter 1 has argued, it is not so much military aggression by the state as autocrat risk preference that leads to war. Certainly, Elizabeth was no war preferring monarch, but rather an extremely subtle and risk averse ruler. There is no doubt that Philip’s war proclivity led to inflation (a fivefold increase in prices in Spain) and this was transmitted throughout Europe (Parker, 1998). This inflation may have been caused partially by the flow of tribute from the Americas, but government spending and the importation of manufactured goods by a privileged elite contributed to the fiscal imbalance. Spain’s income, from taxes in Castile and the Netherlands, was insufficient to cover Philip’s wars.

Philip became increasingly dependent on loans from foreign bankers, particularly in Genoa and Augsburg. By the end of his reign, interest payments on these loans alone accounted for 40% of state revenue. Even though Spain was able to maintain its empire in the Americas and in Asia until the 19th century,¹³⁴ it no longer played as important a role as Britain or the Netherlands.

¹³³Although Henry had defended the Pope against Lutheran heresy in 1521, for which he earned the title “Defender of the Faith,” between 1536 and 1541 he continued his conflict against the established Catholic Church with the dissolution of the monasteries.

¹³⁴Spain conquered the Philippines in 1521 and lost it to the United States in August 1898.

The argument by Acemoglu, Johnson and Robinson (2005) about growth on the Atlantic littoral depended on the creation of a merchant class able to take advantage of transatlantic trade. While there was certainly trade between Spain and its American colonies, this seems not to have engendered a growth-enhancing merchant class. It seems quite obvious that the risk preference of Spain's rulers, and their propensity for debt, hindered the growth of a merchant class.

Stasavage (2010a,b) makes the general point that in geographically extended polities, such as Spain, the merchant class in the early modern period found it more difficult to form legislative assemblies able to constrain the autocratic monarch. Thus early success in creating a large state created the situation where the monarch retained autocratic power, and could engage in risky, military adventures. Legislative assemblies were easier to form in small city states, and so their leaders might more easily be retrained from incurring debt. This provides an interesting insight into the conflicts between Italian city states and the Holy Roman Emperors from the twelfth century to the sixteenth centuries.¹³⁵ A similar hypothesis about the restraints on the merchant class may be valid for the Ottoman and Austrian-Hungarian Empires.¹³⁶

A lesson to be drawn from Philip II must have been obvious to any Englishman: a risk loving autocrat, particularly one who believes that God is on his side, is likely to engage in war, and this has the potential to bring about disaster. The religious ferment of the next hundred years, at least until the Peace of Westphalia (1648), provided ample opportunities for risk loving military and royal autocrats to cause chaos and for the people to rise up in rebellion.¹³⁷ Disorder in Continental Europe continued until 1815, with the final defeat of Napoleon. England (or Britain) was to some extent shielded from this chaos by the English Channel, and by the growing power of its navy. The transformations that we have discussed in Britain would seem to stem from a number of deeply held beliefs: that the power of autocrats must be controlled because of the chaos they create; that a merchant class, engaged in trade, is best able to create wealth; that trade depends on the maintenance of freedom of the seas, and this requires a formidable navy; that debt, though necessary to defend the country, must be constrained by the political institutions; that though there are innate conflicts between land, capital and labor, compromises between these various interests are always possible; and finally, since religious conflict engenders war, some degree of religious tolerance is necessary.¹³⁸

¹³⁵The most glorious city state of all, the Republic of Venice, finally fell to Napoleon in 1797 (Morris, 1990).

¹³⁶Schofield (2006a) has suggested that the collapse of the Soviet empire in 1989/90 may also have been fundamentally due to its leaders' military risk-taking in Afghanistan, and the escalating, but hidden, levels of debt. Soviet expenditure in 1988 was about 12.7% of GDP and 47% of government expenditure. For the Russian Federation it was only about 3.5% of GDP in 2008, but has been increasing. In July, 2010, Russia began selling state assets to cover these increasing costs.

¹³⁷It is also possible that climate change had a negative impact on political stability in the period 1600 to 1715. See Chapter 4 for further discussion of the impact of climate.

¹³⁸Elliot (2006) provides an excellent account of the differences between the British and Spanish empires, one called an "empire of commerce" and the other an "empire of conquest," in the long period from 1492 to 1830.

2.5 Concluding Remarks.

The narrative presented in this chapter suggests that the dynamic economic transformations that have caused the great bifurcation between the rich countries (Britain, the United States *etc.*) and the poor were due to political changes with respect to civil rights as well as property rights. Britain's transition to an open access, more democratic society appears to have been the consequence of a series of somewhat contingent choices, based on a strategic decisions by political leaders, such as Walpole, Peel, Wellington and then Disraeli. We have described a similar sequence of contingent choices in the United States.

The Keynesian or Atlantic compact of 1945 was an important step in creating an international order that made it possible for the West European polities to become mature, open access societies after the disaster of World War II. The collapse of the Soviet Union in the 1990s has created a new round of democratization among polities in many parts of the world.

However, it is unclear whether this process will continue, with the transition of polities such as Russia to full democracy. A recent literature on democratization by many scholars has looked for relationships between economic transformation and democracy. While there are reasons to believe that electoral preferences secure sensible economic choices in mature democracies,¹³⁹ some of the conclusions from this literature about the relationship between the polity and the economy in less developed societies are quite pessimistic.

It is plausible that, in poorer countries, political leaders will tend to be extremely risk preferring.¹⁴⁰ Even if democratic elections occur, the risk attitude of autocratic leaders will lead to violence that cannot be contained, and chaos will be generic. Indeed, Collier (2009) finds empirically that democracy and violence are causally linked in poor countries.

The recent Keynesian disorder has brought considerable stress, even to developed polities, such as Iceland, and there is cause to fear the consequences in newer democracies like Poland. The government in the Czech Republic fell on March 24, 2009, as a direct consequence of the economic crisis. For poorer countries, the World Bank reports a rapid increase in hunger, and this will further exacerbate Malthusian chaos. As suggested above, it is very likely that climate change will have severe consequences for agricultural productivity in the longer run, particularly in Africa, thus further increasing the possibility of civil war, and inducing even more violence and autocracy.¹⁴¹

In those countries that successfully crossed the Malthusian boundary in the past, the risk preference of leaders was constitutionally constrained by a more risk averse capital elite (who had gained some degree of power in the political institutions). Other

¹³⁹Besley (2006). Even so, this argument depends on a better understanding of democratic elections than is currently available.

¹⁴⁰One only has to consider Mugabe in Zimbabwe. The same may be true of middle income countries, as suggested by Putin in Russia.

¹⁴¹Miguel, Satyanath and Sergenti (2004).

countries, such as Germany in 1914, and Japan in the 1930s, were unable to politically control the military elite by a commercial collegium, and found themselves in pursuit of military empires. The quandary for the developed democracies in the 20th century was that their populations could not be expected to have a taste for war. However, we may conjecture that, in the mature democracies of Britain and the United States, the economic returns of the extended franchise meant that their populations were in fact willing to fight for their freedom.¹⁴²

The fear generated in the United States after 2001 led to a short lived autocracy that engaged in extreme risk-preferring strategies to create a military hegemony. It is plausible that there is a connection between this risk preferring military strategy and the commercial risk preference that led to the recent collapse of the economic bubble. The collapse, in turn, created the conditions for a rejection of the Republican administration by the electorate of the United States in November 2008.¹⁴³ None the less, the risk of international disorder is extreme, fed by economic uncertainty and global inequality.¹⁴⁴ While it is to be hoped that Obama will be successful in creating new domestic and global compacts that will mitigate this disorder, the short term prospects are daunting.

Indeed, the resolution of these complex quandaries appears to be at least as difficult as the those that faced earlier societies, as discussed in this chapter. However, a start has been made, as indicated by the agreement, in April, 2009, of the G-20 group of Industrial countries, under pressure from Obama, to make \$850 billion available through international financial institutions like the IMF and World Bank.

One purpose of this discussion has been to attempt to understand how societies of the past, such as the Roman or British Empires, managed, at least temporarily, to construct constitutional or institutional rules that kept the logic of economic, or factor power, compatible with that of political power.

This chapter has deployed a number of abstract ideas from social choice theory and the theory of dynamical systems. It has also emphasized the role of the factors of land, capital and labor (or human capital), so as to complement the institutional perspective on social order presented in North, Wallis and Weingast (2009).

Our current understanding of economic growth is that it is largely determined by the generation of ideas, so that skill based human capital is the fundamental cause of growth, if the institutions are right. Conversely, poor institutions will hinder growth. Even in developed countries, the wage premium on skill has been maintained, and has grown. Naturally this causes an increase in economic inequality and in the degree of polarization in the polity. Many of the chapters that follow will focus on the generation of ideas in the past, and on how the quandaries that are being created affect political institutions.

¹⁴²This response seems to have been conditional on the ability of political leaders like Churchill and Roosevelt to articulate the danger presented by war loving autocrats.

¹⁴³See Chapter 5 for an analysis of this election.

¹⁴⁴The recent IMF report predicted a drop of about 4% in the GDP of the advanced economies for 2009. In 2010 there is little sign yet of a rebound. This drop will surely have serious consequences for poorer countries. Chapter 4 discusses some aspects of the current recession.

Chapter 3

Social Choice

3.1 Introduction

A major theme in the pronouncements of the Reagan administration in the United States and of the Thatcher government in Britain during the 1980's was that Keynesian economic theory provided an excuse for the previous governments of these countries to intervene in their own economies in a way which lead eventually to high unemployment and inflation. One version of this argument, due to Buchanan and Wagner (1977), asserts that, once a government implements Keynesian deficit spending strategies, it becomes susceptible to various special interests in the economy. In an attempt to remain in office, the government adopts policies which result in an increase in the money supply and thus in the rate of inflation. A related argument, presented in the literature on the so-called "political business cycle," suggests that governments will seek to bring about those combinations of inflation and unemployment which are "politically optimal" in terms of electoral response at the time of an election, in an effort to assure re-election. These politically optimal combinations will not coincide with economically optimal combinations, but instead will generate, in the long term, increasing rates of inflation and levels of unemployment.

Keynesian economics was based on the assumption that inconsistent expectations of producers and consumers are persistent features of free market economies. The privileged role of benevolent dictator was given to government, so that its spending strategies might off-set the inconsistency of expectations, encourage investment, and increase output and employment. The new conventional wisdom of the 1980's rejected Keynesian economic theory and returned to pre-Keynesian assumptions. In its simplest form, the neoclassical theory asserts that free markets will tend to be in a state of Pareto optimal equilibrium, as long as government restricts itself to a minimalist strategy. Such a strategy includes increasing the money supply at a constant and declared rate, equal to the long term expected rate of economic growth, reducing the government budget deficit to zero, and if possible bringing about a drop in the government share of GNP. This "disentanglement" of government from the economy would reduce the politically induced inefficiencies in the economy and bring about higher

rates of economic growth. As agents and coalitions realize that they cannot expect assistance from government on terms which are economically irrational and politically motivated, they will increasingly accept their “legitimate” returns, from the free market. According to Usher (1981) this should reduce the level of distributional conflict in the political economy.

Table 3.1. Twelve Developed Polities July 2010*

| Country (Gov ^g) | G ^a | B ^b | E ^c | U ^d | C ^e | T ^f |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| <i>Corporatist</i> | | | | | | |
| Sweden (67) | 31.0 | -2.1 | 1.8 | 9.1 | +6.6 | +10.9 |
| Denmark (62) | 32.0 | -5.8 | 1.2 | 4.2 | +2.6 | +12.3 |
| Austria (52) | 34.0 | -5.0 | 1.1 | 4.9 | +1.6 | -4.8 |
| France (53) | 30.2 | -8.4 | 1.5 | 10.1 | -2.1 | -60.2 |
| <i>Average</i> (59) | — | -5.3 | 1.4 | 7.0 | — | — |
| <i>Mixed</i> | | | | | | |
| Belgium (56) | 32.9 | -6.0 | 1.3 | 11.6 | -0.1 | +19.3 |
| Italy (54) | 28.0 | -5.3 | 0.7 | 8.3 | -2.6 | -9.6 |
| Germany (49) | 30.7 | -5.6 | 1.6 | 7.8 | +5.3 | +207.2 |
| Netherlands (54) | 35.1 | -6.2 | 1.2 | 5.8 | +5.5 | +51.3 |
| <i>Average</i> (53) | — | -5.8 | 1.2 | 8.4 | — | — |
| <i>Liberal/ Plurality</i> | | | | | | |
| UK (43) | 32.8 | -12.8 | 1.3 | 8.0 | -1.0 | -131.6 |
| Canada (48) | 34.0 | -4.3 | 3.1 | 8.1 | -1.8 | -2.8 |
| US (34) | 41.8 | -11.0 | 3.1 | 9.9 | -3.3 | -546.4 |
| Japan (34) | 30.8 | -7.9 | 2.1 | 5.0 | +3.2 | +71.9 |
| <i>Average</i> (40) | — | -9.0 | 2.1 | 7.75 | — | — |
| <i>Overall</i> (51) | — | -6.7 | 1.6 | 7.7 | — | — |

^a G=GDP/capita in thousand US dollars.

^b B=Budget balance deficit (-) or surplus (+) as a percent of GDP.

^c E=Estimated change in GDP, over previous year.

^d U=Unemployment, average percent, over previous year.

^e C=Current account as a percent of GDP

^f T=Trade balance (merchandise) in \$billion

^g Gov= Government spending as a percentage of GDP

*Source: OECD:<http://www.oecd.org/linklist>

Garrett (1998) has compared the “corporatist democracies” with the polities based on plurality, in order to see which of them proved adept at maintaining economic growth in the so-called “global world economy” since 1980. Table 3.1 uses Garrett’s typology of three different categories of countries for 2010 to present macro-economic data on twelve developed polities.

The four corporatist polities tend to have quite powerful social democrat parties that have been in office at least at some time during the 1980's. (Garrett also includes Finland and Norway in this first category, but places France in a mixed category.) In the four liberal/plurality polities, the left was out of power in the 1980's. While it is not evident that the twelve countries can be so readily classified, nonetheless Table 3.1 is suggestive. There does seem to be a tendency for governments of corporatist democracies to absorb a greater share of GDP. Unemployment in the 1980's in the Scandinavian democracies tended to be lower than in the OECD as a whole, while growth was somewhat lower and inflation somewhat higher than in the United States. Table 3.1 shows that the two Scandinavian countries, as well as Germany and the Netherlands, have current account and trade surpluses. Indeed, in August 2010, it was announced that Germany's economy grew 2.2% in second quarter of the year. The United States and the United Kingdom both have very substantial trade and budget deficits, as well as high unemployment rates of 9.9% and 8.0% respectively.

The boom years up to 2007, were associated with a new wave of technological innovations: container ships, satellite communications, computers and the internet. As Reich (2010a,b) points out, these changes contributed to an increase in productivity, but contrary to economic theory, these productivity increases had little impact on the median male wage.¹⁴⁵ Just as we have noted in Chapter 1 for Britain at the beginning of the Industrial Revolution, inequality in the US has increased over the last thirty or forty years.¹⁴⁶ King (2010) observes that the Gini coefficient of income in the US increased from 0.397 in 1967 to 0.463 in 2007, due to the higher proportion of income going to the highest quintile. Higher inequality because of a shift to an industrial society (as in Britain in the nineteenth century, or China at present) is consistent with the work of Kuznets (1965). Presumably the same holds true in the shift from a manufacturing economy to an advanced service economy

To cope with these changes, more women joined the labor force, and men and women worked longer hours, they borrowed more from the increasing value of their homes, while they saved less.¹⁴⁷ The crisis in confidence associated with the collapse of the housing bubble and the recession, starting in late 2007 has induced fear of the future, and brought the savings rate back up to over 6% in the US, as of June 2010.¹⁴⁸

It is probable that technological changes have induced a change in the balance of comparative advantage between the developed economies of the "North" and the developing or less-developed economies of the "South," resulting in the fairly high unemployment rates in the OECD countries in general, and the increase in inequality in the more market oriented polities of the UK and US. The old-established political balance between efficiency and equity has been disturbed in all developed polities.

¹⁴⁵Reich comments that the median male wage is less, when adjusted for inflation, than thirty years ago.

¹⁴⁶Forty years ago the richest 1% gained 9% of total income in the US. In 2007 they gained over 23%.

¹⁴⁷The savings rate for the US had been about 9% of disposable income over the long run from say 1965 to 1985, but dropped to -0.4% before the crisis.

¹⁴⁸In September 2010, the Federal Reserve estimated that total household liabilities had dropped about \$200 billion to \$13.9 trillion while credit card debt had dropped \$83 billion to \$830 billion, both in a year.

The contraction in economies from the peak in late 2007 to the trough in mid 2009 was a world wide phenomenon. The worst hit were the countries in the former Soviet bloc. From peak to trough some of these economies fell over 25%.¹⁴⁹ Iceland and Ireland fell 16% and 14%, respectively, while even the Asian tigers like Taiwan (-10%) and Singapore (-9%) contracted.

In 2008, Iceland had become bankrupt, but had negotiated a bail-out, and because its currency, the krona, was not tied to the euro, it was able to escape some of the severe consequences that the EU economies experienced in 2010. Iceland had let its banks fail, but made \$2 billion of taxpayers money available to new banks. The bank debt owed to British and Dutch depositors was \$5.8 billion, about 46% of Iceland's GDP. Total government debt was about 124% of GDP in 2010, and Iceland is being sued by Britain and the Netherlands in EFTA.

The resulting difficulties from this debt crisis have been exacerbated in Europe by the adoption of the euro. From peak to trough the EU economies dropped about 7%.¹⁵⁰ Greece for example lost 6.6%, and even in the second quarter of 2010, Greece experienced a 1.5% contraction in its economy. Germany also lost 6.6% but by mid 2010 had begun to grow again, and its budget deficit was only about 3.3% of GDP in 2010. As a result the overall economy of the euro area was able to manage a 1% growth in 2010.

The first country in the European Union to experience difficulties was Belgium which had an election in June 2010, but was unable to form a coalition government because of its extremely fragmented polity. With a debt load of nearly 100% of GDP, it began to experience difficulty in financing its debt and was also looking for assistance of the order of 50 billion euros.

Unemployment rates in the European periphery are currently very high (19% in Spain, and 12% in Greece). For 2010, these two countries had high budget deficits of 11.5% and 9.4% of GDP, respectively. Greece was the recipient of a rescue package of about €110 billion. With total external debt about 170% of GDP, Greece was forced in late June 2011 to seek another bailout of about €120 billion. The austerity plans of the Greek government were opposed by protests, raising the possibility of a default. Spain also lined for an aid package, estimated at €400 to €500 billion. Even Italy, with a debt load of 120% of GDP could require up to €1 trillion. In Germany there was increasing concern that there seemed to be a need of something like a € 750 billion (\$1 trillion) financial fund to help euro members facing severe deficits.¹⁵¹

Possibly the worst hit country was Ireland. The *Economist*, on November 18, 2010, estimated the Irish budget deficit to be 15% of GDP for 2009, rising to 32% for 2010. Total debt had increased from 65% of GDP for 2009, to 96% for 2010 to 109% for 2011, while unemployment had risen to 14%. In December, 2010, the Irish government obtained a loan of about \$93 billion from the IMF, the European Commission and the

¹⁴⁹Latvia -26%, Ukraine -20.4%, Estonia -20.3%, Russia -10.9%.

¹⁵⁰Sweden -7.5%, Denmark -7.3%, Italy -6.8%.

¹⁵¹The European levels of total public debt/GDP currently are: Greece 166%, Italy 121%, Ireland 109%, Portugal 106%, Germany 83%, France 87%, Britain 81%, Spain 56%.

European Central Bank. Brian Cowen, the prime minister of Ireland, had said on Monday, November 22, that he would dissolve his government and hold an election once a new national budget was enacted. Cowen's coalition government, with a narrow majority in the Dail, the Irish parliament, was threatened by the reluctance of independent and Green Party members to back an austerity budget. Eventually, on December 7, the 2011 budget, involving spending cuts and tax increases of 6 billion euros was passed by a vote of 82 to 77. Cowen first resisted demands to resign, and attempted to reorganize the cabinet, but the Greens refused to agree. On January 22, 2011, Cowen was forced to resign as leader of his party, Fianna Fail, and Parliament was dissolved on February 1, and an election held on February 26. From 78 seats in 2007, Fianna Fail only took 25, and Enda Kenny of the opposition party, Fine Gael, became Taoiseach (Prime Minister) of Ireland on 9 March.

In the 2011 general election in Finland, the Centre Party, led by Prime Minister Mari Kiviniemi, lost 16 of the 51 seats that they had held, while the True Finns party gained 34 seats. The centre-right National Coalition Party, under Jyrki Katainen, became the largest party for the first time. After long and difficult negotiations, Katainen was elected Prime Minister by the Finnish Parliament on 22 June 2011, leading a coalition of six parties (National Coalition, Social Democrats, Left Alliance, Greens, Swedish People's Party and Christian Democrats).

By January, 2011, it was clear that Portugal was heavily indebted. Even with its cost cutting efforts, the budget deficit was about 7%, with total government debt over 100% of GDP. It seemed likely that it would need to obtain an aid package of 40-80 billion euro. Prime Minister Jose Socrates, of the Socialist Party, resigned on March 23, and his caretaker government obtained a bailout of \$116 billion on May 3, 2011. In the election of June 5, the center right Social Democrats, under Pedro Passos Coelho, took 39% of the vote to 28% for Socialists and 12% for the Popular Party. Coelho will lead a coalition with the Popular Party, and promised further austerity measures to deal with the crisis.

Lars Løkke Rasmussen, leader of the centre-right liberal party, Venstre, lost his position as Prime Minister of Denmark in the September 2011 parliamentary election. He remained in office as head of a caretaker government until his successor, Helle Thorning-Schmidt, was appointed on 3 October 2011.

Iveta Radičová was the leader of the Slovak Democratic and Christian Union – Democratic Party, and Prime Minister of Slovakia from 8 July 2010 as the head of a four-party center-right coalition government. Radičová lost a vote of confidence in the parliament on 11-12 October, 2011, leading to the fall of her government. An early election will be held on 10 March, 2012.

On November 5, the Greek Prime Minister, George Papandreou, agreed to step down to make way for a unity government, and on November 10, Lucas Papademos became interim prime minister.

Two days later, the Italian Prime Minister, Silvio Berlusconi, resigned after Parliament approved a number of measures to reduce the deficit. Italy's president then asked Mario Monti, a former European Commissioner, to form a government.

José Luis Rodríguez Zapatero, the leader of the Spanish Socialist Workers' Party (PSOE), was elected for terms as Prime Minister of Spain in the 2004 and 2008 general elections. In the election of November 20, 2011, the conservative People's party (PP) led by Mariano Rajoy won 186 of the 350 seats in parliament, and a mandate to carry out further austerity measures.

Britain lost 6.6% in the recession and the Labor government fell in May 2010 (as discussed in Chapter 6) and has not yet recovered. The US lost about 4%. As Table 3.1 suggests, the US budget deficit for fiscal year 2010 was about \$1.5 trillion (about 11% of GDP), bringing its total debt to over \$14 trillion (about 100% of GDP).¹⁵² Chapter 5 discusses the post-recession difficulties of the US over debt.

The equivalent figures for the United Kingdom are a deficit of £140 billion (about \$224 billion or 10% of GDP) and a total debt of £1.16 trillion (or \$1.86 trillion ie. 81% of GDP).

As part of the overall rescue package of €750 billion, the European Financial Stability Fund (EFSF) is able to issue bonds guaranteed by Euro Area Member States (EAMS) for up to € 440 billion for support to EAMS in difficulty, subject to conditions negotiated with the European Commission in liaison with the European Central Bank and International Monetary Fund. At the end of September, 2011, the German Parliament voted to increase its loan guarantee to €211 billion. Approval for loans requires agreement of all 17 EAMS and on October 12 Slovakia, the seventeenth state, gave its agreement. Even with the approval, it is very likely that other coalition governments in Europe will fall, the result of the economic restrictions imposed by the euro together with the political effects of proportional electoral systems. Efforts to deal with the recession have done little to reduce unemployment and budget deficits, and all these countries face severe political difficulties as a result.

In August and September, 2011, the US stock market lost about 20%, due to the uncertainty generated by this European debt crisis. It recovered somewhat but by the end of November had lost 12% from its peak in late July 2011.

Shapiro (2008) argues that the continuing expansion of outsourcing of skilled services through globalization will increase and lead to continuing increases in unemployment in the developed countries. This may be ameliorated as the population ages, but then a smaller working population has to provide for a growing population of retirees, leading to increasing budget deficits. As we note in Chapter 6, the government of the United Kingdom announced in October 2010 that its budget deficit had forced it to cut child allowances and financial support for Universities. These difficulties may prove more difficult for the economies of the European Union in the long run than for the United States.¹⁵³ Many commentators fear that Europe will fall into the deflationary trap that has perplexed Japanese political leaders since the 1990's: a flat GDP of \$5.7

¹⁵²Total US debt had increased from about \$12.9 trillion (90% of GDP) in 2008. As we mention later, China holds about \$1.5 trillion of US Treasury debt.

¹⁵³One reason may be that the United States has a very diversified trade regime with many countries. Indeed, Leontief observed the paradox that the US, the country with the world's highest capital/labor ratio has a lower capital/labor ratio in exports than in imports. See also Helpman and Krugman (1989).

trillion and growing government debt that is now over 200% of GDP.¹⁵⁴

The adoption of a theory which assumes free market optimality makes it very difficult for government to focus on ways in which to ameliorate the effects of these transformations in the “global economy.” In Britain in particular, older-established industries, such as shipbuilding, automobiles, textiles, steel, etc. contracted rapidly, and this raised fears of de-industrialization (Blackaby, 1979). Similar fears in the United States have raised the possibility of increased trade protection and limits on immigration.¹⁵⁵ Just as in the 1930’s, there is the beginning of competitive currency devaluation by countries as they attempt to maintain exports and limit the increase of unemployment.

The questions we wish to raise here may be listed as follows.

(1) Is there any evidence that western governments have, in the past, intervened in the macro-economy for purely electoral reasons, in ways which, in the long run, may be deemed economically irrational?

This is different from asking whether particular macro-economic decisions can be seen, with hindsight, to be economically irrational. It asks whether the logic of the “political marketplace” is such as to produce economically suboptimal consequences. The literature that dealt with the question was based on a simple economic theory that supposed that inflation and unemployment could be traded off against one another in a fairly obvious fashion. This is clearly false; macro-economic intervention always produces unintended, and frequently surprising consequences. Even if governments wished to achieve “socially optimal” unemployment-inflation combinations, they would be unable to do so. Secondly, the analysis supposed that, in terms of electoral response, there were favorable unemployment- inflation combinations. This is equivalent to the assumption that the vote response can essentially be regarded as a social welfare function, and that “socially optimal” government behavior is the optimization of this social welfare function within the feasible macro-economic possibilities.

The model presented in Chapters 5 and 6 suggests that although voters respond to economic choices by government, the policy responses by government include non-economic features, particularly the influence that activists exert. This implies that the vote maximizing functions of political agents incorporate many different components. Electoral response to government behavior is also affected by transitory political events (as the current situation in Iraq illustrates).

(2) Is there any evidence that political logic forces governments to accede to special interest groups, to the extent that they over-regulate, over-bureaucratize, over-provide public goods and welfare, etc.?

The general mode of argument of the literature that addresses this question is essentially that the political and economic cost benefit analyses are quite different and that the political calculus leads to an underestimation of the true economic costs of, for example, a public goods project. The difficulty with this kind of argument is that in order

¹⁵⁴Japan’s public debt is 233% of GDP but this mostly owed to domestic creditors. Even so Japan has experienced political difficulties.

¹⁵⁵See Galiani et al. (2011) for a political model of activist group responses to such changes in comparative advantage.

to allege overprovision it is necessary to give an indication of the “optimal” level of provision and a method for attaining it. For example, is there a procedure by which public goods could be created and distributed within a free market context and without the intervention of government, in such a way that the outcome is Pareto superior to the outcome when government intervenes? While a number of authors (Nozick, 1974) have argued that public goods can be provided by protective associations, these arguments simply replace the Hobbesian world of every man against his neighbor with one of every coalition (or neighborhood) against every other. In any case, all such arguments depend in one way or another on an equilibrium optimality result. The arguments made by policy makers during the Reagan and Thatcher governments were that instead of intervening in the political economy it was much better to leave the operation of the economy to market forces. But the global market crashes that have occurred since then have left us in the current predicament. This leads us to the next question.

(3) Is it reasonable to suppose that a free market economy will generally be in a state of Pareto optimal equilibrium?

At the heart of economic theory is the general equilibrium result, that the consequences of rational self-seeking behavior by agents is a Pareto optimal outcome. If this theory had any relevance at all for economic affairs, then one would expect market adaptation to the presence of unemployment not only to eliminate involuntary unemployment but to do it in such a way that the welfare of every individual increases. There is no strong empirical evidence that this is occurring, and it is worth asking whether there is a major flaw in the theory. The assumptions of the theory are of course very restrictive. The preferences of individuals are supposed to be defined on private goods—whether consumption bundles or production outputs. Secondly, complete Arrow-Debreu (1954) markets are assumed to exist in all commodities, so as to eliminate, or rationalize, all future risk. Finally, and most importantly, economic agents are assumed to treat prices parametrically, in the sense that agents treat prices as fixed and optimize on the fixed budget or production sets. This is a reasonable assumption when all agents are “small” relative to the economy. That is, if any agent is removed, then the others may move to a new equilibrium which they prefer at least as much as the original. If this strong “no-surplus” condition fails, for even one agent, then that agent may manipulate the economy to bring about outcomes that the agent prefers (Ostroy, 1980). What this means is that the manipulator attempts to compute the effects its own behavior has on the eventual equilibrium outcome and then behaves in such a way as to produce a different outcome which it prefers. This notion of manipulation developed out of social choice theory and is proving to be of interest to general equilibrium theorists. It seems reasonable to believe that there will be at least one manipulator in any economy, in which case there is no reason to suppose that even a perfect market in private goods will achieve Pareto-optimality. Hahn (1980) has called this feature “the canker at the heart of the theory.”

At the same time the notion of manipulation may prove of considerable value in economic theory. It provides a theoretical mode of access to the analysis of monopoly or oligopoly behavior—such as transfer pricing and the construction of entry barriers. Using

this theoretical notion, one may analyze national strategies of manipulation, including the erection of tariffs, and domestic redistribution of income to pick up the increasing returns to scale or the benefits of trade of a national economy.

(4) In which aspects of the economy might one reasonably argue that government intervention is necessary for the attainment of long term optimal performance?

Schofield (2006a) suggests that the fundamental argument in Keynes (1936) was that markets in commodities, especially traded goods, may very well be governed by equilibrium theory, by the law of supply and demand. What concerned Keynes, however, was the degree to which instability or speculative bubbles in asset markets (by which he meant markets in stocks, currencies and houses, etc.) could undermine the stability of commodities markets. Given the events that had occurred in Keynes' lifetime, his pre-occupation was with effects of this kind not only in the labor market (where the result is persistent unemployment), but also in the international polity (leading to competitive devaluations).

Keynes accepted this weak version of the equilibrium hypothesis (only for commodities markets), because he saw a terrible danger to the Atlantic democracies. In a world of speculative disorder, the returns to capitalists and the wages of labor would have no legitimate basis. To escape this chaos, the citizens of a nation could rationally choose to give up their freedom to the agents of the state. Bound by such a Hobbesian contract to an autocrat, the citizens could at least hope for some certainty in their lives. Keynes was keenly aware that authoritarian state systems could solve the problem of unemployment, by paying the price of efficiency while necessarily depriving their citizens of their freedom. It seemed all too probable in the 1930's that citizens would be willing to pay the double price of inefficiency and loss of freedom to avoid the great and apparent risks of unemployment. We can also speculate that the disorder exhibited by the Russian political economy in the 1990's led the way to the electorate's willingness to accept Putin's concentration of political power in the early part of the 21st century. Keynes' fears of market disorder seem quite justified in view of the currency crash of the late 1990's, the "dot-com" crash of 2000 and the problems in the "sub-prime" mortgage market in the United States in 2007 and early 2008.

In December 2007, Central Banks were desperately making capital available for fear of a liquidity crunch. Figure 3.1 illustrates the extent of the drop in house prices and in the stock market in 2008 while figure 3.2 contrasts the loss in confidence in January 2008 with other crashes in the period from 1973 on. On January 21, 2008, the DAX index in Germany closed down 7.16 percent while the CAC 40 in France lost 6.83 percent and the London stock market index, the FTSE 100, lost 5.48 percent. The Federal Bank cut its key interest rate to 2.25% in March, and then to 2% on April 30, 2008, in the face of the possibility of stagflation (see Figure 3.3). Figure 3.4 shows the fall in the Dow from the peak in late 2007 to the bottom in early 2009. In March, the investment bank, Bear Stearns, faced bankruptcy and was bought by JP Morgan for next to nothing, while Lehman Brothers did file for bankruptcy on September 15, 2008. A week before, the Federal Housing Finance Agency (FHFA) placed the Federal National Mortgage Association (nicknamed Fannie Mae) and the Federal Home Mortgage

Corporation (nicknamed Freddie Mac) under the conservatorship of the FHFA.¹⁵⁶ The collapse of the companies, followed by that of the Lehman Brothers are often seen as starting the panic.¹⁵⁷ Eventually the Dow rebounded in 2010, but Figure 3.5 shows the singularity in the Dow that occurred on May 6, 2010. Rising oil prices (illustrated in Figure 3.6) seemed to suggest in 2008 that that the 1970's had returned. See Phillips (2006, 2008) for comments on the causes of the interlinked problems of oil and debt.

From this Keynesian perspective, the fundamental purpose of government is to ameliorate the chaos of the marketplace, and to promote the human and economic opportunities available to citizens by curbing the degree of risk that they must face. This suggests that government does have a significant interventionist role to play. We concentrate on two related aspects of such intervention.

The most important characteristic of a developed economy is the level (and rate of change) of productivity. This depends, we would argue, on two structural features of the economy—the social organization and quality of labor and the level of technological innovation and utilization. Both features have fundamental public goods aspects. One important aspect of labor is the level of problem solving capacity that is exhibited—the ability to respond in subtle fashion to the micro-difficulties that any economic activity necessarily faces. This depends, in turn, on the quality of the human resources (education in the broadest sense) and on the way labor organizes itself. There have been concerns recently that the United States is falling far behind its competitors in the provision of education, and in the race to develop the new clean technologies that are appropriate in a period of climate change.

As regards education, an economist might argue that it is up to each individual to compute the extent of that individual's level of education, given the likely costs and anticipated returns. Since there are high social benefits from education, the aggregate of individuals' calculations need not be socially optimal. Consequently, there is an important role for government to intervene, so as to facilitate the enlargement of education, particularly in an era of intense technological competition.

As regards technological innovation, theoretical analysis by Reinganum (1981) and Kamien and Schwartz (1981) indicate that it is unlikely that the socially optimal rate of investment in innovation will occur naturally. In a completely competitive market, with many small firms, almost no investment will occur, since each firm will leave it up to the others and hope to pick up the benefits later. In an oligopoly, firms will invest but keep the benefits, in a socially non-optimal way, for themselves. The logical conclusion is for government to guide investment by subsidies, grants, etc., along the lines that it deems socially profitable. One problem, of course, with such a strategy is that it is not obvious that there is any connection between government preferred and socially optimal

¹⁵⁶These two entities had operated since 1968 as government sponsored enterprises (GSEs). Although the two companies are privately owned, they are protected financially by the support of the Federal Government. These protections include access to a line of credit through the U.S. Treasury, exemption from state and local income taxes and exemption from SEC oversight.

¹⁵⁷Kaletsky (2010) argues that the decisions by government regulators to let this happen was the cause of the ensuing panic.

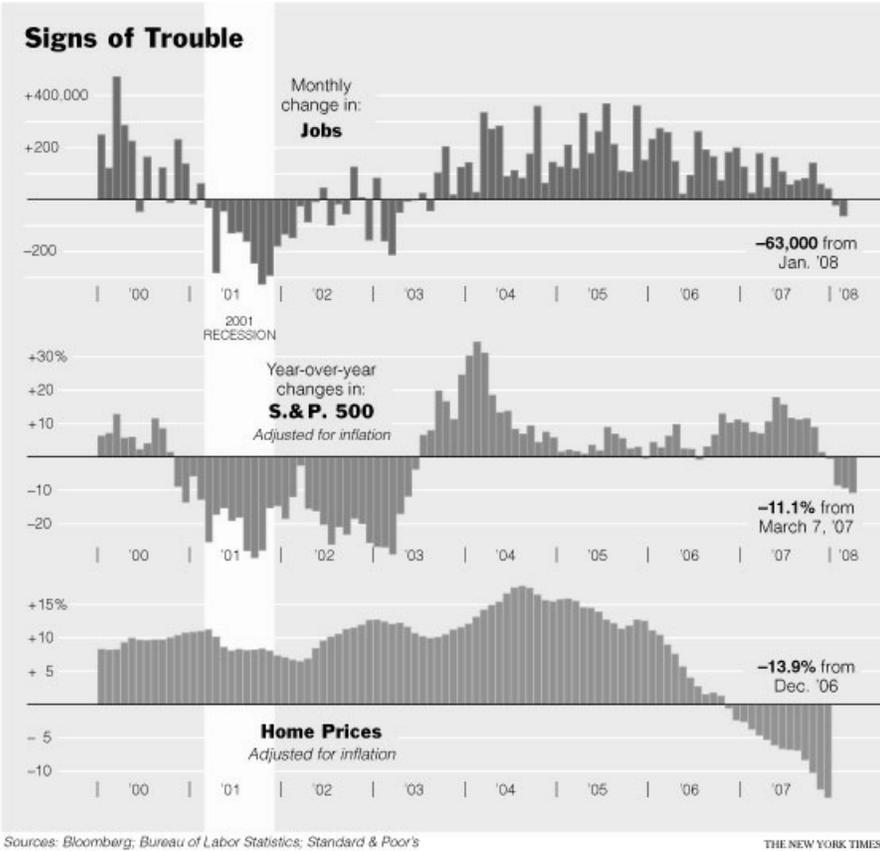


Figure 3.1: Bubbles. (*New York Times*, 8 March 2008).

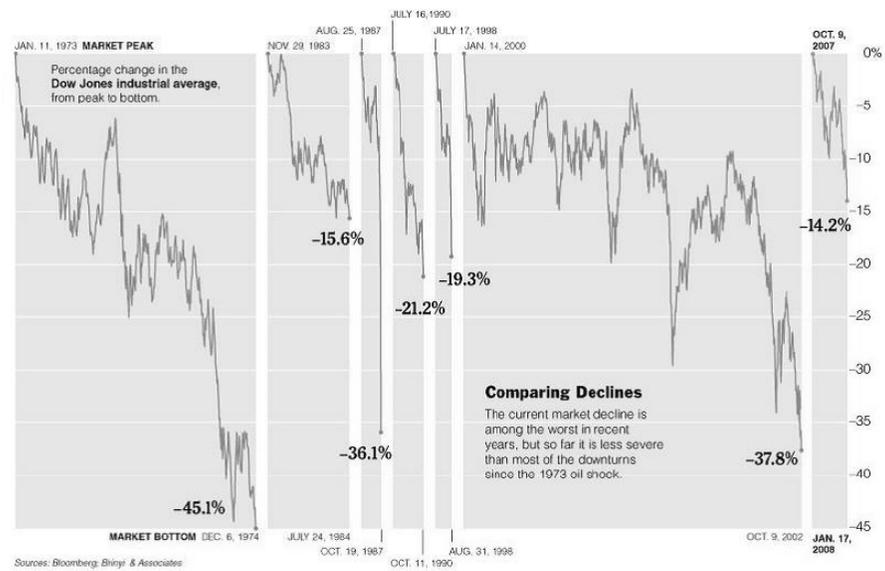


Figure 3.2: Market crashes (*New York Times*, 18 January 2008).

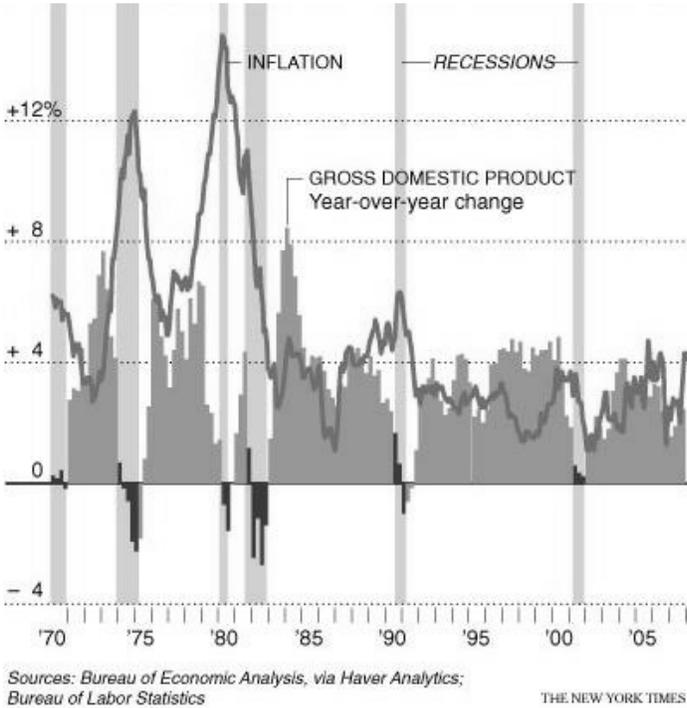


Figure 3.3: The possibility of stagflation (*New York Times*, 21 February 2008).

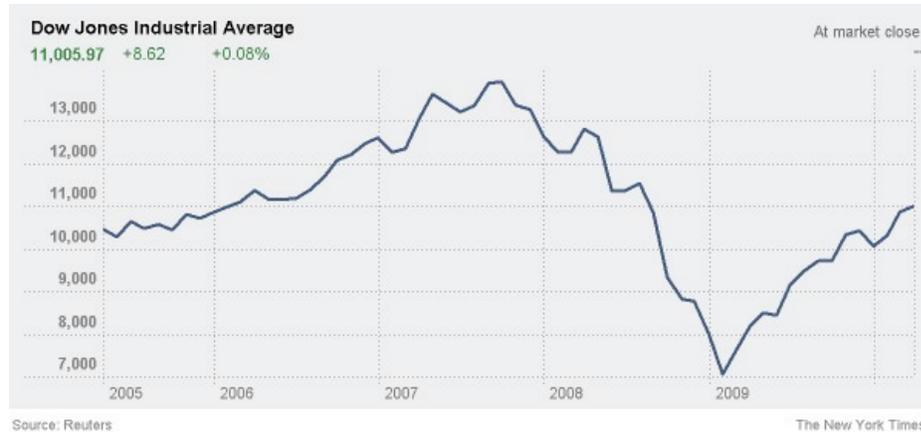


Figure 3.4: The Dow from 2005 to 2010

patterns of investment in research and innovation. A strong case can be made that there has been excess concentration by Britain and the U.S. on defense related industries (see for example Freeman, 1979, and Block 1975). In the future, if climate change does turn out to be the major problem facing humanity, then socially necessary technological innovation to reduce greenhouse emissions will become vital.

These arguments suggest that government has an obligation to offset the suboptimal social choices of the marketplace. The “debate” between the European Union and the “Anglo-Saxon” polities of the United States and the United Kingdom concerns the degree to which intervention in the global economy by government is acceptable.

As the next chapter discusses, we face potentially unknown problems over climate change. New understanding about the effect of climate change on world food production as illustrated in Figure 3.7 suggests that the future may bring massive social unrest and population movement.

Keynes was concerned not just about speculation and market chaos, but about the degree to which uncertainty made the equilibrium theorems invalid. As he wrote

By “uncertain” knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable . . . Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence. (Keynes, 1937).

The possibility of positive feedback effects associated with human activity, particu-

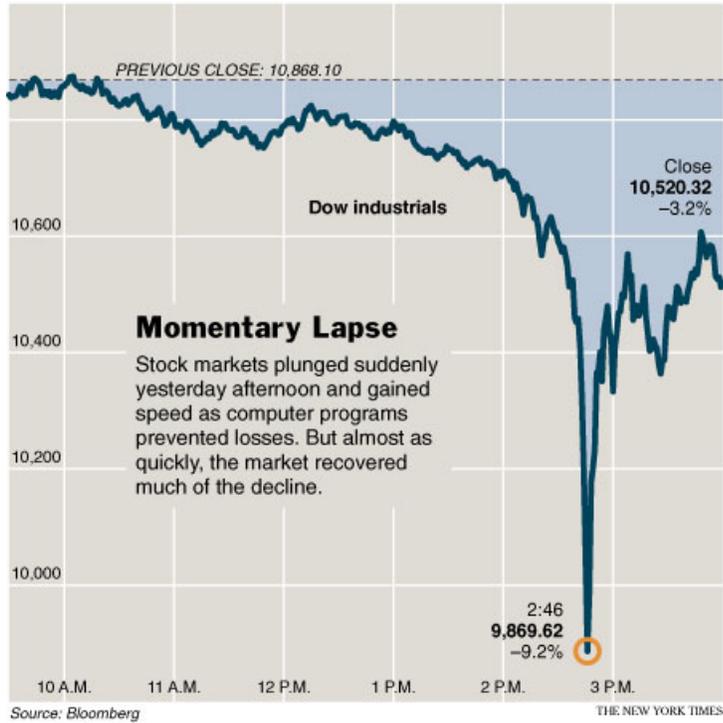


Figure 3.5: The singularity in the Dow on May 6, 2010



Figure 3.6: Real Price of Oil. (*New York Times*, 4 March 2008).

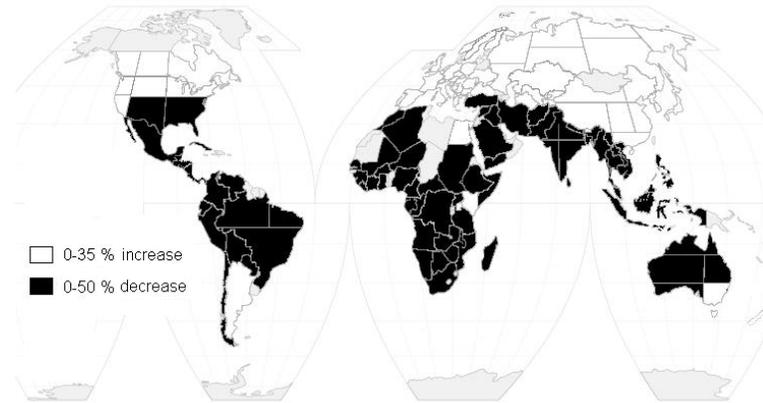


Figure 3.7: The possible effects of climate change on regional agricultural output (W. Cline, 2007)

larly the rapid increase of energy utilization by growing economies such as China and India, has increased the uncertainty that is presented by the future. The concern that Keynes had about the difficulty of controlling market disorder is now even more pronounced, as controlling climate change will need the cooperative action of all states. This difficulty is made worse, because of the changes brought about in the beliefs of political leaders about the feasibility of controlling the global market. Bobbitt (2008) suggests that the constitutional order has changed since the 1980's. The nation state has begun to give way to what he calls "the market state." The next two sections of this chapter consider attempts by political leaders to moderate the effects of market forces.

3.2 The Political Economy

The essential ideas underlying the literature on the Political Business Cycle are three fold:

1. the popularity of a government at some time is effectively determined by the level of unemployment and inflation at that time or in the recent past;
2. government itself can manipulate various aspects of the macro-economy to effect changes in unemployment and inflation within some feasible range;
3. incumbent governments will in fact manipulate the economy to bring about levels of unemployment and inflation which at election times are “socially optimal” in terms of resulting in the maximum number of votes for the party in government.

In their early paper, Goodhart and Bhansali (1970) first correlated government popularity (or the lead over the opposition) in Britain against unemployment and inflation, but were forced to add in cyclical dummies like euphoria and backswing, to account for apparently non-economic changes in popularity between elections. By stimulating the economy in the appropriate manner before an election, the “optimal” combination of unemployment/inflation on the Phillips curve could be attained. However, once inflation was induced into the system, this would trigger inflationary expectations and move the Phillips curve to the right.

As Brittan (1978) has observed,

over a run of political cycles the short term Phillips curve will drift upwards
... democratic myopia and economic time lags will land the economy with an excessive rate of inflation.

Indeed as the Phillips curve moved to the right the socially optimal combinations would result in fewer votes, and each incumbent government would find itself defeated. According to Goodhart and Bhansali, “a pure democracy, with all parties seeking to maximize public support, is doomed to increasing inflation and political disintegration.”

Further extensions by Nordhaus (1975), MacRae (1976) and Tufte (1978) postulated the existence of a political business cycle (PBC), in which government stimulates the economy near election time and then deflates to increase unemployment and bring inflation under some degree of control in preparation for the upswing at the next election.

These views have clearly been highly influential. The McCracken report to the OECD for example, put the blame for the high levels of inflation in 1973-4 on the bunching of elections in 1972 and the irresponsibility of governments in excessively stimulating their economies in 1971.

These models have been criticized from a number of different perspectives. Of course, it could well be the case that governments attempt to manipulate economic variables for political advantage, but find themselves unable to do so successfully because of events outside their control. However, the relationship between government popularity and economic variables appears to be extremely tenuous. Whitely (1979, 1984), on the basis of statistical analysis of poll data in Britain, has argued that government popularity is best modeled by a process of random fluctuation round a level which is itself

subject to external shocks. As he says,

[A] whole series of adverse events have to occur to change government popularity drastically for the worse. Public opinion is 'driven' by a series of on-off events which act like shocks to the system over time. The inertia of opinion ensure that when a government enjoys above average popularity, it will retain that position for several months. If adverse events make it lose popularity, it will in turn remain unpopular for several periods. In this way irregular cycles are generated but they have no substantive significance of a political nature (Whiteley, 1980).

To pursue this however, we have to leave the macro-political economic framework and consider individual responses to changing economic circumstance. Fiorina (1981) has used survey data to analyze these individual responses. He assumed "That in making a voting decision the citizen looks at the incumbent's performance, the alternative platforms of the incumbent and challenger, and (perhaps) imagines a hypothetical past performance term for the previous challenger." In his analysis Fiorina regressed voting behavior on party identification or PID (essentially a proxy for past individual evaluations), current comparative evaluations and future expectations. As he says, "Personally experienced and/or perceived economic judgments affect more general economic performance judgments, both types of evaluations feed into evaluations of presidential performance, and the more general judgments, at least, contribute to the modification of party identification."

Fiorina's micro-political economic analysis indicates that individuals behave in a rational way in using their own experience to interpret the political environment and to make evaluations of policy makers. Further research on the U.S. by Kiewiet (1983) makes it clear that individuals' personal experiences do matter, in that these affect evaluation of how an incumbent President is handling the situation. This, in turn, influences the way the individual votes. The importance of this observation is that personal experience is something unique to the individual, and thus one might reasonably expect "idiosyncratic" response to government behavior, in a sense of a weakening of the relationship between class and voting. This phenomenon of "partisan dealignment" has been noted in Britain. A related phenomenon is the considerable decline of electoral support for the two main parties in Britain, even though the political consequence of this has been reduced because of the operation of the electoral system (Clarke and Stewart, 1998; Clarke, Stewart and Whiteley, 1997, 1998).

With the decay of partisan voting, the variation in individual experience and evaluation of government policy is likely to be sufficient to produce a kind of instability compatible with Whiteley's interpretation of government popularity. Since individual learning is a continuous experience, the popularity of government could be expected to change fairly continuously, but in directions that are largely indeterminate. Recent work on Britain, Canada and the U.S. has focused on electoral response to the valence (or perceived competence) of party leaders. Clarke, Kornberg and Scotto, 2009; Clarke, Sanders, Stewart and Whiteley, 2004, 2006, 2009). Chapters 5 and 6 continue with this

research programme.

For the moment we note that there appears to be no stable relationship between macro-economic variables by themselves and government popularity. It is true however, that government behavior does appear to produce very different changes in unemployment and inflation rates in the United States, depending on whether there was a Democrat or Republican administration. Mueller (2003) estimates that unemployment rates dropped and inflation rates increased during Democrat administration (unemployment down by 1.9% and inflation up by 3.2% in 1960-1968; unemployment down by 3.5% and inflation up by 0.3% in 1992-2000). Since Democrat voters are likely to be more sensitive to unemployment increases, and Republican voters more sensitive to inflation. These observations are compatible with the electoral model presented below in Chapter 5. In that model, although individual preferences depend partly on the economic axis, on tax rates and the like, they also depend on voter perceptions about the policy declarations that candidates or party leaders make on social issues. Thus the electoral model of Chapter 5 would imply a weak relationship between macro-economic outcomes and government popularity, rather than the determinate relationship indicated by something like the Phillips curve.

The literature discussed above essentially concentrated on developed political systems, where interest focuses on the macroeconomic manipulation by government concerned with the results of infrequent elections. A separate research program has concentrated on the populist mode of government (Riker, 1982), generated by the rational self seeking behavior of political actors as they attempt to deliver "public goods" to particular constituencies. The classical justification of government was that public goods such as defense, etc., cannot, in general, be supplied by the competitive economy (Baumol, 1965). The point here is that a good which is to be supplied to all is subject to various forms of manipulation, the most obvious of which is the free-rider problem-the tendency of recipients of the good to disguise their desire for the good so as to avoid some or all of the costs of production (Olson, 1965).

However, very few of the activities of government are concerned with the provision of "pure" public goods, and even then public goods have associated private effects. For example, any public project (a dam, road, defense establishment or whatever) is likely to have geographically local effects on employment and factor costs, as well as more widespread general equilibrium effects. Since any government activity has some distributional consequences, Thurow (1980) is right in one sense to refer to the "zero sum society." While government activity is not entirely distributional, the conflicts of interest that are created are sufficient to bring about the instability effects mentioned above.

A number of authors have argued that political mechanisms, that are devised to deal with these public good conflicts, actually lead to an overprovision of the goods. The typical model has a political representative for each geographical constituency proposing a "pork barrel" project which if carried through, will benefit that particular constituency. The bundle of projects that are accepted are then paid for out of taxes levied on all. Formally this situation resembles a prisoner's dilemma, since each constituency will de-

mand “too much” of its local public goods, since it does not have to meet the full costs of production. If all projects are approved, then the outcome is socially non-optimal. However, to pass any single project a legislator has to logroll with others to form a winning coalition. The instability results, mentioned above, may lead to the inference that, in the absence of formal party discipline, anything can happen.

Weingast (1979) however, has argued that “universalist” coalitions of all, or nearly all, legislators are likely under certain conditions, and this assumption has been used to show the universalist coalitions will over provide public goods (Weingast, Shepsle, Johnsen, 1981). Similar arguments can be made that government intervention, in such areas as regulation and pollution control, is excessive. However without a determinate theory of logrolling based on a good equilibrium notion it is difficult to accept the logical basis of this argument. The second problem is that in the absence of any procedure to truly determine “society’s” preference it may as well be the case that public goods are under-provided. Indeed, Chapter 5 provides an illustration of how the Democrat and Republican parties in the United States are fragmented over some issues like immigration reform, which clearly is a public goods issue. Currently, in 2011, there is considerable conflict between, and within, the parties over the relevance of maintaining tax cuts in the context of an unemployment rate over 9%.

As GNP increases, one might reasonably expect a greater than proportional increase in demand for public goods, and therefore an elasticity of government expenditure with respect to national income in excess of one. Chrystal and Alt (1979) argued that one should examine this problem only with respect to public expenditure G , excluding transfers. In their analysis of the case of Britain they find the elasticity of G with respect to national income, I , was significantly less than one. They note for example that government income tends to fluctuate more widely than government non-transfer expenditure. In a many country analysis they found that the elasticity of G with respect to I was essentially unity.

In their original analysis of British government spending, Peacock and Wiseman (1961) suggested that there was a ratchet effect, with government expenditure increasing rapidly during wars, and remaining at a constant proportion to income between wars. Burton (1978) has contested this view and argued that the acceptance of Keynesian economics leads to an increasing budget deficit which was essentially politically motivated.

It is certainly true that government expenditure (G) as a percentage of GDP has tended to increase from an average of about 28% in 1960 in the OECD economies, to around 45% in 1996 (Mueller, 2003). As Table 3.1 has shown, individual countries show wide variation. In France, G/GDP rose from about 35% in 1960 to 53% in 2010, while in Britain the increase was from 32% to 43%. The United States had a very low ratios in 1960 (27%) rising to 34% in 2010. Government spending also tends to be correlated with government deficits. The budget deficit in France was about 1% of GDP in 1960 but 8.4% in 2010.

Although the budget was in surplus in the United States in 2000, an increase of government expenditure on defence from 4.3% of GDP in 1999 to about 7.5% in 2010,

and a decrease of tax revenue has led to an overall increase in government debt from 70% of GDP in 2000 to 117% of GDP in 2010. (These figures are discussed further in Chapter 4. Thus a relatively small shift in the pattern of government expenditure and income, induced by politically motivated tax cuts and military expenditure, can cause fiscal difficulty.

As mentioned above, general (economic) equilibrium theory supposes that “small” agents respond to prices parametrically and shows that with sufficient price flexibility the outcome will be Pareto optimal with all markets cleared. It is obvious that this is an unrealistic assumption, since industrial economies contain organized “interest” groups which behave strategically with respect to the rest of the economy.

The general model proposed by Olson (1982a) supposes that the interaction of these interest groups is essentially a prisoner’s dilemma in the following sense. A particular group, a trade union for example, will defend its interests by, say, pushing for higher wage rates or restricting the implementation of new technology to maintain employment for its members. Olson’s argument is that such a strategy, while rational for the group, is socially “irrational” in that it effectively reduces total social output in the long run. Government has a small role to play in Olson’s model, since government is viewed only as reacting to, or accommodating, these interest group strategies, by increasing the money supply and stimulating inflation. As Mueller (1982) has observed, economic ineffectiveness of this type is likely to lead to an intensification of distributional conflicts and thus to even more extreme socially irrational strategies.

Formally speaking, Olson’s argument is based on an assumption that, with the complex externalities (or external effects) that exist in a modern economy, group strategies that are permissible within a pluralistic economy cannot generally result in an “efficient” outcome. This conclusion depends however on the nature of the coalition structure that holds in the economy. As Olson (1982b) says:

interest organizations that are quite large in relation to the society of which they are a part, will “internalize” much of the benefit of any action they take in the interest of the society, or (more pertinently) much of the cost of any action they take that reduces efficiency, raises prices, or slows growth in the society.

This suggests that as the concentration of the interest group pattern increases from a purely atomistic one to a single centrally organized structure, the disparity between actual and socially optimal outcomes will widen first of all and then finally fall. Olson contended that those countries that have experienced a severe crisis—such as a defeat in war—will have weakened interest group structures, and therefore exhibit higher than average rates of growth.

An alternative form of analysis is to concentrate on the procedures by which interest groups can bargain together, to recognize the existence of externalities and thus ameliorate the socially harmful effects of non-cooperative strategies. Crouch (1982) for example concentrates on two important variables: consociationalism (or the degree to which bargaining and compromise dominates in the political arena) and centralization (of the trade union structure). (See also Lehmbruch, 1980, and Lipjhart, 1976.)

Consociationalism is a term used to describe a political system where there is a tendency for no single party to command a majority. Crouch's argument is that trade union centralization will occur either in the context of a consociationalist political system or in one where there is a dominant social democratic party that has been in office for considerable duration. In both cases there may exist the possibility for binding contracts between the trade union system and the political system. In Crouch's view, therefore, qualitative characteristics of the political system bring about an institutional framework in the economic system which is conducive to economic "efficiency." One could go further in following Mueller's suggestion and infer that economic "optimality" is in turn conducive to the maintenance of the consociationalist features of the political system.

Any collective action coalition is intrinsically unstable, but under certain favorable conditions cooperation may be possible. Suppose that a relatively large coalition has, for some historical reason, come into existence. If this coalition is sufficiently large vis-à-vis the economy, then it will be forced to internalize the social externalities of its actions. Moreover, the coalition may be able to bargain with other "smaller, non-cooperative" proto-coalitions and which coalesce into cooperative coalitions. The more rapidly the economy is growing, or the less pronounced the distributional features within the social economy, the easier is this bargaining process and the more readily may a corporatist or centralized coalition come into existence. The point is that there is a crucial "size" (determined by "productivity") for a coalition above which it will behave cooperatively. If economic growth slows down, then a cooperative coalition might suddenly fragment. Since its relative productivity declines, it is obvious too that the parliamentary coalition structure is of vital significance in this bargaining process. Although a fragmented parliamentary system may be relatively stable in good times, it is likely to become unstable in bad times.

Table 3.2 presents some data on duration of governments in twelve European polities (Laver and Schofield, 1998 [1990]). The effective number is a simple measure of the fragmentation of the legislature.¹⁵⁸ Because the electoral system is based on a method of proportional representation, government in these polities tends to be made up of a coalition of parties. Some of these polities have tended to have relatively short lived government.

¹⁵⁸Fragmentation can be identified with the *effective number* (Laakso and Taagepera, 1979). That is, let H_s (the Herfindahl index) be the sum of the squares of the relative seat shares and $ens = H_s^{-1}$ be the *effective number of party seat strength*. In the same way we can define *env* as the effective number of party vote strength using shares of votes.

Table 3.2. Duration (in months) of government, 1945–1987

| Country | Average duration | Effective number <i>ens</i> |
|----------------|------------------|--------------------------------|
| Luxembourg | 45 | 3.5 |
| Ireland | 39 | 2.6 |
| Austria | 38 | 2.2 |
| Germany | 37 | 2.9 |
| Iceland | 34 | 3.7 |
| Norway | 32 | 3.2 |
| Sweden | 28 | 3.2 |
| Netherlands | 27 | 4.5 |
| Denmark | 26 | 4.5 |
| Belgium | 22 | 4.0 |
| Finland | 15 | 5.0 |
| Italy | 13 | 3.5 |
| Average | 26 | 3.7 |

The theory of elections presented in chapters 5 to 10 suggests that polities based on proportional representation will tend to encourage the formation of many heterogeneous activist groups, linked to particular parties. These activist groups may exercise some degree of veto power, so that difficult policy choices (over such issues as protection, immigration and agriculture) may tend to be avoided. While this risk avoidance may be associated with somewhat lower growth when times are good, it can be a rational choice, when times turn bad. The cost is the difficulty of reaching agreement. “Globalization”, or the integration of the global market, has brought about the economic growth in the past but this very interconnectedness has deepened the chaotic aspects associated with the collapse of asset bubbles. We now face increasing market uncertainty, and even greater long-run uncertainty because of climate change and global terrorism. In such an environment, attempts at risk avoidance are probably rational. The converse strategy of policy makers in the United States, of accepting risk by acquiescing to global market forces, while simultaneously exercising unilateral military force, could lead to catastrophe.

A theme of this book is that the purpose of social choice theory is to provide a grand theoretical framework for designing human institutions. Chapter 4 argues that the theoretical work asserting that markets optimally aggregate preferences needs to be generalized to extend preference-based theories to include belief formation. A consequence of this change is that the theory is no longer purely axiomatic, but draws on insights about human behavior from other disciplines and empirical analysis of the role institutions play in determining beliefs. Chapter 4 also discusses recent attempts to determine the basis for moral beliefs.

In our view what gives rational choice theory coherence is precisely that it is an attempt to construct a grand theory of human behavior. That is to say, the theory is a conceptual framework through which to analyze the interplay and consequences of human

incentives within institutions. This may explain why, long before rational choice theory migrated from economics into political science, it had been used by the Marquis de Condorcet in late-eighteenth-century France to provide a framework for the design of good government and society.¹⁵⁹ A universal theory of human behavior should be equally applicable in either politics or economics. To assess the merits of rational choice theory, then, requires an understanding of how it has evolved, regardless of which discipline served as the site of the various stages of its evolution.

We shall argue that the primary motivation for practitioners of rational choice theory, in the course of its evolution since the 1950s, has been to create an integrated, empirical theory of market and polity that would serve the normative purpose of designing good institutions. It has become increasingly obvious that to create such a theory, it is necessary to understand how individuals form beliefs about empirical reality and how they act in response both to their normative preferences and their beliefs. As this theory evolved, it led to changes in our understanding of how to devise good political and economic institutions, inasmuch as the economists' equation of good with Pareto optimal no longer appeared adequate. Given that people's beliefs – their empirical models of the world, their private information, and so on – vary so much, the aggregation of people's preferences (or values) so as to achieve Pareto optimality could no longer be the normative basis for design. This realization has led to a return to Condorcet's original desire to evaluate human institutions as devices both to aggregate preferences and integrate beliefs.

We shall discuss in some detail below how only one component of Condorcet's concern, namely preference aggregation, was developed by economists, and particularly Kenneth Arrow (1951), in laying the foundation for a rational choice theory of political economy. Whereas the work in the tradition of Downs (1957) and Olson (1965) had the virtue of simplicity in construction and prediction, the more recent efforts have shown that the predictions of these preference-based models were not corroborated, in general, in the behavior of real polities.

In the following sections of this chapter we shall consider the various attempts to construct a closed (or consistent) preference-based theory of human behavior in both economics and politics and show, in each case, why there were logical reasons to extend the theory beyond preferences to beliefs. As the discussion proceeds, we hope to make it clear why the normative economic criterion of Pareto optimality began to appear less appropriate than the Condorcetian criterion of truth. We use "truth" as a shorthand for the property of a human institution to efficiently aggregate the dispersed information held by its individual members.

The earliest effort in this direction was Condorcet's demonstration that, among a

¹⁵⁹As mentioned in the Preface, the period 1759 to 1788 saw the publication of major works on "social design" in Britain and the United States as well as France. These include Adam Smith (1759, 1776), Condorcet (1785, 1795), and *The Federalist Papers* (1787). See Lasch (1991) for the notion of "progress" in Adam Smith. See also Commager (1977) for the influence of the French *philosophes* and Beer (1993) for the influence of Harrington (1656) and other British writers on the debate in the United States. We emphasized the importance of Condorcet's *Essai* of 1785 in Chapter 1.

jury judging the innocence or guilt of a defendant, a majority vote will more often be correct than the response of an average juror. As the size of the jury, or society, becomes very large, the probability that the majority will be right approaches unity. This theorem seems to justify democratic procedures for belief aggregation (of a certain kind) as optimal.¹⁶⁰ Below we shall mention attempts to derive analogous results for markets.

As rational choice theory has evolved, it has been obliged to become less axiomatic in structure. Indeed, the increasing emphasis on beliefs suggests that it will, of necessity, have to draw on insights from other behavioral sciences, including anthropology, linguistics, and psychology. Since the theory also includes the role of institutions in determining human choice, it is likely that there will be continuing interaction between empirical and theoretical research on this topic.

Let us amplify these remarks by briefly discussing how the rational actor theory employed by economists in the 1950s was later obliged to address larger questions of social choice that were anticipated by Condorcet.

Neoclassical economic theory can be viewed as the analysis of human incentives in a particular restricted context of fixed resources, private goods, and a given technology. As such, it is a theory of preference aggregation. The work of Arrow and Debreu (1954) and of McKenzie (1959) did assert, however, that, in this restricted context, the competitive price equilibrium would be Pareto optimal. In discussions of market behavior, economists often go on to assert (a claim that, as far as we know, is unproven) that only a competitive market can efficiently aggregate the diverse beliefs of the members of a heterogeneous economy. If this were true, then nonmarket, planned economies would be inadequate to the task of integrating the dispersed information that underlies these divergent beliefs.¹⁶¹

Since the difference between preferences and beliefs is important, but subtle, it is worthwhile briefly discussing how market institutions do aggregate beliefs. Foreign exchange markets, futures markets, financial markets, and so forth may seem to be driven by the preferences of buyers or sellers, but in truth the motivations of the agents are derived from their own private information and their expectations of commodity price movements. Rational expectations, or the convergence of agents' expectational beliefs, can be thought of as the appropriate type of truth in markets. However, this convergence in beliefs need not occur.¹⁶²

Thus, in an attempt to develop the analysis of human incentives, rational actor theory

¹⁶⁰As discussed in Chapter 1, the theorem assumes that the average juror probability of being correct exceeds one-half, and that the jurors' choices are made independently. Recent results by Ladha (1992, 1993) indicate that the independence condition may be weakened, yet still preserve the Condorcet Jury Theorem.

¹⁶¹See for example the "calculation" argument of von Hayek (1976). It should be noted that the recent collapse of the economic system of the USSR may be viewed as corroboration that such a system is, in the long run, not well adapted to the generation of technological innovation, one key aspect of information aggregation. This theoretical argument concerning markets is identical in form to the Condorcetian argument concerning democracy. Thus the underlying question is how, exactly, different political economies aggregate information.

¹⁶²Brian Arthur (1997) has recently shown the failure of models of rational expectations.

has been forced to go well beyond the preference-based study of private-goods markets. The intimate connection between preferences and beliefs has necessitated an attempt to reconstitute a general theory of rationality; this is exactly what game theory is about. Moreover, some goods are public, and jointly produced and consumed. Some such public goods (like technological innovation) may be produced and consumed within the economic system, but others, such as national defense and domestic security, are more traditionally created through the political system. Since one method of political choice is by some form of democracy, the need to extend the theory to public goods translates into a requirement to analyze democratic polities to determine not only preferences for such goods, but the incentives to produce them, given people's beliefs about others' willingness to pay for them. It should be noted here that the distinguishing feature of rational choice theory in its market-based form was its emphasis on the connection between preferences, equilibrium, and optimality. The attempt to enlarge the domain of the theory from economics to political economy retained these key concepts. Moreover, the non market institutions that constrain human behavior are obviously important for the way individuals construct their preferences and beliefs, and for the methods by which these are aggregated. The need to examine this question has become more important in the last few years, as research has attempted to model different political institutions. The general theme underlying this research has been, we believe, a desire to determine whether or not democratic political institutions are compatible, in some sense, with market efficiency.

A very extensive public choice literature, particularly in the 1970s and 1980 argued that democratic political choice was not compatible with market efficiency. The various arguments are too numerous to list here, but in general they asserted that democratic polities created the context for political rent-seeking that constrained economic growth. Indeed, political representatives were viewed as creating rents for themselves, with the consequence that government growth was accompanied by deleterious economic consequences. The debate is, of course, still being carried on, and it underlies many of the tensions that exist between the Anglo-Saxon polities of the United Kingdom and the United States and the member states of the European Union. The debate is even more intense in the the United States, between Republicans who intend to reduce the size of government, and Democrats who believe that government should ameliorate the effect of the market.

The public choice literature, while influenced by theoretical, rational choice models, was also directed at explaining empirical facts. This mix of theoretical and empirical reasoning we shall term positive theory. Since positive theory attempts to explain facts of the world, it must address questions of empirical corroboration or falsification.

Early positive attempts to apply economic theory were based on a model of market behavior which assumed that agents are completely characterized by their preferences, and that they respond non-strategically to prices. To some degree the inferences of this model have been corroborated in relatively simple situations. However, this preference-

based theory has had little success in either modelling choice under strong uncertainty¹⁶³ or explaining large-scale economic change over time.¹⁶⁴

More importantly, the attempt to use rational actor theory as a basis for macroeconomics has not been particularly successful. Although macroeconomics purports to describe the real economic world, it often appears to be a tower of Babel, populated by Keynesians, monetarists, supply-siders, etc. On the other hand, most macroeconomists would accept, in general terms, the postulates of microeconomic theory, and the notion of rationality in particular. The empirical weakness of microeconomics has not led economists to reject this theory, but rather has led them to attempt to develop more complex models of rationality.¹⁶⁵ As we have suggested above, the imperative for game theory has been to extend simple models based on preferences so that agents' beliefs are made more explicit.

Is political science more like macroeconomics or microeconomics? Political science is driven by the age-old problem of how we are to be governed. The Founding Fathers and particularly the authors of *The Federalist*, were concerned precisely with the normative problem of the proper form of government. We would go so far as to suggest that Hamilton and the other Federalists were rational choice theorists of a kind. To substantiate this we might mention the recent observation of Gordon Wood (1991: 264) that the Federalist notion of government rested completely "on the assumption that most people were self-interested and absorbed in their private affairs." Of course, the Founding Fathers did not engage in empirical political science, as we would understand the term "empirical" today. Nonetheless, they were men of practical reason who made intelligent guesses about the way self-interested individuals were likely to behave under different systems of government. As discussed in Chapter 1, Madison argued in *Federalist X* that

the greater number of citizens and extent of territory may be brought within the compass of Republican, than of Democratic Government; and it is this circumstance principally which renders factious combinations less to be dreaded in the former, than in the latter.

Not only does Madison essentially apply a Condorcetian¹⁶⁶ form of argument in *Federalist X*, but he distinguishes between opinions (i.e., beliefs) and passions (i.e., preferences).

If we distinguish the normative political theory of the Founders from the current study of American, comparative, and international politics, and if we call the latter political science as opposed to political theory, then it is true that political science is now predominantly empirical, just as macroeconomics is. This by no means entails that empirical political science is epistemologically superior in any way to political theory (whether normative or rational choice). Our own view is that if political science

¹⁶³See Denzau and North (1994).

¹⁶⁴See the discussion of the work by North et al. in Chapter 2.

¹⁶⁵See Rubinstein (1991), Kirman (1989, 2011), and Camerer (1999, 2003).

¹⁶⁶See also McLean and Urken (1992) and Urken (1991) for a different view on whether Condorcet influenced Madison..

focuses principally on empirical relationships rather than on the evaluation and design of government, then it is seriously wanting. An attempt within social choice theory to construct a normative basis for evaluation based on Pareto optimality will be discussed in the next section.¹⁶⁷

Although rational choice theory is predominantly a theoretical discipline, the work presented in the later chapters of this volume is concerned with empirical corroboration. The mix of problem-based concerns and empirical testing displayed by rational choice theory has contributed significantly to its increasing importance in political science.

While Arrow (1951) was concerned with the normative task of aggregating preferences, the problem addressed by both Downs (1957) and Olson (1965) was to use microeconomic tools to explore the provision of public goods through voting and collective action. Neither Downs's prediction (that, in two-party competition, the parties will tend to converge) nor Olson's claim (about the failure of collective action when private incentives are absent) have been empirically substantiated. The reason is that while both Downs and Olson focused on preferences, it is evident that elections and collective action situations are games that cannot be fully described without modelling the beliefs of the participants.

More generally, it is important to model the way agents form beliefs about other agents' beliefs, and thus their behavior. This is often described as the common knowledge problem. In our view, it is at the heart of an understanding of economic as well as political behavior, and indeed all collective action.¹⁶⁸

Preference-based models, whether of markets or elections, are relatively simple, with fairly clear predictions. Beliefs, on the other hand, are anything but simple: they involve, at the very least, some description of how people learn, update, and model the world they live in. Condorcet, known both for his work on the aggregation of beliefs (the so-called Condorcet Jury Theorem) and for work on the aggregation of preferences, was unable to combine these two modes of analysis. In his honor, we shall call the venture of developing an integrated model of politics that includes both preferences and beliefs the Condorcetian research program. In the next sections of the chapter we shall present our view of the evolution of the preference-based models (what we call the Arrovian research program, in honor of Kenneth Arrow) to incorporate beliefs.

¹⁶⁷Important work in normative political theory by Rawls (1970) and Gauthier (1986), etc., is influenced, to some degree, by social choice theory. See also Binmore (1994) for an attempt to base normative political theory in game theory.

¹⁶⁸See Schofield (1985a), Hinich and Munger (1994).

3.3 The Arrovian Research Program

Table 3.3: A Classification of Economic and Political Theories

| | Economics | Political Economy | Politics |
|-------------|----------------------|---------------------------------|----------------------------|
| Normative | Welfare economics | Social choice | Normative political theory |
| Theoretical | Market (equilibrium) | Game theory | Rational choice theory |
| Positive | Public economics | Public choice | Theory of institutions |
| Empirical | Macroeconomics | Institutional political economy | Political science |

Table 3.3 sets out our view of the relationships between the various branches of economics, political economy, and politics. As the table suggests, rational choice theory as applied to politics is only one among a number of different research activities, all characterized by their varying degrees of emphasis on the normative, the theoretical, the positive and the empirical.¹⁶⁹ The table is also meant to emphasize the close connections between game theory and the adjacent theoretical and positive subfields.

Market theory utilizes the idea of equilibrium to relate economic parameters (resources, preferences, technology) to an outcome or choice. Welfare economics and public economics (research fields that are subsidiary to market theory) are designed to address normative and positive aspects of the relationship between government behavior and the economy. Public economics deals with the appropriate relationship between government and the economy, while macroeconomics covers the empirical aspect of this relationship.

In an attempt to provide a formal basis for public finance and government, the economist must determine whether the domain of market theory can be enlarged to include non-market phenomena, such as preferences for public goods. Arrow took the first step in this program by asking if the preferences of the individuals making up a society could be aggregated to construct a measure of social welfare. Although his social choice theory addressed certain concerns that economists regard as essential, including the compatibility of the market and democracy, nothing about that theory restricts it to either welfare economics or political theory. Still, for an economist, the question of the compatibility of the market and democracy must be expressed in a formal language that is general enough to include economic theory.

Economic theory *circa* 1954 used assumptions on the preferences and resources of individuals to demonstrate the existence of a market equilibrium. To enlarge its theoretical language so as to model democracy, the nature of citizen preference was extended from private goods to public goods. However, the fundamental concept of preference had to be retained. Since the question involved the degree to which the

¹⁶⁹We distinguish here between empirical research and positive research. While the latter is based on theoretical arguments, it also attempts to make assertions about the empirical world.

market equilibrium result could be generalized, it was necessary to pose it in terms of the existence (or otherwise) of equilibrium.

Microeconomics adopts the postulate that individual preferences are consistent. However, a variety of consistency axioms can be adopted. The most restrictive one, common in microeconomics, is that each individual's preference can be represented by a (numerical) utility function. This strong assumption implies that both strict preference and indifference are transitive: if a and b are equally preferable, as are b and c , then so are a and c . The standard example of non-transitive indifference, however, is a cup of coffee with no sugar, which is "indifferent" compared to a cup with a single grain of sugar, to one with two grains, and so on, but not to one with a thousand grains. A weaker consistency assumption is that of the transitivity of strict preference, but not of indifference. Even weaker is the assumption of acyclicity: if a is strictly preferred to b , b is strictly preferred to c , c to d , and so on to x , then x cannot be strictly preferred to a . Acyclicity guarantees that an individual may always make a "choice," that is, select an alternative, such that if a is chosen, none of the other alternatives can be preferred to a .

While economic theory concentrates on preferences, it usually adopts the postulate that individuals' behavior will be given by their choices (if such exist). Where the outcomes are uncertain, or involve risk, behavioral predictions may associate a list of probabilities with the final eventualities. Theorists often assume that preferences under risk behave as if they were weighted by these probabilities. Yet it is entirely possible that real individual preferences in the presence of risk may fail acyclicity, leading to apparently "irrational" or inconsistent behavior (Kahneman and Tversky 1984). In our view the postulate of acyclic consistency is reasonable in the absence of risk, but is less tenable in its presence.

Rationality postulates combine with various structural assumptions about the nature of the economic system to yield an economic equilibrium that is Pareto optimal in the sense that no other allocation of resources is preferred unanimously. In the absence of a price mechanism, as in politics, rational choice theorists utilized the notion of the "core."¹⁷⁰ An outcome is in the core if no coalition of agents is able and willing to bring about a different state. The concept of a core was devised, in part, to cover situations involving public goods.

The genius of Arrow's result is that it suggests that, in general, a social utility function cannot be defined, negating the assumption that individual preferences could be aggregated so as to describe an optimal provision of public goods. In a sense, Arrow showed that the assumptions economists typically employ in modelling individual behavior are unlikely to hold where public goods are concerned. For while it is reasonable to assume that individuals prefer more rather than less of a private good, it is entirely possible that among them, individuals can have extremely complex preferences in the public domain. More of my public good may be more of your public bad. While we may want extensive military expenditure, you may loathe the military and prefer good schools, parks, environmental protection, and so forth. Since there is no obvious a pri-

¹⁷⁰This idea will be used in Chapter 7 to study legislative bargaining.

ori restriction on the possible set of public preferences that individuals may have, Arrow adopted the unrestricted domain assumption. That assumption allows each individual to have any preference, as long as it satisfies transitivity of both strict preference and indifference. Under this assumption, the only social rule that satisfies the unanimity condition must be dictatorial. More generally, any social utility that can be used to make social choices based on individual preferences must necessarily be dictatorial.

If preferences could be equated with utilities, then social utility could be obtained simply by summing individual utilities. But economists believe in general that interpersonal comparisons of utility are scientifically meaningless, since it is impossible to "extract" the information required to construct such comparisons. Certainly markets and voting mechanisms, when viewed as methods of preference aggregation, do not provide the means of obtaining such information. However, if markets and politics are modelled as devices for aggregating both preferences and beliefs, then it is possible that the negative inferences of the Arrow impossibility theorem could be avoided. As Arrow (1986) himself observed, before this could be attempted, it would be necessary to deal with the question of *common knowledge* – the foundation of our beliefs about the beliefs of others.

Duncan Black (1958) reintroduced Condorcet's work to a modern audience and thus contributed to the extension of preference-based theory to include the analysis of beliefs. Almost all the elements of what has come to be known as spatial voting theory are present in Black's *The Theory of Committees and Elections*. Just as Arrow had investigated whether individual preferences could be aggregated into a social utility function, Black investigated the possibility of equilibrium in voting systems. In this context an equilibrium is a point or outcome that is unbeaten (although it need not beat every other conceivable point). Suppose that three voters have distinct preferred points on a left-right political continuum, and that each voter has single-peaked preferences (preferences that are maximized at a single point). Then the middle (or median) voter's preferred point cannot be beaten under majority rule, where a majority requires two out of three. Black called this equilibrium a "majority motion" in his book. In more recent work, the voting equilibrium is known as the *core*.

Suppose now that the decision problem involves more than a single continuum. For example, preferences for social liberalism or conservatism might be independent from preferences for economic liberalism or conservatism. Under such conditions, even with single-peaked individual preferences, the likelihood of the existence of an equilibrium is negligible. As Black writes,

the conditions that must be satisfied before there can be any majority motion are highly restrictive. The frequency of occurrence as a fraction of the total number of cases possible . . . is infinitesimally small or 'practically zero' (Black 1958:139).

Indeed, Black seemed to equate cases without an equilibrium with the occurrence of cycles, so he apparently took it for granted that when there is more than one dimension to voters' preferences, voting cycles will occur. Economics postulates that any observed

behavior must express an actor's preference. A voting equilibrium, therefore, would be expected to manifest collective preferences. If there is no equilibrium, however, the theorist can make no behavioral predictions.

In the absence of a behavioral prediction based on preference theory, the natural step was to account for observed outcomes by modelling the way beliefs influenced behavior. To be more specific, it appeared plausible that the outcome would depend on the expectations of agents, their ability to bargain by making guesses about other agents' behavior, and so on. One of the important results in the purely preference-based theory of voting was that voting cycles could, in principle, go everywhere in the policy space. Yet this occurrence of theoretical indeterminacy or chaos did not necessarily imply behavioral chaos, since there existed no belief-based model about what voters would actually do in the context of theoretical chaos. Indeed, experimental work by Fiorina and Plott (1978) and by Laing and Olmsted (1978) seemed to demonstrate that coreless games do not produce markedly more unstable outcomes than do games with cores. The empirical work did suggest that a rational choice theory that incorporates beliefs should smooth out the difference between games with and without a core.

The work on theoretical voting chaos¹⁷¹ during the late 1970s induced a period of intense debate within rational choice political theory. Two of the protagonists in this debate, Riker (1980, 1982, 1986) and Tullock (1981), drew quite different conclusions concerning the significance of chaos results for the study of legislatures (see also the essays in Ordeshook and Shepsle 1982). Our own criticism of Riker and Tullock is more fundamental. Formally, the chaos theorems on which they drew apply only to committees, where there is some foundation for supposing the voters have well-specified preferences. It is not at all clear that representatives in a legislature can be assumed to have "preferences" that are similar in kind to the members of a committee. It may be intuitively plausible that each legislator seeks to provide certain kinds of "goods" to constituency members. But until the voter-legislator connection is modelled in detail, there is no formal rational choice basis for the study of a U.S.-style legislature.

Schofield (2008b) has argued however, that it is plausible that the models of committee voting are applicable to European-style legislatures involving well-disciplined parties. In particular, it appears reasonable to assume that party leaders in such legislatures do have preferred policy outcomes, and that they attempt to construct legislative majorities to implement these policies. There is an extensive empirical literature on coalition formation in European legislatures (Laver and Schofield 1990) and recent attempts to use rational choice theory in this context do produce empirical predictions that have been substantiated. One insight that comes out of this work concerns the possibility that a large non-majority party may form a minority government when its preferred point is at the core or equilibrium position in the policy space. In general legislative political games, however, there will be no core. Instead it is possible to extend the notion of the core to that of the "heart" (Schofield, 1999c). The heart is always non-empty and

¹⁷¹McKelvey, 1976, 1979; Schofield, 1977a, 1978, 1980, 1983; Cox 1984; Rubinstein, 1979; McKelevey and Schofield, 1986, 1987.

is continuous, in an appropriate sense, in all relevant parameters.¹⁷²

Rational choice theory also provides a logical framework within which to make some sense out of some well-established empirical relationships that have been noted in multiparty political systems. For example, as Table 3.2 suggests, the fragmentation of parliamentary systems into many small parties is highly correlated with government brevity in the European systems (Dodd 1976). It should be obvious that in the absence of a core or policy equilibrium, any government that does form may be defeated by another majority coalition with a counter-policy proposal. Thus a connection between political fragmentation and the remote probability of a core would give insight into macropolitical" relationships. In our view, the United States Congress is fundamentally different from European multiparty systems for a number of reasons.¹⁷³

There is a venerable tradition on the connection between proportional representation and political fragmentation (Duverger 1954). The empirical work by Taagepera and Schugart (1989), for example, provides a detailed examination of this connection. European polities in general use proportional representation and typically have more than two parties. Duverger (1954) and Popper (1945) argued that this tends to result in weak government. By the same token, there is some evidence that (plurality) systems based on single-member constituencies tend to produce two parties and thus a clearer electoral choice. The British electoral system, for example, which clearly is a plurality, or first-past-the-post arrangement, has always tended toward two dominant parties. While this is consistent with some rational choice models of elections, Duverger's argument, that small parties will wither away under plurality, is confounded by the continued presence of small British parties such as the centrist Liberal Democrat party in the United Kingdom. Indeed, this party became a member of the coalition government, with the Conservative Party, after the 2010 election.

On the other hand, although the United States is usually regarded as having a two-party system, its parties appear less disciplined, in general, than European-style parties. In particular, members of Congress are generally more heterogeneous in their voting behavior than one would expect within a European-style party system. The political science literature, from Duverger onwards, is even more inadequate in terms of the theoretical (rather than empirical) analysis of these relationships. Our own view is that the formal analysis of elections should start with a general conception of electoral laws and deduce facts about the number and nature of political parties.

There are two distinct classes of models of electoral competition. The first class assumes that voting is *deterministic*. That is, the candidates make promises and each voter picks a candidate depending on which promise the voter prefers. Within this class of models, policy blind models assume that the candidates gain no utility except from winning, and that they attempt, therefore, to gain the maximum number of votes. Just as in the committee model examined by Black, if the space of possible outcomes is one-dimensional, then two rational candidates will make the same promise, attempting

¹⁷²These notions of the core and heart will be used in Chapters 7 and 8 to study legislative bargaining in Israel, Turkey and Poland.

¹⁷³Chapters 6, 7, 8 and 9 set out the argument.

to occupy the point at the median voter position.

As an economist, Downs (1957) could be justified in viewing this as a solution to the equilibrium problem in political economy. From the perspective of public finance, two-party competition could be assumed to provide a "median" tax schedule which could then be used to cover the provision of the public good in question. Obviously, however, government provides more than one public good, so individual voter preferences must be described in more than one dimension. The results from the committee voting model imply that, in such cases, there will be no core. In other words, no matter what one candidate promises, an opponent can promise something else that will obtain a majority. From the perspective of non-cooperative game theory, the non-existence of a core means there is no pure strategy Nash equilibrium (PNE) in the two-candidate game.

The obvious theoretical response is to develop a more general notion than the core. Kramer (1978) showed that there will be a mixed strategy Nash equilibrium (MSNE) where candidates make ambiguous promises. The nice feature of the so-called *uncovered set* (McKelvey, 1986) is that the support of the MSNE will belong to this set. Thus, the political economist can assert that actual political outcomes will lie in the uncovered set. To some extent, at least, the theoretical problem of equilibrium is thus solved.

However, the motivation for this modelling strategy comes from economics, not political science. Its sole purpose is to solve the formal requirements of public economics, not to describe actual politics. Indeed, any model that predicts that candidates will make identical promises cannot be considered to have made any effort to characterize real politics. It was this realization, perhaps, that led Wittman to observe that "the research on formal models has been almost devoid of empirical content."

Wittman (1977, 1995), and others, have attempted to inject some political reality into the model by assuming the candidates are policy motivated, in the sense that the candidates' own policy preferences are reflected in the promises they make. A candidate may, for example, contract with a group of supporters to constrain his or her personal policy objectives in a certain way in return for campaign contributions. A policy-motivated candidate may find a way to be more credibly committed to supporters' objectives, and thus raise much greater campaign contributions, than a pure election-seeking candidate. In any case, the possibility of a trade-off between contributions and voting suggests that a PNE can exist where the candidates make quite different promises. The formal model of elections in the U.S., presented in Chapter 5, suggests that this is the case.

The second class of electoral models assumes that voters are *probabilistic* rather than deterministic. Once the candidate promises are made, a voter in the deterministic model chooses one of the candidates with certainty (except when the two candidates are identical in all respects). In the probabilistic model, on the other hand, the voter's behavior, after the candidate promises are known, is a random variable which is based on the voter's beliefs about the likely consequences of the choice. In particular, such beliefs should deal with the estimates each voter makes concerning the likelihood that the candidates will deliver on their promises.

The advantages of the probabilistic model are two-fold. First, if voter preferences and candidate promises (or positions) are known, then it is possible to model the voter

response econometrically. The early empirical work concentrated on two-candidate models (Enelow and Hinich 1984), but recent research, discussed in Chapters 5 to 11, has modelled multicandidate and multiparty competition (see also Schofield and Sened, 2006)).

It is important to note that the probabilistic model is continuous in voter and candidate positions, and the chaos theorems (mentioned above) do not apply. Because the total vote for each candidate is a random variable, it can be characterized by its expectation and variance. Probabilistic models typically assume “pure-election seeking” candidates who make promises to maximize their expected vote. The usual result in models of two-candidate competition is that there exists a PNE where both candidates propose the mean rather than the median position (Lin, Enelow and Dorussen, 1999; Coughlin 1992). This result solves the equilibrium problem of public economics very neatly.

However, there are a number of theoretical and substantive problems with this probabilistic model. Even policy-blind candidates make promises under risk, and the degree of risk depends not just on the expectation of voter response, but on the variance of this response. The models implicitly assume that the variance is independent of candidate positions, and this is untenable in the absence of a clear model of the formation of voter beliefs. The models also assume that each voter’s behavior is statistically independent of the others’. This is unwarranted for the same reason. More importantly, however, the conclusions of the model are not empirically substantiated. The analysis presented in Chapters 8 and 10 of elections in Poland, Israel and Turkey show the existence of a PNE where the parties cluster into various groups. In fact, all the parties maintained separate identities and declared quite different policies to the electorate.

We infer that a more realistic variant of the probabilistic model must assume that candidates, or parties, are policy motivated, at least to the extent of choosing positions that balance their policy and electoral objectives. As one would expect, the Nash equilibrium causes party leaders to make very different promises (Cox 1997).

Our observations about these models are intended to highlight the differences in the requirements of public finance and formal political theory. For public finance, the motivation is to extract predictions about political choice that can be used to evaluate the optimality of public decisions concerning taxation and public goods provision. The need to add greater political verisimilitude has obliged political theorists to address questions of belief formation (particularly regarding what voters believe the winning candidate will do after the election) and candidate commitment. From the perspective of public finance, the more refined model appears untidy and less parsimonious. The political theorist, however, faces the quite difficult task not just of comparing predictions with reality, but of evaluating how reasonable the assumptions about belief formation are. It is only recently that these belief-based models have been developed to a degree sufficient to offer plausible predictions.

We have tried to suggest, in this section on elections, why the simple unidimensional two-candidate model of electoral competition is both theoretically and empirically inadequate. On the theoretical side, the attempt to base the analysis purely on techniques

of preference aggregation has proved to be unsatisfactory. As we have implied above, Downs paid considerable attention to questions of risk or uncertainty in elections, but the formal techniques to address those problems were not available at that time. The observation that these simple models were also empirically unsatisfactory gives greater weight to the theoretical attempt to model both preferences and beliefs. In the next section, we shall attempt to enlarge the discussion about the nature of beliefs, and show the connection with Condorcet's Jury Theorem.

3.4 The Condorcetian Research Program

From the point of view of pluralistic political theory, no individual preference can be privileged over another. This could be taken to imply that no fundamental agreement may be reached among individuals who differ in their preferences. A Nash equilibrium in a game, or a voting equilibrium in a committee, specifies the nature of the compromise (rather than agreement) that individuals will accept given that they attempt to maximize what they prefer. In contrast to preferences, people with differing empirical beliefs about how the world works may come to agree with each other if they communicate and share information. Economists have recently attempted to model this process when beliefs are uncontaminated by preferences (Aumann 1976; McKelvey and Page 1986).

To some extent, political decision making is a matter of aggregating beliefs. Thus, while people may disagree about what action to take, debate may lead to an agreed solution. When two candidates offer differing courses of action (based on their own beliefs about the world), it is perfectly reasonable to suppose that the probability that a given voter chooses one candidate over the other is determined by the relative degree to which (s)he agrees with the two candidates' beliefs. From this point of view, the paradox of voter turnout does not exist, since voting is not based on the desire to implement one's preferences but on the attempt to ascertain the truth. Moreover, convergence of candidates to the same (Nash equilibrium) position is no longer a problem but a virtue, inasmuch as the equilibrium position is the one that has the highest probability of being correct, given the distribution of beliefs in the society. Thus the Nash equilibrium result solves the optimality problem for political-economic theory.

Admittedly, this argument depends on the validity of the Condorcet Jury Theorem, which in turn depends on the assumption of the statistical independence of voter behavior (see Ladha and Miller 1995). This assumption may not be warranted when votes are determined by voters' beliefs. Moreover, if the candidates or voters are policy motivated, their policy concerns will contaminate the process of belief aggregation. Similarly, parties strong enough to impose policy objectives on candidates will also contaminate this process. Nonetheless, since the empirical evidence suggests that party discipline in the U.S. Congress is weak, there may be a basis for inferring that successful congressional candidates at least approximate the belief optimum of their con-

stituents.¹⁷⁴

The Jury Theorem depends on beliefs that are, in turn, determined by the configuration of activist factions in the political economy. It should be possible, therefore, to use a more complex version of the theorem to resolve some of the questions raised by the Founding Fathers about the relationship between factions, institutional rules, and good government. On the other hand, the optimality question that formal democratic theory may now pose is whether institutional rules and legislators' and activists' private preferences will intrude on the formation of the outcome that best represents the diverse beliefs of the members of the society.

Pursuing these issues will require the development of rationality models that incorporate both preferences and beliefs. It is obvious that the interrelation between beliefs and preferences is fundamental in the context of social dilemmas. Olson's (1965) attempt to analyze the problem of collective action (including voluntary provision of public goods and voter turnout) adopted the simpler perspective of preference aggregation. In this context it is traditional to use game theory to model the situation, and indeed to describe it as a prisoner's dilemma.¹⁷⁵

The paradox of the n -person prisoners' dilemma, of course, is that the dominant or best strategy for each individual is to defect rather than cooperate. This inference was used as the basis for the argument that public goods would not be provided, or that interest groups would collapse in the absence of private incentives. Recent work has suggested that it is far too simplistic to infer that defection will always occur. One possibility is that a dominant player may bribe or persuade the other members of a group to form a cooperative coalition. These theoretical observations provide the basis for the positive literature on hegemony in international relations (e.g., Gilpin 1987). However, the possibility that cooperative coalitions can form entails that they may also collapse. Indeed, Richards (1990) has demonstrated the occurrence of chaos, or unpredictability, in the experimental prisoner's dilemma. More recent analysis has emphasized the importance of modelling the beliefs agents hold about the beliefs of others.¹⁷⁶ Because the analysis of an agent's choice necessarily requires a model of what the agent thinks others will do and why they will do it, analysis of the relationship between beliefs and preferences must deal with the common knowledge problem. In general this common knowledge problem comes down to whether or not the members of the society have similar knowledge structures: that is whether they hold similar views about how the world works.

While capitalism and democracy were initially viewed by rational choice theorists simply as methods of preference aggregation, the more recent work has had to view rational agents not simply as preference maximizers, but as rational modelers of other

¹⁷⁴ Chapters 5 and 6 present models of voting that shows how activists may affect the way that voter beliefs about the character traits presidential candidates in the US and political leaders in Great Britain.

¹⁷⁵ Hardin (1971, 1982), Taylor (1976), Axelrod (1980).

¹⁷⁶ There is now an extensive literature on a game theoretic analysis of the evolution of social norms. See Kreps, Milgrom, Roberts and Wilson (1982), Sugden (1986), Young (1993), Binmore (1993, 1998, 2005), Nyarko (1997), Bicchieri (1993, 2006), Aumann and Brandenburger (1995), Skyrms (1996), Gintis (2009a,b)

agents and the world in which they live. To model another agent means modelling how that agent models others. The problem of common knowledge is whether there can be a formal basis for this hierarchy of individual knowledge. Although the question of why voters vote or why soldiers fight may seem very similar from the point of view of preference-based game theory, no plausible understanding of their behavior can ignore voters' or soldiers' beliefs. In these two cases, the relationship between beliefs and preferences could, in principle, be very different. In the next Chapter we address some of the relationships between preferences and beliefs, and application of chaos theory to economics and climate.

Chapter 4

Models of the World and Society

4.1 Cultural and Linguistic Evolution

As the Arrovian and Condorcetian programs have intermingled over the last 50 years, two aspects of the resulting research program have become increasingly obvious. First, the attempt to extend closed, preference-based economic theory to the political economy has encountered a number of theoretical difficulties. The motivation of this economics program seems very similar in a sense to that of the Hilbert program of logically closing mathematics. Just as Gödel (1931) showed the Hilbert program to be impossible,¹⁷⁷ so, we believe, did Arrow demonstrate the inadequacy of the preference-based rational choice program.¹⁷⁸ A theory of rationality based on both preference and belief is likely to be open, both in the sense that it is not completely mathematized, but also in the sense that it incorporates non-rationalist or at least non-logical, aspects of thought and language.¹⁷⁹

Penrose (1994) makes a strong case that the Gödel-Turing problem forbids any purely formalistic or computational account of self-awareness. Penrose's argument suggests that there must be fundamental constraints on our ability to model our own behavior. However, we feel these constraints apply not only to theoretical work, but even more importantly to all empirical accounts of behavior.

As the inadequacy of the formalism of pure preference-based game theory is increasingly appreciated, we predict that the flow of ideas between the theoretical and empirical aspects of political economy will increase. This is already evident in attempts to relate the positive theory of institutions to empirical work in political economy. For example, while the work by North (1990, 2005) and North et al. (2009) on institutions and economic performance grew out of earlier empirical work in economic history (North 1981), it was also informed by the developments in game theory that

¹⁷⁷See Wang (1987) for a discussion of Gödel's work.

¹⁷⁸See Binmore 1993 and Schofield (1995b) for a discussion of connections between rational choice theory and the work of Gödel 1931 and Turing 1937. In fact, both the game-theoretic assumption that agents learn about their opponents and that they choose their best response have recently been shown to be incompatible because of the Turing halting problem. See Nachbar (1997, 2001, 2005) and Foster and Young (2001)

¹⁷⁹See Margolis (1987, 1993) for some interesting views on such a possibility.

we have mentioned above. Researchers on the positive aspects of political economy are increasingly aware of the way different institutions, whether economic or political, determine the “rules of the game” and thus the formation and maintenance of beliefs. This, in turn, can create the context for work of a predominantly empirical nature, but situated in political economies very unlike those of developed societies. Thus while political economy will retain the normative and theoretical focus of the Condorcetian and Arrovian research programs, it will also increasingly sustain empirical work of a truly comparative nature.

These remarks are to remind the reader that our ability to juxtapose theoretical and empirical analysis of human behavior is limited by the fundamental Gödel-Turing constraints on the consistency and completeness of self-knowledge. These theoretical observations attest to the following remark:

[T]he fundamental theoretical problem underlying the question of cooperation is the manner by which individuals attain knowledge of each others’ preferences and likely behavior. Moreover, the problem is one of common knowledge, since each individual, *i*, is required not only to have information about others’ preferences, but also to know that the others have knowledge about *i*’s own preferences and strategies. (Schofield, 1985b)

The early work by Hamilton (1964) and Trivers (1971) used arguments based on kinship and reciprocity to model cooperation in a small family or society.¹⁸⁰ Much work has been done recently on modelling the cultural or informational basis of cooperation. For example, Pinker and Bloom (1990) have pointed out that

humans, probably early on, fell into a lifestyle that depended on extended cooperation for food, safety, nurturance, and reproductive opportunities. This lifestyle presents extraordinary opportunities for evolutionary gains and losses. On the one hand it benefits all participants by surmounting prisoners’ dilemmas. On the other it is vulnerable to invasion by cheaters. The minimum cognitive apparatus needed to sustain this lifestyle is memory for individuals and the ability to enforce social contracts .

They argue that the logic of surmounting the prisoner’s dilemma provided the selection pressure for the evolution of language. Recent research suggests that there was a fairly rapid increase of technological and cultural efficiency somewhere between 30 and 60 KYBP, that led to a diaspora of humans out of Africa (Mellars, 2006).¹⁸¹ A plausible conjecture is that this cultural transformation was based on the coevolution of language and cultural techniques to avoid the costs of the prisoner’s dilemma. On the other hand, Choi and Bowles (2007) present a game theoretical simulation of altruism in prisoner dilemma like situations that seems to indicate that altruism-“benefiting fellow group members at a cost to oneself”- cannot be evolutionary stable. Choi and Bowles suggest, on the contrary, that altruism can co-evolve with parochialism-“hostility towards

¹⁸⁰See also Hamilton (1996, 2001); Trivers (1985).

¹⁸¹As in Chapter 2, we use KYBP to mean thousand years before the present.

individuals not of the same group.” (See also Bowles, 2006).

One obvious way that people can determine whether others are of the same or different group is whether they speak the same language. It seems quite clear that language tends to exhibit rapid evolution (Kenneally, 2007). In Chapter 2, we mentioned the argument by Anthony (2007) that all Indo-European languages evolved in a few thousand years from a single population originally inhabiting an area north of the Black Sea.

Putting these various ideas together suggests the hypothesis that altruism, together with parochialism, and language co-evolved. Within a single speech community, cooperation is enhanced by mutual intelligibility, but conflict between speech communities drives group competition and war.

Later in this chapter, we mention the argument by Calvin (1991, 2006) that human cultural evolution has been dramatically influenced by the chaotic climatic changes that have occurred since the end of the Ice Age, about 16 KYBP. At about 7.6 KYBP, the end of a mini ice age caused the flooding of the fresh-water Euxine Lake to create the Black Sea. This may have been the trigger for a flow of agricultural communities into Western Europe. Drought in the Aegean about 3.2 KYBP destroyed the Hittite empire in Anatolia and the Mycenaean late bronze age civilization. As we discussed in Chapter 2, the longevity of the Roman Empire may have been a function of the stability of the Mediterranean climatic or ecological zone from 2.3 KYBP to 1.6 KYBP. A climatic change around 1.6 KYBP (400CE) may have shifted this ecological zone and precipitated the movement of peoples into Western Europe, bringing the Roman Empire to an end.

The Medieval Warm Period, 900CE to 1200CE, tended to benefit Western Europe, and led, for example to the colonization of Greenland about 985CE. However, it also brought drought and collapse to the Mayan civilization (750CE to 1025CE) and the Mesa Verde, Chaco Canyon and Mimbres cultures in North America (1276-1299CE).¹⁸² A cold period, the little ice age, after 1200CE, brought widespread famine in Europe. It is also thought that this climate change contributed to the virulence of the black death about 1340CE.¹⁸³ After the end of the little ice age, about 1740CE, agricultural productivity started to increase. As we discussed in Chapter 2, this had important ramifications for the beginning of the industrial revolution. Even so, climatic oscillations caused poor harvests. In France in 1788/89, bread riots led to the dismissal of the director-general of the finances, Jacques Neckar, on July 12, by Louis XVI, and the storming of the Bastille a few days after.

We may reasonably call these climatic changes *chaotic* because they are caused by complex feedback loops, involving, among other things, the North Atlantic Oscillation, the El Nino Southern Oscillation and the Great Ocean Conveyer Belt. Fagan calls this the “dance of air and ocean,” the interaction of periodicities in the orbit of Earth, solar radiation, and deep ocean currents generated by the Coriolis force. Rapid transformations are possible in these dynamic systems, to the extent that they can become structurally unstable: a relatively small perturbation can induce a qualitatively very different

¹⁸²Diamond (2005).

¹⁸³See the various books by Fagan (1999, 2000, 2004, 2008).

system.

In our time, a small humanly induced increase in CO₂ concentration in the atmosphere could enhance the green house effect, inducing catastrophic collapses of the Greenland and Antarctic ice sheets. As we discuss later in this chapter, the Greenland collapse would turn off the Gulf Stream, freeze Europe and flood the low-lying land where great cities lie. Drought would cause massive fires in Asia and probably destroy the Amazon forest, causing further positive feedback and increased green house effects. The theoretical and empirical evidence strongly suggests that this threat to the survival of the human race is far more severe even than the threat of nuclear war in the last century. The problem is that we desire economic growth, and the most readily available energy sources to sustain this growth are oil and coal, whose use exacerbates the green house effect. Reliance on markets seems only to bring about chaos. As drought and famine occur throughout the world, attempts to deal with this global problem will become less and less effective. Indeed, it has been conjectured that climate change already contributes to the widespread stress and civil war currently seen in Africa (Miguel, Satyanath and Sergenti, 2004). Recent books by Khanna (2008) and Zakaria (2008) discuss aspects of the probably unpleasant world of the future. We shall be caught in the last and most terrifying prisoners' dilemma of all.

There are elements of the world and society, such as climate and the pattern of economic development, that are chaotic. This presents us with quandaries about how to make decisions with regard to the future. The most mathematical of our theories about society, namely general equilibrium, may also be deeply flawed, and we may need to think again about how to orchestrate our institutions to guard against risk.

Since chaos and uncertainty are inextricably linked, a discussion of varieties of chaos can suggest to us why the future is so uncertain, and perhaps provide a better understanding of how to deal with the externalities that we are currently imposing on future generations.¹⁸⁴ The rest of this chapter presents some recent notions about chaos as applied to the economy, to the heavens and to climate.

4.2 Chaos in the Market and the Heavens

4.2.1 The Market

John Maynard Keynes's work, *The General Theory of Employment, Interest and Money* (1936) was very probably the most influential book on economics in the twentieth century. *The General Theory* is, in a sense, a continuation of Keynes's earlier writing on the foundation of probability, completed in the period 1906 to 1914, and published eventually as the *Treatise on Probability* (1921). In the *Treatise*, Keynes was concerned

¹⁸⁴Indeed, according to Hawking and Mlodonow (2010), without a theory that builds on chaos and uncertainty, we will have no understanding of our future.

to construct a formal theory of probability defined as a degree of belief.¹⁸⁵ But he also wrote in a sceptical vein.

[T]he old assumptions, that all quantity is numerical and that all quantitative characteristics are additive, can no longer be sustained. Mathematical reasoning now appears as an aid in its symbolic rather than its numerical character. I, at any rate, have not the same lively hope as Condorcet, or even as Edgeworth, “Eclairer le Science morales et politiques par le flambeau de l’Algebre.”..

French philosophy of the latter half of the eighteenth century was profoundly affected by the supposed conquests of the calculus of probability in all fields of thought...It was under these influences that Condorcet evolved his doctrine of the perfectability of the human race.. The continuity of modern European thought may be illustrated by the reflection that Condorcet derived from Bernoulli, that Godwin was inspired by Condorcet, that Malthus was stimulated by Godwin’s folly into stating his famous doctrine, and that from the reading of Malthus on *Population Darwin* received his earliest impulse.¹⁸⁶

Macro-economics as it is practiced today tends to put a heavy emphasis on the empirical relationships between economic aggregates, while micro-economics emphasizes the logic of equilibrium and market efficiency. Keynes’ views, in the *Treatise*, suggest that he was impressed neither by econometric relationships nor by algebraic manipulation. Moreover, his ideas on “speculative euphoria and crashes” would seem to be based on an understanding of the economy grounded neither in econometrics nor mathematics alone, but in the qualitative aspects of its dynamics.

Schofield (1999) has argued that a dominant core belief, the *economic equilibrium hypothesis*, had won universal acceptance among policy makers in the aftermath of the chaotic events of the 1970’s. The International Financial Crisis of 1997-1998, involving Russia, Indonesia, Malaysia, and many countries in Latin America, indicated that the global economy faced a fundamental quandary derived from the realization that this core belief was wrong. A resolution of this quandary could be based on accepting that Keynes was correct in his understanding of the global economy. While commodities markets, governed by risk, might well display equilibrium, asset markets, governed by speculation, do not. For Keynes, asset markets display fundamental uncertainty. The earlier article argued that the events of the late 1990’s indicated that fundamental reform of international institutions was necessary to avoid chaos.

The crisis of 1997-1998 was followed shortly after by the collapse of the dot.com bubble. Figure 4.1 shows the magnitude of changes in the US stock market in the long period from the 1920’s to the present (the figure normalizes the changes by setting all peaks to unity). It is noticeable that the fall from a peak in the Dow of 11,723 on January 14, 2000, to its next low of 7,286 on October 9, 2002, was followed by a peak

¹⁸⁵The *Treatise* extended the arguments by Condorcet and Laplace, written over a hundred years before, and also provoked Popper’s rejection of induction. See Popper ([1935], 1992).

¹⁸⁶Keynes (1921:90). Here Keynes seems to accept Hume’s scepticism about the basis for probability. The *Treatise* also provoked Popper’s rejection of induction. See Popper 1992,[1935]).

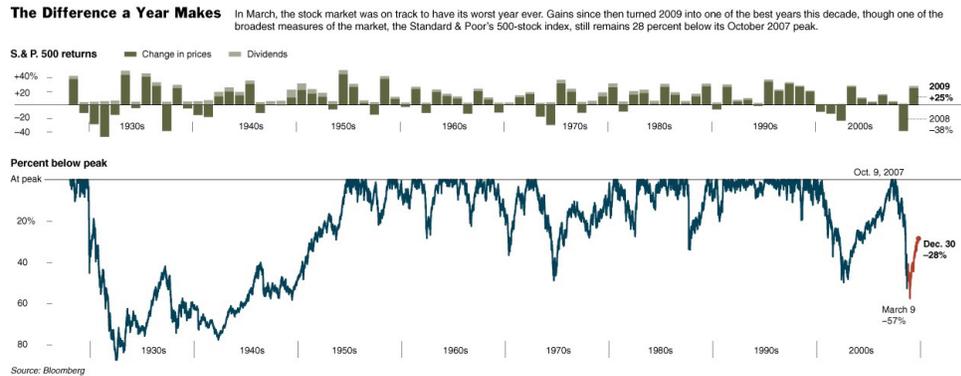


Figure 4.1: Chaotic stock market prices 1930-2009 (Source: New York Times, Dec 31, 2009)

of 14,164 on October 9, 2007. The next low was 6,547 on March 9, 2009. These violent oscillations are compatible with Hyman Minsky's theory of market volatility, based on Keynesian uncertainty. (Minsky, 1975, 1986). Minsky's argument is that periods of economic growth eventually lead to irrational beliefs about the degree of risk embedded in the market. Increasing risk taking leads to a bubble, and this eventually collapses when the true level of risk becomes apparent. Minsky's work therefore denies the core principle of market efficiency associated with the equilibrium hypothesis.

The collapse of the global property/housing bubble from late 2006 destroyed trillions of dollars of assets, not just in the US but worldwide, and almost destroyed the global market itself. Rapidly rising unemployment showed that disorder in financial markets could have real macroeconomic effects.

Many theories have been put forward recently to account for this bubble. One of these is that China's mercantilism meant that its purchases of dollar assets, to maintain its cheap currency, provided cheap money to US consumers, fueling the bubble and US economic growth.¹⁸⁷ While there is some truth to this argument, it does not provide a basis for understanding the periods of high and low volatility apparent from Figure 4.1.

In this chapter, we shall focus on the idea of chaos that underlies Keynes's arguments about uncertainty. To do this we shall first discuss the economic equilibrium and efficient market hypotheses. The idea of chaos first occurred in constructing models of the weather, climate and celestial mechanics, and we shall use such models to give an idea of what chaos is all about. In discussing climate, we shall argue that our civilization developed during a period known as the holocene. We conjecture that the prior period

¹⁸⁷Ferguson (2008).

of market stability resembles the holocene, and we should prepare ourselves for a future of increasing chaos. How we might defend against this future chaos will depend on building dynamical models of the economy and climate that are not based on false equilibrium arguments, but incorporate at least some of the complex feedback mechanisms that we now know govern our society.

First consider a thought experiment to about the global economy. There must be local periodicities due to climatic variation.¹⁸⁸ Since hurricanes and monsoons, *etc.* effect the economy, one would expect small chaotic events. More importantly, however, some of the behavior of economic agents will be based on their future expectations about the nature of economic growth, *etc.* Thus one would expect long term expectations to affect large scale decisions on matters such as investment, fertility *etc.*

It is evident enough that the general equilibrium (GE) emphasis on the existence of price equilibria, while important, is probably an incomplete way to understand economic development. In particular, GE theory tends to downplay the formation of expectations by agents, and the possibility that this can lead to unsustainable “bubbles.”

It is a key assumption of GE that agents’ preferences are defined on the commodity space alone. If, on the contrary, these are defined on commodities *and* prices, then it is not obvious that the Arrow Debreu Theorem can be employed to show existence of a price equilibrium.¹⁸⁹ More generally one can imagine energy engines (very like hurricanes) being generated in asset markets, and sustained by self-reinforcing beliefs about the trajectory of prices. It is true that modern decentralised economies are truly astonishing knowledge or data-processing mechanisms. From the perspective of today, the argument that a central planning authority can be as effective as the market in making “rational” investment decisions is very controversial. Hayek’s “calculation” argument used the fact that information is dispersed throughout the economy, and is, in any case, predominantly subjective. He argued essentially that only a market, based on individual choices, can possibly “aggregate” this information.¹⁹⁰

Recently, however, theorists have begun to probe the degree of consistency or convergence of beliefs in a market when it is viewed as a game. It would seem that when the agents “know enough about each other”, then convergence in beliefs is a possibility

In fact the issue about the “truth-seeking capability” of human institutions is very old and dates back to the work of Condorcet . Recent work suggests that there may be “belief cascades” or bubbles, which generate multiple paths of beliefs which diverge away from the “truth.”¹⁹¹

We have in mind a dynamical representation of the economy somewhere in between macro-economics and general equilibrium theory. The laws of motion of such an economy would be derived from modelling individuals’ “rational” behavior as they process information, update beliefs and locally optimize.

¹⁸⁸We shall discuss climate more fully below.

¹⁸⁹Arrow and Debreu (1954).

¹⁹⁰Von Hayek, (1945)

¹⁹¹This idea can be applied to chaotic social changes, such as the fall of the Iron Curtain or the onset of revolution. See Lohmann (1994) and Schofield (2006).

As Akerlof and Shiller argue,

the business cycle is tied to feedback loops involving speculative price movements and other economic activity — and to the talk that these movements incite. A downward movement in stock prices, for example, generates chatter and media response, and reminds people of longstanding pessimistic stories and theories. These stories, newly prominent in their minds, incline them toward gloomy intuitive assessments. As a result, the downward spiral can continue: declining prices cause the stories to spread, causing still more price declines and further reinforcement of the stories.¹⁹²

At present it is not possible to construct such a micro-based macro-economy because the laws of motion are unknown. Nonetheless, just as simulation of global weather systems can be based on local physical laws, so may economic dynamics be built up from the local “rationality” of individual agents. However, the GE models discussed in this chapter are based on the assumption that the political economic world is contractible, that is, it has the topological characteristic of a ball. This seems an unlikely assumption.¹⁹³ Although the total set of resources may well be bounded, it does not appear to be the case that technological possibilities are similarly bounded. Indeed, the Enlightenment argument between Malthus and Condorcet seems, at least in the developed world, to have been carried by the optimistic Condorcet. However, the less developed world, particularly Africa and parts of the Middle East, faces Malthusian constraints that engender economic and political disorder.¹⁹⁴ North (2005) argues that the growth of the developed world is due to its sophisticated institutions, what Kling and Schultz call “protocols,” namely the social ability to solve social and economic problems.¹⁹⁵

Although we might have reason to be optimistic about technological advance, recent economic events have caused concern about the validity of current economic theory. Since our social protocols are crucial to our society, it is imperative they they work in an efficient manner. This concern has led to an extensive literature, in the last few years, dealing with the efficiency of our market protocols, the theory of efficient markets. This literature discusses the nature of herd instinct, the way markets respond to speculative behavior, the power law that characterizes market price movements and the cause and effect of such financial crises.¹⁹⁶ Some of these analysis are based on a version of the market equilibrium theorem. In fact, much of the work on efficient markets is based on the Black-Scholes partial differential equation used to price options.¹⁹⁷ The recent collapse of the economy suggests that this equation is subject to chaotic singularities,

¹⁹²Akerlof and Shiller (2009). See also Akerlof and Kranton (2010).

¹⁹³See Krugman (2009), for a recent argument that the assumptions of economic theory are unrealistic.

¹⁹⁴See Condorcet (1955 [1795]), Malthus (1970 [1798], [1830]), and the discussion in Chapter 1.

¹⁹⁵King and Scultz (2009) and Stiglitz (2010)

¹⁹⁶See, for example, Mandelbrot and Hudson (2004), Shiller (2003, 2005), Taleb (2004, 2007), Barbera (2009), Cassidy (2009), Fox (2009), James (2009), Tett (2009), Roubini and Mihm (2010).

¹⁹⁷Black and Scholes (1973). We shall argue below that this equation is structurally similar to the Ricci flow equation in celestial mechanics, and can be regarded as a method of computing the “geodesic” of the financial economy.

whose qualitative nature is not understood.

As discussed above, Minsky's interpretation of Keynes's general theory focuses on the proposition that asset pricing is subject to an extreme degree of uncertainty. The underlying idea is that individuals do not know the true probability distribution on the various states of the world, but only have personal probability distributions, in the sense of Savage (1954). They make stochastic choices on the basis of this personal uncertainty. Agents may also differ widely in how they treat "black swan" low probability events. Since investment decisions are based on these uncertain evaluations, and these are the driving force of an advanced economy, the flow of the market can exhibit singularities, of the kind that recently nearly brought on a great depression. These singularities are time-dependent, and can be induced by endogenous belief-cascades, rather than by any change in economic or political fundamentals.¹⁹⁸

More abstractly, the space in which economic and political behavior occurs may be thought of as a "manifold" of very high dimension. While GE asserts that there are "equilibria", these will depend on the dynamical domain in which they are defined. These domains are separated by singularities, where the qualitative nature of the system may be radically transformed. To illustrate this point by the stock market, shown above in Figure 1, the flow does not look like a slowly changing equilibrium, responding to exogenous changes in population and resources. A period of relative stability, or low volatility, as in the 1990's, would give a false impression of risk prior to the singularity in 2000. This stable period was followed by collapse, then euphoria, then by collapse again, then the current partial recovery. The period of disorder associated with such a singularity we can call "chaos."¹⁹⁹

Discovery of Chaos "Empirical chaos" was probably first discovered by Lorenz (1963, 1993). He found that slight changes in the coefficients of a simple system, with three variables and three parameters, used to model the weather, gave rise a qualitatively different dynamical process. Figure 4.2 gives a pictorial representation of the dynamical system he found, the so-called "butterfly."

Given that chaos can be found in such a simple meteorological system, it is worthwhile engaging in a thought experiment to see whether "climatic chaos" is a plausible phenomenon. Weather occurs on the surface of the earth, so the spatial context, or "geosphere," is the two-dimensional sphere, the surface of the earth, $S^2 \times I$, where I is an interval corresponding to the depth of the atmosphere. Purely theoretical arguments show that a certain kind of dynamical system on $S^2 \times I$ will exhibit a singularity. For example, the impact of different weather systems can be seen as a singularity. But the effect of their impact will often be indeterminate.

The system of plate tectonics occurs in the "lithosphere" also in $S^2 \times I$, so volcanoes can also be seen as singularities. Earthquakes and volcanoes on the tectonic boundaries are locally chaotic because of the non-linearity of the dynamical system that governs

¹⁹⁸All of these ideas are present in Keynes's work, especially as interpreted by Minsky.

¹⁹⁹See for example, Boldrin and Woodford (1990)

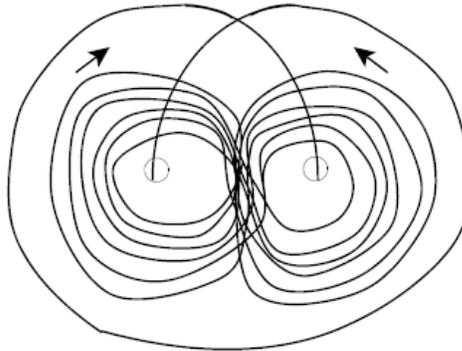


Figure 4.2: The “butterfly”

their behavior.²⁰⁰ The domain of the dynamical system near a singularity can be called a portal, and it is within a portal that the dynamics becomes chaotic.

Climate is affected by temporal periodicities, induced by the orbit of the earth round the sun and wobbles in the earth’s rotation.²⁰¹ In addition there are spatial periodicities or closed orbits in the geosphere. Chief among these must be the jet stream and the oceanic orbit of water from the southern hemisphere to the North Atlantic (the Gulf Stream) and back. The most interesting singularities are the hurricanes generated each year off the coast of Africa and channeled across the Atlantic to the Caribbean and the coast of the U.S.A. Hurricanes are self-sustaining heat machines that eventually dissipate if they cross land or cool water. It is fairly clear that their origin and trajectory is chaotic. While the topological structure of the geosphere allows us to infer the existence of a singularity, understanding weather, and more generally, climate itself, involves the analysis of an extremely complex dynamical system that is affected by periodicities in the solar system. We now turn briefly to the notion of structural stability or chaos in the heavens.

4.2.2 The Heavens

When Galileo Galilei turned his telescope to the heavens in August, 1609, he inaugurated the modern era in science. In his *Sidereal Messenger* he wrote of the myriad stars in the milky way, the moons of Jupiter, each at a different period and distance from Jupiter. Jupiter’s moons suggested it was a planet just like the earth. Moreover the

²⁰⁰For example, the earthquakes in Haiti on January 12, and in Chile on 27 February, 2010, as well as the eruption of the Eyjafjallajokull volcano in Iceland in April, 2010, were completely unpredictable.

²⁰¹We discuss celestial and climatic chaos below.

phases of Venus also suggested that it was a planet orbiting the Sun. These observations, together with Kepler's empirical "laws" on planetary orbits made it clear that the Copernican heliocentric model of the solar system was not just a mathematical theory but a truth. Galileo waited 22 years before publishing *Dialogue concerning the Two Chief World Systems, Ptolemaic and Copernican*, for fear that he would be accused of heresy by the Church. Indeed, in 1633, he was found guilty of "vehement suspicion of heresy" and spent the years until his death under house arrest, but writing *Two New Sciences* (1638). Within fifty years Newton published *Philosophiae Naturalis Principia Mathematica*, giving a mathematical model of physical reality, including celestial mechanics that provided the theoretical foundations for Kepler's Laws.²⁰²

Even with the Newtonian mathematical model, it was unclear whether the solar system was "structurally stable". Although it was possible to compute the orbit of a single planet round the sun, the calculation of the influence of many planets on each other seemed technically difficult. Could these joint influences cause a planet to slowly change its orbit, perhaps causing it to spiral in to the sun? Structural stability for the orbital system of the planets means that the perturbations, caused by these interactions, do not change the overall dynamic system. The failure of structural stability means that a slight perturbation of the dynamical system induces a change in the qualitative characteristics of the system. As in the previous discussion, we can use the term "chaos" to refer to this breakdown.

It is only in the last twenty years or so that the implications of "chaos" have begun to be realized. In a recent book, Kauffman (1993) commented on the failure of structural stability in the following way.

One implication of the occurrence or non-occurrence of structural stability is that, in structurally stable systems, smooth walks in parameter space must [result in] smooth changes in dynamical behavior. By contrast, chaotic systems, which are not structurally stable, adapt on uncorrelated landscapes. Very small changes in the parameters pass through many interlaced bifurcation surfaces and so change the behavior of the system dramatically..

It is worth mentioning that the idea of structural stability is not a new one, though the original discussion was not formalized in quite the way it is today. The laws of motion written down by Newton in *Principia Mathematica* could be solved precisely giving a dynamical system that for the case of a planet (a point mass) orbiting the sun. However, the attempt to compute the entire system of planetary orbits had to face the problem of perturbations. Would the perturbations induced in each orbit by the other planets cause the orbital computations to converge or diverge? With convergence, computing the orbit of Mars, say, can be done by approximating the effects of Jupiter, Saturn perhaps, on the Mars orbit. The calculations would give a prediction very close to the actual orbit. Using the approximations, the planetary orbits could be computed far into the future, giving predictions as precise as calculating ability permitted. Without convergence, it

²⁰²Galileo Galilei (1967 [1610],1992,[1632]), 1974 [1638]), and Newton (1995 [1687]).

would be impossible to make predictions with any degree of certainty. Laplace in his work *Mécanique Céleste* (1799-1825) had argued that the solar system (viewed as a formal dynamical system) is structurally stable (in our terms).²⁰³ Consistent with his view was the use of successive approximations to predict the perihelion (a point nearest the sun) of Haley's comet, in 1759, and to infer the existence and location of Neptune in 1846.

Structural stability in the three-body problem (of two planets and a sun) was the obvious first step in attempting to prove Laplace's assertion. In 1885 a prize was announced to celebrate the King of Sweden's birthday. Henri Poincaré submitted his entry "Sur le problème des trois corps et les Equations de la Dynamique." This attempted to prove structural stability in a restricted three body problem. The prize was won by Poincaré although it was later found to contain an error. His work on differential equations in the 1880s and his later work, *New Methods of Celestial Mechanics* in the 1890's, developed qualitative techniques (in what we now call differential topology).²⁰⁴ The Poincaré conjecture, that "a compact manifold, with the same algebraic invariants as the three-dimensional sphere, is indeed a three sphere" was one of the great unproven theorems of the twentieth century. The theorem has recently been proved by Grigori Perelman.²⁰⁵

The earlier efforts to prove this result has led to new ideas in topological geometry, that have turned out, surprisingly, to have profound implications for a better understanding of general relativity and the large scale structure of the universe. Our physical universe is a three dimensional manifold, probably bounded and thus compact. The Ricci flow on this manifold is given by a certain partial differential equation. This equation is a way of characterizing the curvature of geodesics on this manifold. The equation has a deep relationship with the topological structure of the universe. Perelman's proof depends on understanding the nature of singularities associated with this equation.

One of the notions important in understanding structural stability and chaos is that of *bifurcation*. Bifurcation refers to the situation where a particular dynamical system is on the boundary separating qualitatively different systems. At such a bifurcation, features of the system separate out in pairs. However Poincaré also discovered that the bifurcation could be associated with the appearance of a new solution with period double that of the original. This phenomenon is central to the existence of a period-doubling cascade as one of the characteristics of chaos. Near the end of his *Celestial Mechanics*, Poincaré writes of this phenomenon:

Neither of the two curves must ever cut across itself, but it must bend back upon itself in a very complex manner ...an infinite number of times.... I shall not even try to draw it...nothing is more suitable for providing us with an idea of the

²⁰³ See Galison (2003).

²⁰⁴ Poincaré (1993)

²⁰⁵ O'Shea (2007). Perelman recently won a million dollar Millenium prize for his theorem from the Clay Mathematics Institute. For an outline of Perelman's result see Morgan and Tian, (2007).

complex nature of the three body problem. (Galison, 2003:74)

Although Poincaré was led to the possibility of chaos in his investigations into the solar system, he concluded that though there were an infinite number of such chaotic orbits, the probability that an asteroid would be in a chaotic orbit was infinitesimal. Arnol'd showed in 1963 that for a system with small planets, there is an open set of initial conditions leading to bounded orbits for all time.²⁰⁶ Computer simulations of the system far into time also suggest it is structurally stable. This property of the solar system was a necessary condition for life to have evolved on Earth. Even so, there are events in the system that affect us and appear to be chaotic (perhaps catastrophic would be a more appropriate term).²⁰⁷ It is certainly the case that the “N-body system” can display exceedingly complex, or chaotic phenomena (Saari and Xia (1985).

Although space is three dimensional, the Einsteinian universe also involves time, and the behavior of geodesics near space-time singularities may also be very complex.²⁰⁸ The point of this discussion about celestial mechanics is that we know the Newtonian laws of motion, but even these relatively simple laws generate phenomena that can defeat prediction. Analysis under the more complex Einsteinian laws of motion become even more difficult. The Black-Scholes partial differential equation, which we referred to above, can be seen as the analogue of the computation of the geodesic in cosmology. Once we have rejected the notion that the economy seeks equilibrium, then we are obliged to accept the real possibility of singularity and chaos in its behavior.

As a result of his research in celestial mechanics, Poincare (1908) was led to the realization that any deterministic system could, in principle, be chaotic. As he wrote:

If we knew exactly the laws of nature and the situation of the universe at the initial moment, we could predict exactly the situation of that same universe at a succeeding moment. [B]ut even if it were the case that the natural laws had no longer any secret for us, we could still only know the initial situation approximately. If that enabled us to predict the succeeding situation with the same approximation, that is all we require, and we should say that the phenomenon had been predicted, that it is governed by laws. But it is not always so; it may happen that small differences in the initial conditions produce very great ones in the final phenomena. A small error in the former will produce an enormous error in the latter. The meteorologists see very well that the equilibrium is unstable, that a cyclone will be formed somewhere, but exactly where they are not in a position to say; a tenth of a degree more or less at any given point, and the cyclone will burst here and not there, and extend its ravages over districts it would other-

²⁰⁶See Arnol'd (1963) and Message (1984).

²⁰⁷Like the comet Shoemaker-Levy 9 which collided with Jupiter in 1994.

²⁰⁸See the discussion of space-time singularities, such as black holes, in Hawking and Ellis (1973) and in Penrose (2003). Penrose (2011) discusses the possibility of a chaotic portal to a singularity as suggested by the Belinsky-Khalatnikov-Lifshitz conjecture.

wise have spared... Prediction becomes impossible, and we have the fortuitous phenomenon.²⁰⁹

Poincaré's argument even holds in the very long run for the solar system. Current simulation can estimate all planetary orbits forwards and back for about 5 million years, the *horizon of predictability*. These simulations of the solar system suggest that perturbing the initial conditions of the system can lead to growing changes in the planetary orbits (Thuan, 2001).

We now turn to the possibility of chaos in climate, and its influence on humankind.

4.3 Climate and Evolution

The impact of large asteroids may have a dramatic effect on the biosphere of the Earth, and these have been suggested as a possible cause of mass extinction. The onset and behavior of the ice ages over the last 100,000 years is very possibly chaotic, and it is likely that there is a relationship between these violent climatic variations and the recent rapid evolution of human intelligence.²¹⁰

More generally, evolution itself is often perceived as a gradient dynamical process, leading to increasing complexity. However, Gould has argued over a number of years that evolution is far from gradient-like: increasing complexity coexists with simple forms of life, and past life has exhibited an astonishing variety. Evolution itself appears to proceed at a very uneven rate, and Gould used the term "punctuated equilibrium" to refer to these singularities that differentiated domains of evolutionary volatility.²¹¹

By analogy with the use of the term *singularity* in celestial mechanics, we shall use it to refer to a "gate" or portal between qualitatively different dynamical systems. To illustrate, although topology asserts that there are singularities in a flow on the geosphere, as described above, it is necessary to use chaos theory in an attempt to understand the creation of a hurricane or an earthquake. The same point holds more generally for any attempt to model the qualitative changes that can occur in weather and climate.²¹²

The Holocene One of the concerns about climate is that it may exhibit complex singularities. For example, the spatially periodic, oceanic flow of water, including the Gulf stream, has switched off, and then on again, in the past. These switches can be interpreted as singularities that have caused catastrophic changes in climate, and have, in turn, been caused by subtle changes in the underlying periodicities of the system. Since the end of the last ice age, during the period of the *holocene* of the last twelve thousand years, humankind has benefited from a structurally stable and mild climate

²⁰⁹Poincaré (2007 [1908]:68).

²¹⁰Calvin (1991, 2008).

²¹¹See Eldridge and Gould (1972, 1977), Gould (1980, 1989), and also the statistical analysis in Hunt (2007).

²¹²Sometimes climate does hit an equilibrium, when the planet becomes an ice ball. It only escapes such an equilibrium because of tectonic activity. See Macdougall (2004).

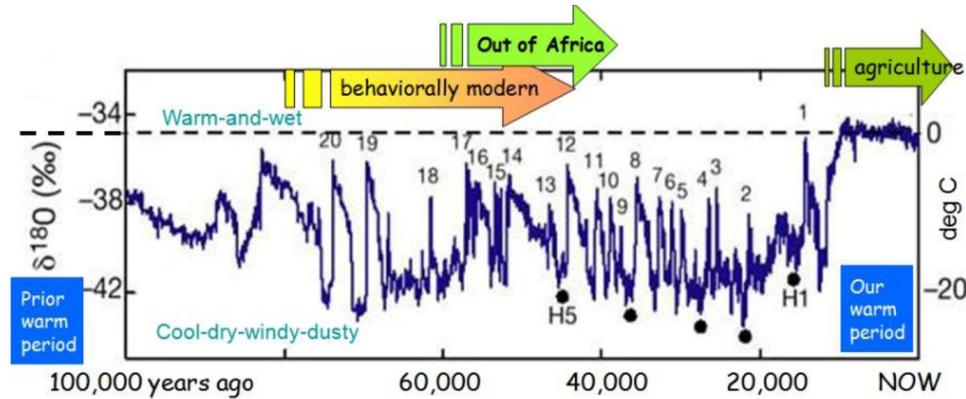


Figure 4.3: Climate 100KYBP to now: chaos from 90KYBP to 10KYBP (Source: Global-Fever.org).

domain, conducive to agriculture. Figure 4.3 shows average global temperature for the last 100K years, taken from Greenland ice cores. There is a singularity about 90K years ago, then a long chaotic period of about 80K years, and then a singularity about 12K years ago, leading to the holocene. Just before the holocene, there was a brief ice age, the “Younger Dryas,” lasting approximately 1,300 years, from about 12.8KYBP to 11.5KYBP. Broecker (1997, 2010) describes how the global climate “flickered” in a particularly chaotic fashion, over periods of between 5 and 45 years, just before passing through the singularity that heralded the Holocene.²¹³ Richerson, Boyd and Bettinger (2001) argue that, before the holocene, agriculture was impossible because rapid climatic variations hindered the experiments that are the precursor to agriculture. About 15KYBP intensive foraging was underway in the Near East, but it was only at about 11.5KYBP, at the beginning of the Holocene, that agriculture started. For reasons suggested by Diamond (2005), agriculture was delayed until about 5.7 KYBP in Mexico and about 5.2 KYBP in the Andes. Once agriculture started in the Near East, it diffused quite rapidly, reaching Europe about 7KYBP.

The dynamical system of the “biosphere”, the whole system of life on Earth, is so intertwined with that of the geosphere and the celestial system that computer-based quantitative analysis can only hint at the connections. As we noted above, the earth’s climate is affected by periodicities in the rotation of the Earth, as shown in Figure 4.4, as well as by the oscillatory behavior of the Solar irradiation (with an eleven year sunspot cycle). The celestial cycles are associated with the *eccentricity* of the orbit (with a pe-

²¹³There was also a very brief ice age about 8,200 years before the present.

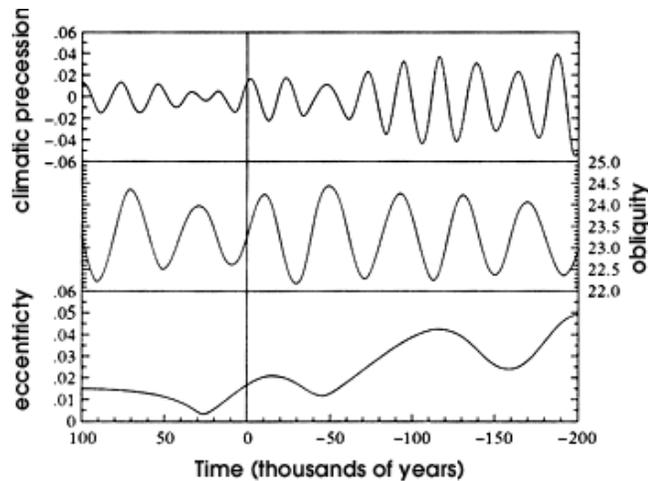


Figure 4.4: Oscillations in precession, obliquity and eccentricity

riod of order 95,000 years), the Earth's tilt or *obliquity* (with a period of about 41,000 years), and *precession* (of period about 26,000 years). The current obliquity of Earth is 23° , and as the figure shows, obliquity stays with a range of 22.5° to 24° . This is due to the Moon's stabilizing effect.²¹⁴ Without the moon, the obliquity would range much more widely, and life on Earth would be much more precarious (Ward and Brownlee, 2000).²¹⁵ The changes in eccentricity are due to the perturbations on Earth's orbits induced by the other planets. See Hays, Imbrie and Shackleton (1976) for a discussion of the work of Milutin Milankovitch, who first hypothesised that these "celestial" oscillations affected climate. See also Hansen (2009) for the resulting correlated changes in temperature, CO_2 concentration and sea-levels over the last 400 thousand years induced by these celestial oscillations.

As Figure 4.4 illustrates these oscillations are periodic and non-chaotic in themselves. However, their interactive effect on the Earth can induce transformations in climatic behavior that are chaotic over certain domains. Clearly the oscillatory celestial events, as illustrated in Figure 4.4, cannot, by themselves, account for the climatic behavior presented in Figure 4.3. In other words there may be two entirely different domains, a stable one like the holocene, and a chaotic one, like the period just before the holocene. In addition, exotic celestial events, like the collision with the asteroid, 65

²¹⁴Thuan (2001) notes that many of these fortuitous aspects are purely contingent. The Moon is the result of the Earth's impact with a large asteroid over 4 billion years ago.

²¹⁵See Fagan (1999, 2008) and Diamond (2005) on the Medieval Warm (800 CE to 1300 CE) and the Little Ice Age (1300 CE to 1850 CE).

million years ago, can induce major singularities and flip the biosphere into a different domain. See Luis Alvarez et al. (1980) for this most recent mass extinction. See also Benton (2003) for the much more severe Permian mass extinction about 250 million years ago. It is believed that extensive volcanic activity released enormous amounts of CO₂ and chlorine, causing a runaway greenhouse effect. The effect was further stimulated by the melting of frozen gas hydrates, and led to a global 6 degree Celsius rise in temperature. About 90% of all species became extinct. Since the “ice-ball” extinction of 700 million year ago, there have been six major mass extinctions (Ward and Brownlee, 2000).²¹⁶

It is increasingly understood that the dynamics of the geosphere and biosphere interact through multiple feedback mechanisms. Over the very long run, these mechanisms are influenced by plate tectonics (Broecker, 1985). In the shorter run, the melting of the ice caps resulting from a temperature change modifies their albedo, reflecting less heat energy, further raising world temperature, increasing oceanic volume, affecting forest evapotranspiration as well as the global algae populations. The oceanic conveyor (and thus the Gulf Stream) can, and has, shut down. Methane can be liberated from deep ocean domains and from land, due to the decay of permafrost. Cloud formations may change as the weather system is transformed, and intense families of hurricanes spawned in the oceans. All these possible changes are deeply chaotic because they involve fundamental transformations in the nature of the balance between our civilization, the oceans, the land and the atmosphere.²¹⁷

It is now well established that even relatively small changes in climate, over the last few thousand years, have had profound effects on our civilization, the *anthrosphere*.²¹⁸ Over the longer run of 100K years, our rapid evolution was the consequence of the chaotic climate prior to the holocene. The population growth from about 6 million, at 12K years ago, to over 6 billion now is due, of course, to the spread of agriculture, but this was possible only because of a relatively stable climate.²¹⁹

We have only recently realized that population growth and economic activity have induced links from the anthrosphere *to* the biosphere and geosphere. In fact it is now believed that these effects have been present since the beginning of agriculture about 12K years ago, but the relative stability of the holocene obscured this connection. It is precisely because small changes can induce singularities that we now fear that human activity may be sufficient to “force” the biosphere through a new singularity into a “hot zone,” with a qualitatively different dynamical system. Metaphorically speaking, it would be like passing through a black hole into a totally different universe. The point

²¹⁶These extinctions may be regarded as catastrophes. See the work in catastrophe theory in mathematics by Zeeman (1977).

²¹⁷See McKibben (1989), Edwards (2010) and Flannery (2005) on modelling these complex systems of climate change.

²¹⁸See Fagan (1999, 2008) and Diamond (2005) on the Medieval Warm (800 CE to 1300 CE) and the Little Ice Age (1300 CE to 1850 CE).

²¹⁹World population growth rate increased from about 0.07% 12K years ago to about 0.08% 2K years ago to about 0.4% in 1650. The “Malthusian barrier” was broken about 1950 with a growth rate of about 1.6%. See Chapter 2 and Kremer (1993).

is that the portal to the singularity would be chaotic. Indeed it has been suggested that our behavior may have brought the Holocene to an end, and we should note this by calling the new world the *Anthropocene*.

The Anthropocene While GE may assert the existence of a general full-employment equilibrium, recent events seem to support the thesis presented here that economic behavior in our sophisticated markets may also induce complex or chaotic singularities in the flow of the economy. Indeed, it has dawned on us that these lurches from one crisis to another make it even more difficult to see how to plan for the future. If the onset of climate change induces the kind of chaos that occurred prior to the holocene, then we can expect economic hurricanes in the future. More to the point, well before we hit a climatic singularity, there may occur totally unexpected eventualities, such as Malthusian crashes, or Katrina events. For this reason, the future we face exhibits the kind of fundamental uncertainty that Keynes emphasized.

It can be argued that the degree of uncertainty is so pronounced that we should plan for the future with extreme risk aversion.²²⁰

The National Academy of Sciences has recently published three reports on climate change and has asserted that

A strong, credible body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems.²²¹

Of course, what we should do depends on what we think the costs of climate change are. The global downturn has, however, focused attention on the present, not the future, and led to severe disagreement about how to attempt to deal with climate change at the international level. As noted in Chapter 1, it was only because of pressure from President Obama that the Copenhagen Accord was agreed to, in December 2009, by the United States together with the four emerging economies of China, Brazil, India and South Africa.

To preserve democracy, Keynes believed that government intervention to control market volatility was the answer, coupled with the preservation of the free market in commodities.²²² But as ever, to constrain or regulate a market, it is necessary to control assets sufficient to do the job, and the scale of these required assets depends on the size of the market and its inherent volatility. The decades long growth and globalization of the international economy means that the assets used for control must be of the order of many trillions of dollars. The United States does not control sufficient assets.

²²⁰See the quotation from Stern (2007) in Chapter 2, and Stern (2009). This uncertainty stems essentially from the very limited horizon of predictability that we can reasonably impose on the interaction of the atmosphere and climate.

²²¹National Academy of Sciences reports, “Limiting the Magnitude of Future Climate Change”, “Adapting to the Impacts of Climate Change”, “Advancing the Science of Climate Change”. See <http://delso-old.nas.edu/climatechange>.

²²²As did Hayek, Keynes believed the free market in commodities was conducive to both efficiency and liberty.

Schumpeter was sanguine about the consequences of market volatility. As he wrote

This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in..It must be seen in its role in the perennial gale of creative destruction. (Schumpeter, 1942).

If the volatility of the market is no more than a cyclic phenomenon, then we can agree with Schumpeter. Minsky, a student of Schumpeter, was much less sanguine. While accepting Schumpeter's view of the transformative role of technology, he feared the consequences of financial chaos.²²³

4.4 Quandaries

In fact, it seems that the globalization and transformation of the world economy in the last few decades has created much more complex feedback mechanisms than ever existed before. It is this increased complexity in the international system that has made it more susceptible to belief cascades, and to the possibility of singularity.

In a sense, our own hubris has brought this on ourselves. If we can no longer trust the market to behave in a fairly stable fashion, then we have to understand it better, in order to regulate it, or partially control it. At the same time however, we also face the possibility of climatic chaos, generated by the additional complexity of our own behavior affecting an already subtle dynamical system. Mathematics will be essential to the task of understanding. However, the attempt to model risk through computer models during the economic holocene contributed to our current situation. Indeed, the use of mathematical models of finance contributed to the current economic disaster because they failed to incorporate the complexity of belief cascades.

We face a quandary of uncertainty, since we neither understand the Anthropocene that we have created, nor the way in which it is affected by the biosphere and climate. This global quandary creates many localized quandaries about how to proceed in the short and medium term. Sachs (2008: 58), for example, argues that "the current trajectory of human activity is not sustainable."²²⁴

Although President Obama seems aware of the these quandaries associated with

²²³Kurzweil (2006) welcomes the singularity that he believes will be generated by the coming scientific and computer-based changes. See also Ridley (2010) for an equally optimistic viewpoint. The application of sophisticated computer and mathematical tools to finance is described in Derman (2007) and the consequences of these techniques in Patterson (2011). Johnson and Kwak (2010) basically argue that the crisis was due to oligopoly capitalism.

²²⁴There may be signs that the transition is already under way. 2010 was the hottest year on record, and may have led to the drought and fires in the wheat-producing regions of Russia, Ukraine and Kazakhstan. As a result world prices for cereals started to rise in Fall 2010.

The floods in Pakistan in summer 2010 were the result of intense rainfall, as might be expected from climate change.

See Smith (2010) for further discussion of the affects of climate change on the future.

economic disorder and climate change, he faces a divided Congress, and a Senate, conservative in its policy preferences, because of its use of a supermajoritarian voting rule. It would seem that facing the quandary of the future will depend on our ability to better understand the global economy that we have created. A high degree of risk aversion would seem like a good first step. But to do this requires concerted and cooperative action by all the major powers, including at a minimum, the United States, the European Union and China. An appreciation of the failure of our theories about economic equilibrium and an acknowledgement of fundamental uncertainty and chaos may help us proceed with caution.

In the next chapter we address the question of political choice in the United States, and argue that it is strongly influenced by activist groups. The policy areas of energy and climate are likely in the future to be of global significance, and activists with particular financial interests in these areas will continue to attempt to influence policy choices in ways that are unlikely to be optimal for the society as a whole.

Later chapters extend the analysis to consider elections in a variety of different polities. These various models of elections are a first start at modelling the pattern of social beliefs, the “soul”, that forms the basis of the political economy.

Chapter 5

Elections in the United States

5.1 Introduction

“This referendum has the potential to rip our party apart,” said Missouri Republican Kenny Hulshof, speaking of a ballot measure that would constitutionally guarantee the right to conduct stem cell research.²²⁵ The measure is strongly supported by the leading businesses and by their pro-business Republican allies. However, it is even more vehemently opposed by the social conservative wing of the Missouri Republican party, who regard stem cell research as tantamount to abortion.

Is this issue just a flash in the pan, or does it have long-term implications for the evolving identity of both the Republican and Democratic parties? Miller and Schofield (2003) have argued that the two-dimensional nature of American politics guarantees long-run instability in the U.S. party system. Any given winning coalitional basis for a party must inevitably generate possibilities for the losers, by appealing to pivotal groups on one dimension or another.

Americans have strong feelings about economic ideology—favorable toward business or else favorable toward the use of governmental power to shield consumers and labor from the market risks of monopoly, shoddy consumer products, and environmental degradation. While the particular issues on the agenda may vary, the shared ideological dimension allows for a degree of structure and predictability in policy. Knowing that a voter is a member of a labor union or an executive of a Fortune 500 company allows one to predict that voter’s position on a consumer protection bill or a trade treaty. However, it does not necessarily allow one to predict that same voter’s feelings about social policies—race, abortion, prayer in schools, or other traditional issues.

The independence of electoral perceptions on the policy dimensions is illustrated by the analysis of Schofield, Miller and Martin (2003) who examined National Election Survey Data for the U.S. elections of 1964 and 1980 and used factor analysis to produce two policy dimensions, one economic and one social.

The points in Figure 5.1 for 1964 represent the ideal or most preferred points of the

²²⁵*New York Times* (12 March 2006), quoted in Miller and Schofield (2008: 433)

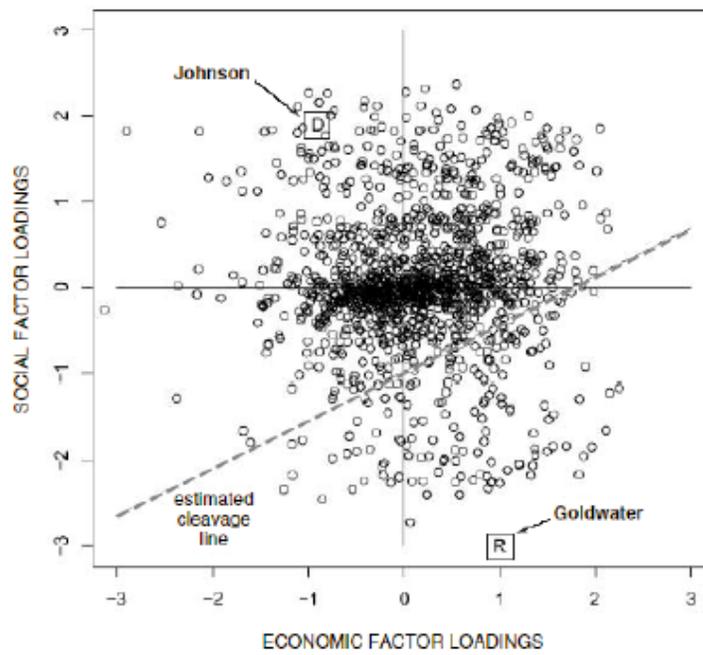


Figure 5.1: Voter distribution in 1964

citizens who undertook the survey, while the candidate positions were estimated on the basis of a simple binomial logit model, based on the information from the survey about voter intentions. The analysis merely confirmed the previous results of Poole and Rosenthal (1984a) on U.S. Presidential elections. Poole and Rosenthal noted that there was no evidence of convergence to an electoral center, as suggested by the “mean voter theorem.”²²⁶ Notice that the voter distribution in Figure 5.1 is essentially normal, with little correlation between the two axes. This implies that these two dimensions of policy are statistically independent. A further finding of Poole and Rosenthal was that the statistical model was enhanced when intercept terms were added to the voter model. Schofield, Miller and Martin argued that these intercept terms be interpreted as *valence*, as proposed by Stokes (1963, 1992). where the valence of a candidate should be regarded as the non-policy innate attractiveness or *quality* of the candidate, as judged by the average member of the electorate.²²⁷ We use the symbol λ_j to refer to the intrinsic or exogenous valence of candidate j .

A recent formal analysis of the stochastic electoral model has suggested why convergence to an electoral mean need not occur. Because voter behavior is probabilistic, Schofield (2007a) supposed that candidates adopt policy positions so as to maximize their *expected vote share*. In fact, because a candidate’s optimal position will depend on the opponent’s position, it is necessary to use the concept of *Nash equilibrium*.²²⁸ When the valence difference between the candidates is significant, then the lowest valence candidate, in equilibrium, must move away from the electoral mean in order to be positioned at an equilibrium, vote maximizing position.²²⁹ In response, the higher valence candidate will adopt a position opposite the lower valence candidate. In Figure 5.1, the *estimated cleavage line* shows the set of voters who are indifferent between Johnson and Goldwater. This line goes through Goldwater’s side of the mean, suggesting that Johnson not only had a higher valence than Goldwater, but had captured the center. The figure suggests that neither candidate was located at the electoral center.

It has been traditional to speak one dimensionally, of conservative and liberal candidates, but Figure 5.1 suggests that it is necessary to speak of social liberals, economic liberals, social conservatives and economic conservatives, reflecting the fundamental fact that there are actually four quadrants of the policy space, as in Figure 5.2. This figure is a version of Figure 1.8 in Chapter 1. The idea behind the figure is that Goldwater’s policy position was influenced by conservative economic activists, located at E, and conservative social activists located at C. The interaction between these two groups is indicated by the “contract curve” between the positions of the two groups. The opti-

²²⁶Hinich (1977).

²²⁷Stokes used the term *valence issues* to refer to those that “involve the linking of the parties with some condition that is positively or negatively valued by the electorate.” Stokes observation is validated by recent empirical work on many polities, as well as a study on the psychology of voting by Westen (2007).

²²⁸A Nash equilibrium is a set of party positions so that no party may unilaterally change position to gain an advantage.

²²⁹Schofield (2007) showed that convergence to the electoral center will occur in equilibrium only if a certain convergence coefficient, c , is bounded above by the dimension of the policy space. As discussed in Chapter 1, and later in this chapter, for a large enough valence difference, c will exceed the dimension of the policy space, and then convergence, in equilibrium, *cannot* occur.

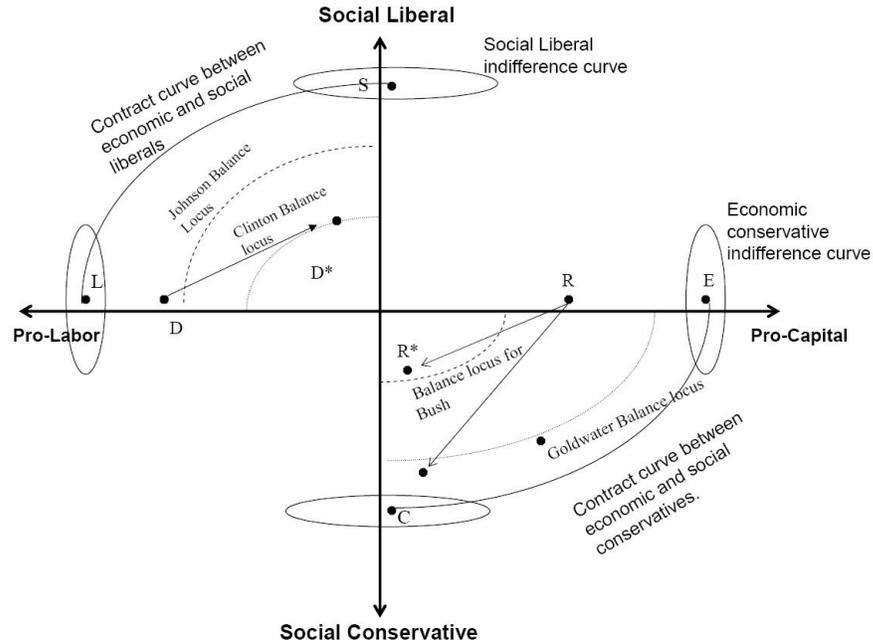


Figure 5.2: Activists in the U.S. 1964 to 1992

mal position of a presidential candidate such as Goldwater will be located on a “balance locus” that reflects the valences of the two candidates, as well as the influence of the various activist groups. The Appendix to this chapter presents the formal definition of these concepts. The purpose of this figure is to illustrate the likelihood that within each party there will be intrinsic conflicts, as suggested above, between economic and social activists. The figure presents ellipsoidal indifference curves for the different activist groups, which are intended to indicate that economic activists, located at E are less interested in social policy, while social activists are less interested in economic policy.

Much of the existing literature in political economy relies on a one-dimensional spatial model of democracy to understand the inter-relationship between politics and economics.²³⁰ However, this spatial model treats vote choice as a function of voters’ policy preferences only, and tends to predict convergence towards an electoral center.

²³⁰See, for example, Acemoglu and Robinson (2006a) and the applications of the model in Acemoglu et al., (2008).

Yet, in almost every polity there seem to be electoral or policy outcomes that the pure one-dimensional spatial model cannot easily explain. Increasing polarization of party or candidate positions in the United States is just one example.²³¹ There also appears to be increased radicalism in many European countries, as well as the occurrence of unusual coalitions spreading across the ideological spectrum in many eastern European countries.²³²

The current chapter focuses on constructing a formal apparatus that extends the spatial model to include multiple dimensions as well as voter judgments about the competence or quality of party leaders and candidates. An earlier version of this model has already proved useful in accounting for party or candidate position in a variety of countries.²³³

Voter judgments about candidate and leader competence are modeled by the notion of (*exogenous*) *valence*. In this respect, the formal model can be linked to Madison's understanding of the nature of the choice of Chief Magistrate (Madison, 1999 [1787]). As Chapter 1 has suggested, the elegant argument of Madison on the "extended Republic" may well have been influenced by Condorcet's work on the so-called "Jury Theorem" (Condorcet, 1994 [1785]). This aspect of Condorcet's work is based on the notion of electoral judgment rather than preference, and it has recently received renewed attention (McLennan, 1998). Formal models involving valence have been developed recently and can be seen as a contribution to the development of a Madisonian conception of elections in representative democracies as methods of aggregation of both preferences and judgments.²³⁴

The standard spatial model is based on the assumption that it is only candidate *positions* that matter to voters. Within the context of the spatial model, there has been controversy over whether rational candidates will converge to an electoral center, as suggested by the work of Downs (1957) and many other theorists, or whether elections will be fundamentally chaotic, as argued by Riker (1980, 1982, 1986).

However, as Stokes (1963, 1992) emphasized many years ago, the non-policy evaluations, or valences, of candidates by the electorate are just as important as electoral policy preferences. Based on the empirical and theoretical work presented here, we argue that neither the Downsian convergence result nor the chaos theorems gives an accurate picture of democratic elections. Instead, both position and valence matter in a fundamental way.

Earlier work developed an empirical stochastic electoral model based on multinomial conditional logit methodology (MNL).²³⁵ In this model, each *agent*, *j*, was char-

²³¹This appears to have occurred even though survey data suggest that the electoral distribution remains concentrated round a centrist position. See for example McCarty, Poole and Rosenthal (2006), Fiorina, Abrams and Pope (2005), Layman et al. (2006, 2010) and Schofield et al. (2011a, b), and earlier work by Poole and Rosenthal (1984b).

²³²The severe economic problems over budget deficits has made political compromise very difficult.

²³³Schofield and Sened (2006) presented models for Israel, the Netherlands and the United Kingdom. In this volume we extend these models to a larger set of countries.

²³⁴Aragones and Palfrey (2002, 2005), Groseclose (2001), Zakharov (2009).

²³⁵See the earlier work in Schofield and Sened (2005a,b).

acterized by an *exogenous valence*, λ_j . This model can be considered to be Downsian, since it was based on a pure spatial model, where the estimates of valence were obtained from the intercepts of the model. It was possible to obtain the conditions for existence of “a local Nash equilibrium” (LNE) under vote maximization for a parallel formal model using the same stochastic assumptions as the MNL empirical model. A LNE is simply a vector of agent positions with the property that no agent may make a small unilateral move and yet increase utility (or vote share).

This work led to results (Schofield, 2006b, 2007a) on the necessary and sufficient conditions for the validity of the *mean voter theorem for the pure spatial model with intrinsic valence*. The mean voter theorem asserts that all candidates should converge to the electoral mean.²³⁶ Analysis of recent US elections, presented below corroborates the earlier work by Enelow and Hinich (1989) and shows, by simulation on the basis of the MNL models, that presidential candidates should converge to the electoral mean. However, the empirical work also suggests that presidential candidates do not in fact adopt positions close to the electoral center. Figures 5.3 and 5.5 for example, shows the estimated positions of the presidential candidates and the voter distributions in the 2000 and 2004 elections in the U.S.²³⁷ These estimates were obtained from the American National Election Surveys (ANES) for these two election years. Factor analysis gave the two policy dimensions, one economic and one social, just as in 1964. In addition, the surveys provided data on which respondents provided support to the candidates, and these data allowed us to distinguish between the average positions of activists in contrast to those who voted for the two parties, as indicated in Figures 5.4 and 5.6.²³⁸ Figures 5.3 and 5.5 also include the cleavage lines obtained from simple binomial logit models of the elections.

This chapter offers a more general model of elections that, we suggest, accounts for the difference between the estimates of equilibrium positions and actual candidate positions. The model is based on the assumption that there is a second kind of valence is known as *activist valence*. When party, or candidate j adopts a policy position z_j , in the policy space, X , then the activist valence of the party is denoted $\mu_j(z_j)$. Implicitly we adopt a model originally due to Aldrich (1983). In this model, activists provide crucial resources of time and money to their chosen party, and these resources are dependent on the party position.²³⁹ The party then uses these resources to enhance its image before the electorate, thus affecting its overall valence. Although activist valence is affected by party position, it does not operate in the usual way by influencing voter choice through the distance between a voter’s preferred policy position, say x_i , and the party position. Rather, as party j ’s activist support, $\mu_j(z_j)$, increases due to increased contributions to the party in contrast to the support $\mu_k(z_k)$ received by party k , then (in the model) all

²³⁶The electoral mean is the average of the distribution of voter preferred points.

²³⁷For discussion of the 2004 election, for example, see Ceaser and Busch (2005) and Abramson, Aldrich and Rohde (2007).

²³⁸These figures include the standard errors of these estimates, where the larger error bars correspond to the activist estimates.

²³⁹For convenience, it is assumed that $\mu_j(z_j)$ is only dependent on z_j , and not on z_k , $k \neq j$, but this is not a crucial assumption.

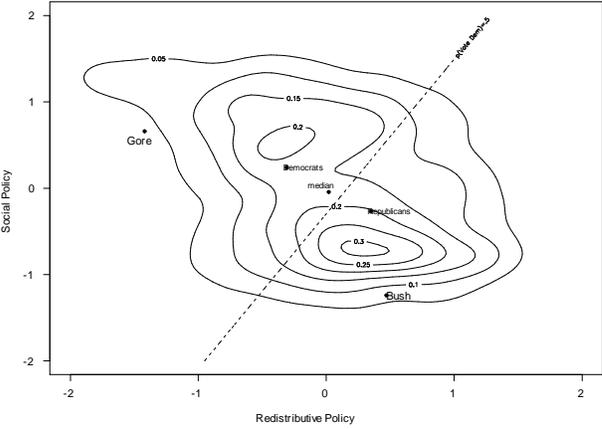


Figure 5.3: Contour plot of the voter distribution in 2000 with the equiprobable cleavage line

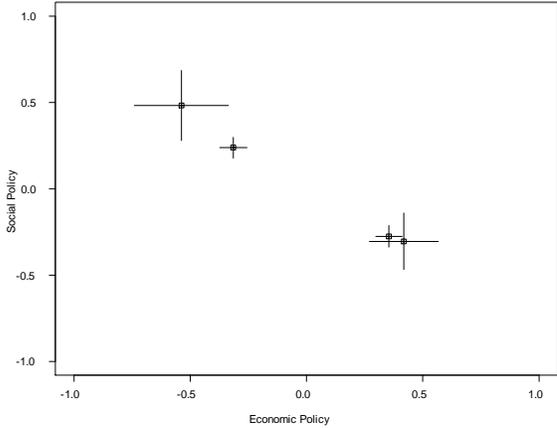


Figure 5.4: Comparison of voter and activist means in 2000

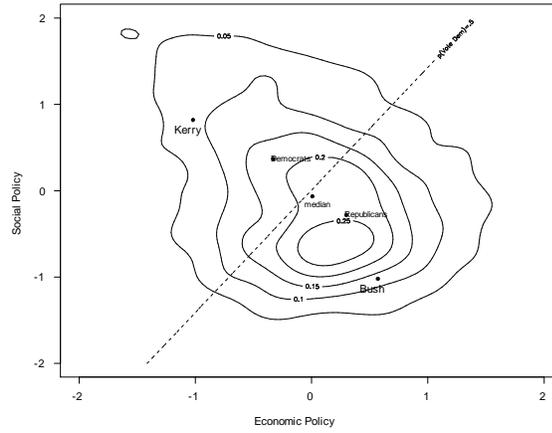


Figure 5.5: Electoral distribution and candidate positions in the United States in 2004

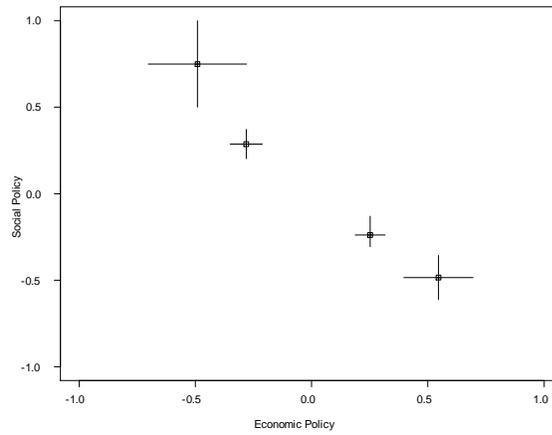


Figure 5.6: Comparison of voter and activist means in 2004

voters become more likely to support party j over party k .

The problem for each party is that activists are likely to be more extreme than the typical voter. By choosing a policy position to maximize activist support, the party will lose centrist voters. The party must therefore determine the "optimal marginal condition" to maximize vote share. The Balance Theorem, presented in Appendix 4 to this chapter, gives this as a (first order) *balance condition*. Moreover, because activist support is denominated in terms of time and money, it is reasonable to suppose that the activist function will exhibit decreasing returns. The Theorem points out that when these activist functions are sufficiently concave, then the vote maximizing model will exhibit a *local* Nash equilibrium (denoted LNE).

It is intrinsic to the model that voters evaluate candidates not only in terms of the voters' preferences over intended policies, but also in terms of electoral judgments about the quality of the candidates. These judgments are in turn influenced by the resources that the candidates can raise from their activist supporters.

In the next section we sketch the model and then apply it to consider the 2008 election in the US. The formal model is presented in Appendix 4.

5.2 Activist Support for the Parties.

To present the model, suppose there are two dimensions of policy, one economic, and one social. These are found usually by factor analysis of survey data.

As in Figure 5.7 indicates, we can represent the of conflicting interests or bargains between the two activist groups of supporters for the Republican Party, located at R and C , by a "contract curve." This represents the set of policies that these two groups would prefer their candidate to adopt. It can be shown (Miller and Schofield, 2003) that this contract curve is a *catenary* whose curvature is determined by the eccentricity of the utility functions of the activist groups. We call this the *Republican contract curve*. The Democrat activist groups may be described by a similar contract curve (This is the simplest case with just two activist groups for each candidate. As the formal model in the Appendix (Section 5.6.1) shows, this idea can be generalized to many activist groups.

The Balance Theorem presented in this chapter gives the first order condition for the candidate positions (z_{dem}^*, z_{rep}^*) to be a Nash equilibrium in the vote share maximizing game. This condition is that the party positions satisfy a *balance equation*. This means that, for each party, $j = dem$ or rep , there is a weighted electoral mean for party j , given by the expression

$$z_j^{el} = \sum_i \varpi_{ij} x_i. \quad (5.1)$$

This is determined by the set of voter preferred points $\{x_i\}$. Notice that the coefficients $\{\varpi_{ij}\}$ for candidate j will depend on the position of the other candidate, k . The *balance equation* for each j is given by:

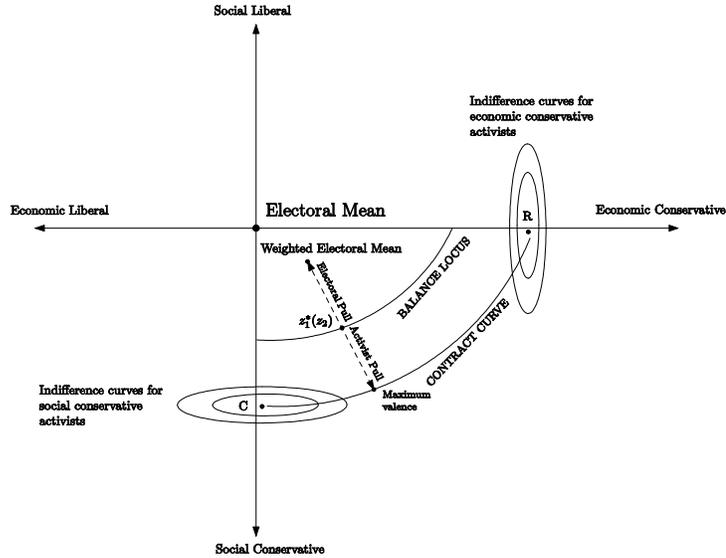


Figure 5.7: Optimal Republican position

$$[z_j^{el} - z_j^*] + \frac{1}{2\beta} \left[\frac{d\mu_j}{dz_j} \Big|_z \right] = 0. \tag{5.2}$$

The locus of points satisfying this equation is called the *balance locus* for the party. It is also a catenary obtained by shifting the appropriate activist catenary towards the weighted electoral mean of the party. The symbol $\mu_j(z_j)$ refers to the endogenous or activist valence of candidate j . Unlike the exogenous valence term, λ_j , which is independent of z_j , the term $\mu_j(z_j)$ is a function of z_j . The gradient vector $\frac{d\mu_j}{dz_j}$ is called the *marginal activist pull for party j* (at the position z_j^*) and represents the marginal effect of the activist groups on the party's valence. The gradient term $[z_j^{el} - z_j^*]$ is the *marginal electoral pull of party j* (at z_j^*). Obviously, this pull is zero at $z_j^* = z_j^{el}$. Otherwise, it is a vector pointing towards z_j^{el} . In Figure 5.7, the point $z_1^*(z_2)$ is the balance solution for a Republican candidate responding to a Democrat candidate at z_2 . The point $z_1^*(z_2)$ lies on the balance locus of the Republican party, and is also a function of the Democrat candidate location. A similar balance locus can be constructed for the Democrat candidate. The formal model as illustrated in Figure 5.7 appears compatible with the estimates of candidate positions, as well as estimates of average activist positions, as given in Figures 5.3 through 5.6.

5.2.1 The Lead-up to the 2008 election

These various figures are intended as an indication of the complexities of U.S. politics. As Figure 5.2 may suggest, to win it is necessary to create a coalition of activists who may very well be enemies in some policy domains, but who may be able to agree to disagree on one dimension in order to prevail on the other. As saliences have diverged within the two classes of activist groups, the groups have become more heterogeneous and fragmented. The fact that the electoral distribution has come to vary dramatically in various parts of the country means that activist coalitions, ostensibly in support of one of the parties in one region, may conflict with activist groups for the same party, but in a different region. Indeed, the changing frontiers between the preferred points of activist party coalitions may cause activist groups to change their affiliation. Because of the plurality nature of presidential and Congressional elections, activist coalitions must be aware that fragmentation creates losers. Thus there is a permanent tension between the desire to influence policy, and the winning of elections.

This potential conflict between activist coalitions was recently given expression in 2005 by John Danforth, a long-standing traditional Republican:

When government becomes the means of carrying out a religious program, it raises obvious questions under the First Amendment... At its best, religion can be a uniting influence, but in practice, nothing is more divisive. For politicians to advance the cause of one religious group is often to oppose the cause of another.

Take stem cell research. Criminalizing the work of scientists doing such research would give strong support to one religious doctrine, and it would punish people who believe it is their religious duty to use science to heal the sick . . . But in recent times, we Republicans have allowed [our] shared agenda to become secondary to the agenda of Christian conservatives. As a senator, I worried every day about the size of the federal deficit. I did not spend a single minute worrying about the effect of gays on the institution of marriage. Today it seems to be the other way around. The historic principles of the Republican Party offer America its best hope for a prosperous and secure future. Our current fixation on a religious agenda has turned us in the wrong direction. It is time for Republicans to rediscover our roots.²⁴⁰

A second area of policy conflict lay in immigration reform in 2006. As Table 5.1 shows, in the Senate on 18 July 2006, 32 Republicans voted against reform, while 23 pro-business Republicans voted aye. Almost all Democratic Senators voted for reform, as a matter of civil rights, but 4 Democrats voted nay, presumably out of fear that immigration would put downward pressure on wages.

This tension provides the energy that drives the constant transformation of politics in the United States.

²⁴⁰Danforth (2005)

Table 5.1. Votes of Democrat and Republican senators on immigration reform in 2006

| | Democrats | | Republicans |
|--------------|------------------|--------------------|--------------------|
| Yea | Akaka-HI | Lautenberg NJ | Bennett UT |
| | Baucus MT | Leahy VT | Brownback KS |
| | Bayh IN | Levin MI | Chafee RI |
| | Biden DE | Lieberman CT | Coleman MN |
| | Bingaman NM | Lincoln AR | Collins ME |
| | Boxer CA | Menendez NJ | Craig ID |
| | Cantwell WA | Mikulski MD | DeWine OH |
| | Carper DE | Murray WA | Domenici NM |
| | Clinton NY | Nelson FL | Frist TN |
| | Conrad ND | Obama IL | Graham SC |
| | Dayton MN | Pryor AR | Gregg NH |
| | Dodd CT | Reed RI | Hagel NE |
| | Durbin IL | Reid NV | Lugar IN |
| | Feingold WI | Sarbanes MD | Martinez FL |
| | Feinstein CA | Schumer NY | McCain AZ |
| | Harkin IA | Wyden OR | McConnell KY |
| | Inouye HI | | Murkowski AK |
| | Jeffords VT | | Smith OR |
| | Johnson SD | | Snowe ME |
| | Kennedy MA | | Specter PA |
| | Kerry MA | | Stevens AK |
| | Kohl WI | | Voinovich OH |
| | Landrieu LA | | Warner VA |
| Total | | 39 | 23 |
| | Democrats | Republicans | |
| Nay | Byrd WV | Alexander TN | Lott MS |
| | Dorgan ND | Allard CO | Roberts KS |
| | Stabenow MI | Allen VA | Santorum PA |
| | Nelson NE | Bond MO | Sessions AL |
| | | Bunning KY | Shelby AL |
| | | Burns MT | Sununu NH |
| | | Burr NC | Talent MO |
| | | Chambliss GA | Thomas WY |
| | | Coburn OK | Thune SD |
| | | Cochran MS | Vitter LA |
| | | Cornyn TX | |
| | | Crapo ID | |
| | | DeMint SC | |
| | | Dole NC | |
| | | Ensign NV | |
| | | Enzi WY | |
| | | Grassley IA | |
| | | Hatch UT | |
| | | Hutchison TX | |
| | | Inhofe OK | |
| | | Isakson GA | |
| | | Kyl AZ | |
| Total | 4 | | 32 |

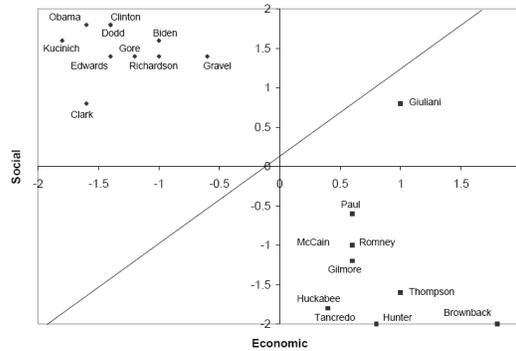


Figure 5.8: Positions of Republican and Democrat Candidates in the run up to the election of 2008

The previous section has suggested that a candidate's valence at election time is due to the ability of activist groups to raise resources for the candidate. At the same time, the candidate positions are the result of a balancing act between choosing an electorally optimal position and being able to persuade activist groups to provide these resources. Figure 5.8 gives estimates of candidate positions during the election primaries in 2008, while Figures 5.9 and 5.10 show the relationship between expenditure for various candidates in these primaries. (See Schofield and Schnidman, 2011).

Estimating the residuals between the linear regression line and the popularity level gives a way of obtaining the intrinsic valences of the various candidates. The figures suggest that Huckabee and McCain (among the Republicans) had relatively high valences, while the contest between Clinton and Obama would depend on their activist contributions. On 3 January, 2007, Huckabee won the Iowa Republican caucus while Obama won the Democrat caucus (with 38% to Clinton's 29%). In the New Hampshire primary a few days later, Clinton was the Democrat winner with 39% to Obama's 36%.

After "Super Tuesday" on February 5, and the various contests leading to Pennsylvania on April 22, Clinton and Obama had won 1245 and 1310 delegates, respectively, while McCain dominated the Republican race, with 1162 delegates to Huckabee's 262 and Romney's 142. On May 6, Obama won North Carolina by 56% to 44%, while Clinton only just won Indiana.²⁴¹ By May, 2008, Clinton had raised about \$173 million (\$132,000/delegate), Obama \$197 million (\$143,000/delegate), McCain \$66 million

²⁴¹The Republican Party uses a "first past the post" or plurality selection rule for delegates, whereas the Democrat party uses a proportional rule. This accounts for McCain's lead, while neither Clinton nor Obama dominated in terms of delegates. It is plausible that the Republican rule causes activist groups to coalesce round the leader, whereas Democrat activist leaders perceive no clear winner.

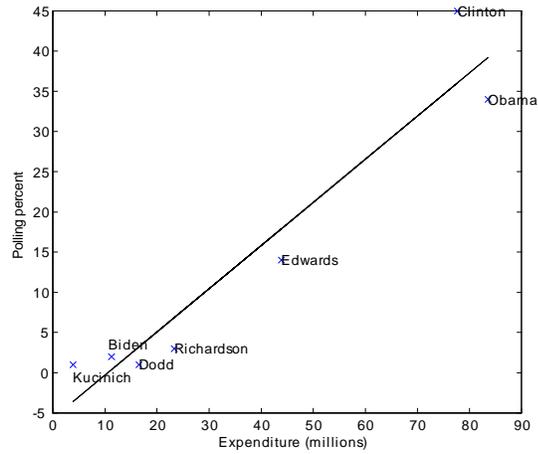


Figure 5.9: Democrat candidate spending and popularity, January 2008

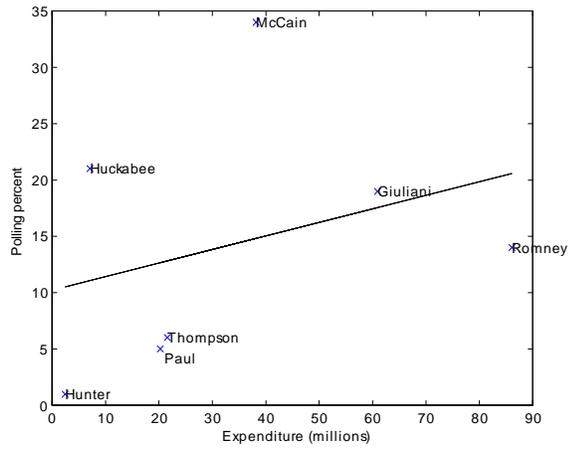


Figure 5.10: Republican candidate spending and popularity, January 2008

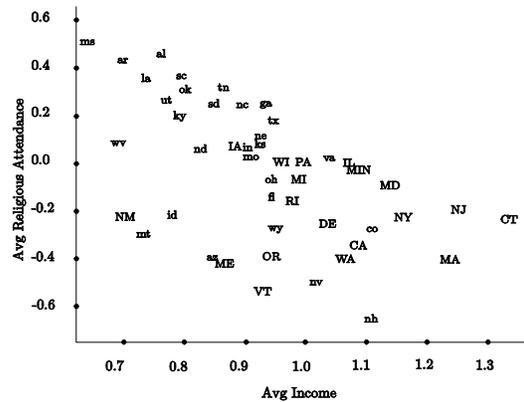


Figure 5.11: Relationship between average income and average religious attendance by state (States that voted Democrat are capitalized, states that voted Republican are lower case)

(\$57,000/delegate) and Huckabee \$16 million (\$69,000/delegate). Finally Paul gained 5 delegates for \$34 million, Giuliani spent \$65 million for nothing, and Romney spent \$110 million (\$612,000/delegate). Both Romney and Giuliani left the race after February 6th, while Huckabee conceded after McCain's successes on March 4. These expenditure/delegate figures give a fairly clear indication of the contenders' intrinsic valences.

Figure 5.9 suggests that Barack Obama and Hilary Clinton were both very successful in raising campaign resources, and that these were highly correlated with the electoral support.²⁴² Other candidates fell far behind and dropped out of the race. Figure 5.10 suggests that McCain was also extremely popular, even though his campaign, in January 2008, had not been very successful in raising contributions. This inference is compatible with McCain's estimated fairly moderate position in Figure 5.8. By the time of the election, Obama had raised about \$745 million and spent \$730 million, while McCain had only raised \$368 million and spent \$333 million. Winning elections is clearly a matter of money. Kenski et al (2010) provide an estimate of the influence of money and thus advertising on the contest between McCain and Obama.

Figure 5.11 suggests that Cosmopolitan states like Connecticut and New Jersey form the base of the Democratic Party while poor, religious states like Mississippi form the base of the Republican Party. These affiliations change with time, as a result of irregular

²⁴²The Washington Post noted, on January 1, 2008, that both Clinton and Obama had raised about \$100 million for their campaigns.

realignments but comprise the background to the 2008 election. See Bartels, 2008, and Merrill, Grofman and Brunell, 2008 for empirical evidence of changes in electoral patterns over time. Asmussen, 2010, presents data on the importance of religion, or the evangelical movement in this realignment.

5.3 The Election of 2008 in the United States

5.3.1 Empirical Analysis

The 2008 American National Election Study (ANES) introduced many new questions on political issues in addition to the existing set. Assignment of respondents into the “new” or “old” set was random, with 1,059 respondents assigned to the “new” condition and having completed the follow-up post-election interview.

The post-election interviews asked respondents whom they voted for, if at all. Since we use a conditional logit model, which requires data for both respondents and candidates (which we only have for the major party candidates) we removed observations where respondents claimed to have voted for a presidential candidate other than McCain or Obama, or not to have voted at all.

To create the two-dimensional policy space, 23 survey items were selected to broadly represent the economic and social policy dimensions of American political ideology (see Appendix 2 for question wording). There were multiple questions for abortion, gay and African American issues. These three sets of questions were combined using factor analysis to give three separate scales.

Factor analysis of the survey was then used to obtain measures of individual locations in the policy space. The factor loadings are given in Table A5.1 Tables A5.1 to A5.6 for the election of 2008 are in Appendix 1 to this chapter.²⁴³

The ANES also includes questions on seven qualities or traits associated with Obama and McCain, asking respondents about the traits of the candidates, including the terms “moral, caring, knowledgeable, strong, dishonest, intelligent, out of touch.” Factor analysis of these questions gave two factors, and the resulting factor scores were used as estimates of voter perceptions of the candidate’s personal traits.

As Sanders et al. (2011) comment, valence theory is based on the assumption that “voters maximize their utilities by choosing the party that is best able to deliver policy success.” The authors go on to note that an overall assessment of a party leader by a voter “provides a simple affective heuristic for arriving at an evaluation of that leader’s party.” We therefore use these electoral perceptions of character traits as an additional measure of candidate valence.²⁴⁴

²⁴³In these tables we include the Log Likelihoods, and the Akaike (AIC) and Bayesian (BIC) Information Criterion. Lower values of AIC and BIC indicate better model performance.

²⁴⁴These electoral estimates of character traits can also be used to examine the change of electoral perceptions in the lead up to the election, as in Scotto et al. (2010).

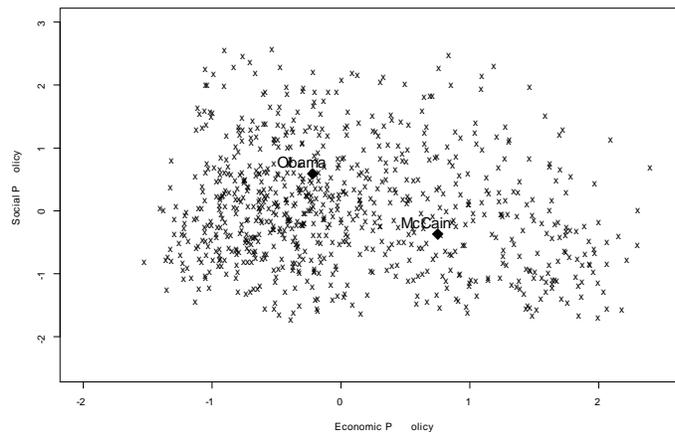


Figure 5.12: Distribution of voter ideal points and candidate position in 2008

To calculate the presidential candidate positions, we took advantage of new survey questions which asked respondents to locate the positions of Obama and McCain on seven distinct issues.

These seven questions (government spending, universal health care, citizenship for immigrants, abortion when non-fatal, abortion when gender incorrect, aid to blacks, and liberal-conservative) were otherwise worded the same as the corresponding items from the 23 policy issue questions. (See questions 1, 2, 10, 12a,g,19 and 23 in Appendix 1).

To find McCain's ideal point, we simply took the average response for each of his seven candidate location questions. We then repeated the process using Obama's candidate location questions. See Tables A5.2 and A5.3 for the descriptive data and the estimated positions of the two candidates.

Respondents were coded as activists if they claimed to have donated money to a candidate or party. The survey data gave information on whether the respondent was African American, Hispanic, female, working class, from the South. Additional data on age, number of years of education and level of income were used to construct eight different sociodemographic variables. Figures 5.12 and 5.13 show the voter and activist positions, as well as the two candidates.

Figure 5.12 gives the voter distribution, while Figure 5.13 gives the activist distribution, as well as the two candidate positions.

As noted above, the positions of the major presidential candidates, McCain and Obama, in 2008 were estimated using the perceptions of the sampled individuals.

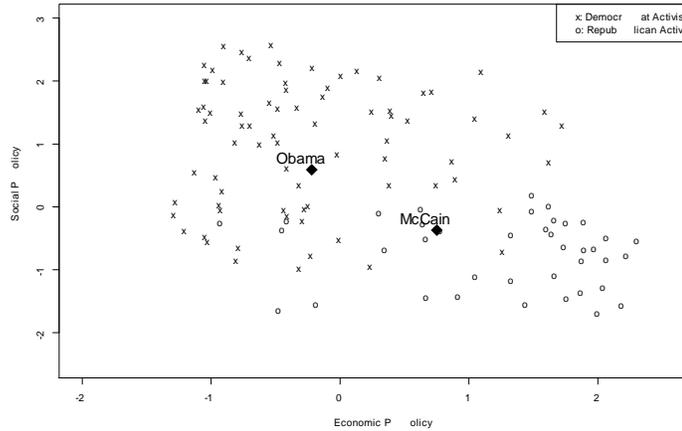


Figure 5.13: Distribution of activist ideal points and candidate positions in 2008

These positions are denoted $(z_{Obama}^*, z_{McCain}^*)$ and given by:

$$\begin{aligned} z_{Obama}^* &= (x_{Obama}, y_{Obama}) = (-0.22, 0.75), \\ z_{McCain}^* &= (x_{McCain}, y_{McCain}) = (0.59, -0.37). \end{aligned}$$

We now use the formal model to analyse this election.

5.3.2 Estimation of Political Equilibria

Obama's victory on November 4, 2008 suggests that it was the result of an overall shift in the relative valences of the Democrat and Republican candidates from the election of 2004. In fact, since Obama took 52.3% of the vote, a simple estimate of the probability, ρ_{Obama} , of voting for Obama is given by

$$\rho_{Obama} = [0.523] = \frac{\exp[\lambda_{Obama}]}{1 + \exp[\lambda_{Obama}]}$$

It immediately follows that an estimate of λ_{Obama} relative to λ_{McCain} is given by

$$\begin{aligned} \log_e \left[\frac{0.523}{0.477} \right] &= \log_e [1.096] \\ &\simeq 0.09. \end{aligned}$$

In fact there were differential shifts in different regions of the country. In a region of the country from West Virginia through Tennessee, Arkansas and Oklahoma, there was

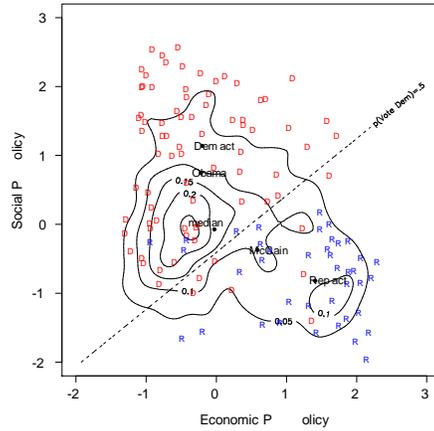


Figure 5.14: The cleavage line in 2008. Democrats are denoted D and Republicans denoted R.

a shift of 20% in the increase in the Republican vote, suggesting a change of about 0.6 in McCain's valence advantage.

To model this election we first constructed a *pure positional binomial logit model*.

According to this positional model, a voter i , with preferred position (x_i, y_i) is estimated to vote Republican with probability

$$\rho_{rep} = \frac{\exp(\lambda_r + bx_i + cy_i)}{1 + \exp(\lambda_r + bx_i + cy_i)}. \quad (5.3)$$

We estimated these coefficients to be $(\lambda_r, b, c) = (-0.74, 1.49, -1.80)$, with standard errors (0.11, 0.13, 0.15) respectively. All were significant with at the 0.001 level.

This cleavage line derived from this the equation gives the locus of voting with equal probability for one or other of the candidates. This cleavage line is given by the equation

$$y = 0.82x - 0.4. \quad (5.4)$$

This cleavage line misses the mean, and goes through the point $(0, -0.4)$, indicating a slight valence advantage of Obama. The coefficient λ_r is a measure of the (negative) relative valence of McCain with respect to Obama for this positional model. This cleavage line is given in Figure 5.14, and is similar to those shown above for the elections of 2000 and 2004.

These positional model does not explicitly involve the candidate positions, and so cannot be used to determine political equilibria. We now discuss the spatial models, presented in Table A5.5.

We define the electoral covariance matrix, ∇_0 , to be the 2 by 2 matrix giving the variance of the electoral distribution on each axis, together with the covariance between the two axes. For the ANES sample this is given by

$$\nabla_0 = \begin{bmatrix} 0.80 & -0.13 \\ -0.13 & 0.83 \end{bmatrix}.$$

The principal component of the electoral distribution is given by the vector $(1.0, -1.8)$ with variance 1.02, while the minor component is given by the orthogonal eigenvector $(1.8, 1.0)$ with variance 0.61.

Model (1) in Table A5.5 shows the coefficients in 2008 for the pure spatial model, $\mathbb{M}(\lambda, \beta)$, to be

$$(\lambda_{Obama}, \lambda_{McCain}, \beta) = (0, -0.84, 0.85).$$

Table A5.5 indicates, the loglikelihood, Akaike information criterion (AIC) and Bayesian information criterion (BIC) are all quite acceptable, and all coefficients are significant with probability < 0.001 .

Note that these parameters are estimated when the candidates are located at the estimated positions. Again, λ_{McCain} is the relative negative exogenous valence of McCain, with respect to Obama, according to the pure spatial model $\mathbb{M}(\lambda, \beta)$. We define this model formally in Appendix 1 to this chapter. We assume that the parameters of the model remain close to these values as we modify the candidates positions in order to determine the equilibria of the model.

According to the model $\mathbb{M}(\lambda, \beta)$, the probability that a voter chooses McCain or Obama when both are positioned at the electoral mean, \mathbf{z}_0 , are

$$(\rho_{McCain}, \rho_{Obama}) = \left(\frac{e^0}{e^0 + e^{0.84}}, \frac{e^{0.84}}{e^0 + e^{0.84}} \right) = (0.30, 0.70).$$

Appendix 4, together with these results, shows that the characteristic matrix (essentially the Hessian of McCain's vote function at \mathbf{z}_0) is:

$$C_{McCain} = \begin{bmatrix} -0.46 & -0.09 \\ -0.09 & -0.44 \end{bmatrix}.$$

Section 5.6.2 in Appendix 4 to this chapter shows that the necessary and sufficient condition for convergence to the electoral mean, \mathbf{z}_0 , is that this characteristic matrix has negative eigenvalues.²⁴⁵ Clearly this is the case here. Section 5.6.2 also defines a ‘‘convergence coefficient’’, c , which characterizes the local equilibrium. The Valence Theorem shows that the necessary condition for convergence to the electoral mean, \mathbf{z}_0 , is that $c < 1$, while a necessary condition is that $c < w$. Note that c is dimensionless, and therefore independent of the units of measurement. We compute c as follows:

$$c = 2\beta(1 - 2\rho_{McCain})\text{trace}\nabla_0 = 2(0.85)(0.4)(1.63) = 1.1.$$

²⁴⁵Standard results of calculus show that in this case, the electoral mean is a local maximum of McCain's vote share function.

The estimate for c exceeds this critical value for convergence. However, the determinant of C_{McCain} is positive and trace is negative so both the eigenvalues of C_{McCain} are negative.²⁴⁶ Simulation of the pure spatial model confirmed that \mathbf{z}_0 was a local Nash equilibrium (LNE) to the vote maximizing game. Indeed it was shown to be a pure strategy Nash equilibrium (PNE).

We now turn to the models with traits, denoted $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\alpha}, \beta)$, with sociodemographic variables, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$, and the full spatial model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ with traits and sociodemographics. Table A5.4 gives the factor analysis of the candidates traits which was used in the trait models, while Table A5.5 models (2), (3), (4) give the results of these various extensions with additional “valences” determined by traits and sociodemographics.

We found that the loglikelihoods of the pure sociodemographic model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$, and pure traits model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\alpha}, \beta)$, to be to be -427 and -356 respectively. Comparison of the loglikelihoods of these models, as given in Table A5.5 shows that the perception of character traits is important for the statistical significance of the model. As Table A5.6 shows, the difference in the loglikelihoods of the spatial model with traits and the pure traits model is $-243+357=114$, while the difference between the full spatial model with both traits and sociodemographics against the pure traits model is $-207+357=150$. (The t-value associated with the β -coefficient in all spatial models was of order 10, suggesting that the spatial component was statistically very significant.)

Recent empirical work by Clarke, Kornberg and Scotto (2009: 159) has compared a “Downsian” or pure spatial models of the 2000 and 2004 US presidential elections with valence models of the same elections. Their overall conclusion was that the two classes of models had “approximately equal explanatory power.” The results presented in Table A5.5 corroborate this conclusion, as we have found that the spatial model augmented the traits model in the 2008 U.S. presidential election.

We also constructed traits models for the elections of 2000 and 2004, as shown in Tables A5.7 and A5.8 in Appendix 3. The tables show that traits and the β coefficients are highly significant in these years. Whereas Clarke, Kornberg and Scotto (2009) obtained an AIC of 238.9 for a joint traits model for 2004, we obtained 137.8, while for 2000 they obtained 444.82, and we obtained 549.4. Like us they found the spatial coefficients, their analogue of β , to be highly significant.

Simulation of the full spatial model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$, with traits and sociodemographics showed that the LNE (and PNE) was one where the candidates adopted the positions z_{Obama}^{el} and z_{McCain}^{el} .

As Appendix 4 shows, we may use this estimated LNE, \mathbf{z}^{el} , as an estimate for the weighted electoral mean for the two candidates. Thus:

$$\mathbf{z}^{el} = (z_{Obama}^{el}, z_{McCain}^{el}) = ((+0.10, -0.07), (+0.13, -0.12))$$

This equilibrium is only a slight perturbation from the joint mean, which we normalized at $(0,0)$. We can infer that though the traits add to the statistical significance of the stochastic model they do not significantly affect the equilibrium. Analysis of the relationship between perceptions of candidate traits and vote choice showed that there were

²⁴⁶We verified this was also true when we examined the upper 95% probability bounds on the matrix.

weak correlations and these had only a slight effect on the strong convergence induced by the electoral pull.

The model in Appendix 4 is one where the candidates are committed to contracts with activists, and can be regarded as having policy preferences that are induced from the policy preferences of the activists. Using our estimates of the candidate locations

$$z_{Obama}^* = (x_{Obama}, y_{Obama}) = (-0.22, 0.75),$$

$$z_{McCain}^* = (x_{McCain}, y_{McCain}) = (0.59, -0.37), \text{ we then obtain}$$

$$\begin{aligned} \mathbf{z}^* - \mathbf{z}^{el} &= \begin{bmatrix} & McCain & Obama \\ x & 0.59 & -0.22 \\ y & -0.37 & +0.75 \end{bmatrix} - \begin{bmatrix} & McCain & Obama \\ x & +0.13 & +0.10 \\ y & -0.12 & -0.07 \end{bmatrix} \\ &= \begin{bmatrix} & McCain & Obama \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix}. \end{aligned}$$

Using the balance equations

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) = [\mathbf{z}^{el} - \mathbf{z}^*].$$

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) + \frac{1}{2\beta} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}^*) = 0.$$

and the estimate $\beta = 0.83$ we find

$$\begin{aligned} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}^*) &= 2\beta \begin{bmatrix} & McCain & Obama \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix} \\ &= \begin{bmatrix} & McCain & Obama \\ x & 0.76 & -0.53 \\ y & -0.42 & 1.36 \end{bmatrix}.. \end{aligned}$$

is an estimate of the pair of direction gradients, induced by activist preferences, acting on the two candidates. The difference between \mathbf{z}^* and \mathbf{z}^{el} thus provides an estimate of the activist pull on the two candidates. In this election, we estimate that activists pull the two candidates into opposed quadrants of the policy space. The estimated distributions of activist positions for the two parties, in these two opposed quadrants (as given in Figure 5.13 are compatible with this inference. The means of these activist positions are:

$$\begin{bmatrix} & Rep Act & Dem Act \\ x & 1.41 & -0.2 \\ y & -0.82 & 1.14 \end{bmatrix}.$$

If we assume that the Democrat activists tend to be more concerned with social policy and Republican activists tend to be more concerned with economic policy, then

we have an explanation for the candidate shifts from the estimated equilibrium. The means of the party voters are

$$\begin{bmatrix} & \text{Rep Voters} & \text{Dem Voters} \\ x & 0.72 & -0.17 \\ y & -0.56 & 0.36 \end{bmatrix}.$$

Note in particular that the distribution of activist positions for the two parties, given in Figure 5.13, looks very different from the voter positions, given in Figure 5.12. The latter is much more heavily concentrated near the electoral origin, while the former tends to be dispersed. Since the trace of the electoral covariance matrix is 1.83, the *electoral standard deviation* (or *esd*) is its square root, 1.35, so another way of normalizing $\mathbf{z}^* - \mathbf{z}^{el}$ is to take

$$\begin{aligned} \frac{1}{\sigma}[\mathbf{z}^* - \mathbf{z}^{el}] &= \frac{1}{\sigma} \begin{bmatrix} & \text{McCain} & \text{Obama} \\ x & 0.46 & -0.32 \\ y & -0.25 & 0.82 \end{bmatrix} \\ &= \begin{bmatrix} x & 0.34 & -0.23 \\ y & -0.19 & 0.61 \end{bmatrix}. \end{aligned}$$

The norms of these two vectors are 0.37 and 0.64, respectively, giving us a dimensionless measure of activist influence. In principle, this equation could be used to estimate the influences of the various activist groups on the two candidates.

When the candidates are at their estimated positions, the estimated vote shares, according to the traits model, are $(V_{Obama}, V_{McCain}) = (0.68, 0.32)$. Since the actual vote shares are $(0.52, 0.48)$, it appears that the trait model may give a statistically plausible account of voter choice, but it does not provide, by itself, a good model of how candidates obtain votes. We suggest that the missing characteristic of this model of the election is the effect on the vote by the contributions of party activists.

Indeed, we suggest that the addition of activists to the model can account for the difference between convergent, equilibrium positions and the divergent, estimated candidate positions, as obtained by Enelow and Hinich (1989) and Poole and Rosenthal (1984), respectively, in their various analysis of U.S. elections.

As we noted above, we could also interpret $\frac{d\mu}{dz}(\mathbf{z}^*)$ as the gradient obtained from a model where candidates have policy preferences derived from utility functions (μ_{mc}, μ_{ob}) . Duggan and Fey (2005) have explored such a model for the case of a deterministic vote model, and obtained symmetry conditions for equilibrium similar to those obtained earlier by McKelvey and Schofield (1987). However, in such a model of policy seeking candidates, a candidate must be willing to adopt a losing position because of strong preferences for particular policies.

It is possible that our estimates of the candidate positions are incorrect, since we used average voter perceptions, based on only seven of the possible survey questions. However, these estimated positions give us a statistically significant model of voter

choice. We argue that the most plausible account for the difference in the estimated and equilibrium positions of the two candidates is the nature of activist competition.²⁴⁷

Note also that this model can be applied to the determination of policy positions of members of the House and Senate of the United States. In particular, we would expect local activist groups to be very heterogenous across states and House constituencies. As a result, policy positions of members of Congress can be expected to be very heterogenous, even within parties.

5.4 After the Election: 2009-2011

Obama's victory in 2008 suggests that policy outcomes from 2009 onwards will lie in the upper left hand quadrant of the policy space, and all indications are that Obama's policy position is close to the estimate of Gore's position in 2000. The precise policy outcome from Obama's administration will, of course, depend on the degree to which Republicans in the Senate will be able to block Democratic policies through the use of the filibuster.²⁴⁸ However, all the indications in the early phase of the new administration are that Obama's policy initiatives will pass. This is indicated by the vote, on January 15, 2009, in the Senate of 52 against 42 in support of Obama's economic recovery program. On February 6, an agreement was reached in the Senate to reduce the size of the stimulus bill to \$780 billion, in return for the support of three Republican senators. On February 9, 2009, the Senate did indeed vote by the required majority of 61 to halt discussion of the stimulus bill, thus blocking a filibuster. A compromise bill of \$787 billion, including some tax cuts, was agreed by House and Senate within a few days, which the House passed with 245 Democrats voting against 183 Republicans, while the Senate passed it with just 60 votes. The bill was immediately signed by Obama.

As Obama commented afterwards:

Now I have to say that given that [the Republicans] were running the show for a pretty long time prior to me getting there, and that their theory was tested pretty thoroughly and its landed us in the situation where we've got over a trillion dollars' worth of debt and the biggest economic crisis since the Great Depression, I think I have a better argument in terms of economic thinking.

On February 26, Obama proposed a 10 year budget that revised the priorities of the past, with an estimated budget deficit for 2009 at \$1.75 trillion (or over 12% of GDP). It included promises to address global warming and to reverse the trend of growing inequality. A \$3.6 trillion Federal budget proposal passed the House on April 2, by 233 to 196, with even "blue dog" conservative Democrats supporting it, but, again, no Republicans. Finally, the Waxman-Markey climate change bill, formally called the American Clean Energy and Security Act (ACES), passed on a 219-212 vote in the House on June 26, 2009. The long delayed victory by Franken, junior senator for Minnesota as of June

²⁴⁷See also the figures for the elections of 2000 and 2004.

²⁴⁸See Miller and Schofield, (2008) for a discussion of Republican blocking tactics in recent years.

30, briefly gave the Democrats 60 votes in the Senate, sufficient to overcome Republican filibusters.

Obama's social policies may eventually pass, as indicated by the vote in the Senate of 61 to 36, on January 22, 2009, for a bill against pay discrimination. The House also gave final approval on February 4, by 290 to 135, to a bill extending health insurance to millions of low-income children. Forty Republicans voted for the bill, and 2 Democrats voted against it. When the bill was signed by President Obama, it was seen as the first of many steps to guarantee health coverage for all Americans.

Obama gained another important victory when the Senate confirmed Sonia Sotomayor as Supreme Court Justice on August 6, 2009, by a vote of 68 to 31. She will be the first Hispanic and the third woman to serve on the Court. On May 9, 2010, President Obama announced that he had chosen Elena Kagan as his nominee to succeed Supreme Court Justice John Paul Stevens.

Events in 2009 and 2010 are consistent with the model presented in this chapter. Obama is attempting to attract and retain pro-business social liberals with his response to the economic crisis. His massive budget proposal addresses the economic downturn but has angered most Republicans. It is possible that the Republican Party will eventually gain votes from the blue-collar voters who are suffering the most from the economic collapse. However, if there is any economic recovery by the 2012 election, it is likely that most of the pro-business group in the country will respond to Obama's attempt to get the economy moving by supporting him. That will leave the Republican Party with nothing but the old-style populism of William Jennings Bryan: anti-Wall Street, anti-banking, anti-Detroit, anti-immigration, and pro-evangelical religion. This will result in a party realignment to a situation where the predominantly socially and economically liberal "cosmopolitan" Democrats are opposed to a coalition of populist and economically conservative Republicans. It is possible that the Republican Party will move to the lower left, populist quadrant of the policy space, while business interests in the upper right quadrant will switch to the Democrats. It is indicative of this trend that on April 28 Arlen Specter, the senator from Pennsylvania, shifted his allegiance from the Republican Party to the Democrats. However, Specter lost the Democrat primary in May 2010, suggesting that Democrat activists are hostile to pro-business interests.

In October, 2009, the so-called "tea party activists" opposed to Obama's policies on health care began lining up against the centrist Governor Charlie Crist in the GOP Senate primary. On November 1, the centrist Republican candidate, Dede Scozzafava, decided to drop out of the special election in New York's 23rd congressional district and endorse the Democrat candidate, Bill Owens. He won the election in a district that had been Republican since 1872. Increasingly, the Democrats in Congress represent the richest and the poorest constituencies, while the Republican Party no longer is the party of the wealthy. In the health bill vote in the House in early November, 219 Democrats with 1 Republican voted for the bill, while 176 Republicans and 39 "Blue Dog" Democrats voted against.²⁴⁹ By December 19, Senator Bernie Sanders of Vermont, an

²⁴⁹On Saturday, November 21, the Senate voted 60 to 40, along partisan lines, to move to the final discussion

independent who caucuses with the Democrats, as well as Democrat Senators Ben Nelson and Sherrod Brown, had agreed to a compromise bill. This brought the size of the coalition to the critical size of 60 votes, sufficient to force a motion of cloture and bring about a decision in the Senate.²⁵⁰

Finally on Christmas Eve, 2009, the health bill passed in the Senate, again by 60 votes with 39 Republicans opposed. However, the victory by Republican Scott Brown in the special Senate election in Massachusetts on January 19 deprived the Democrats of the 60 seat majority required to push through the legislation.²⁵¹ On February 25, 2010, an attempt to reach a bipartisan compromise failed, and there was talk of using a maneuver known as “reconciliation” to force through a health bill using majority rule.

These political difficulties appear to have distressed the electorate. For example, the CNN Opinion Research Corp. poll, conducted on February 12-15, 2010, with 1,023 respondents, found that 86% thought government was “broken.” Of these, 81% felt it could be “fixed.” In fact, “gridlock”²⁵² can be overcome, as illustrated by the 62-30 vote in the Senate on February 22 to implement a multi-billion “jobs creation” program. Gridlock over health care also seemed to be broken on March 25, after strenuous efforts by President Barack Obama and House speaker, Nancy Pelosi, when the House voted 220-207 for the health care bill. Republicans had voted unanimously against the legislation, joined by 33 dissident Democrats. The President had signed a draft of the bill, the “Patient Protection and Affordable Care Act” on March 23, and the Senate passed the bill by simple majority of 56 to 43, as required for reconciliation.

On the other hand, on May 19, the vote to end debate on the Financial Regulation bill failed to obtain the required supermajority, but passed the next day on a vote of 59 to 39 (ie. a majority of 60.2%). Finally, on July 15, the Senate voted 60-39 for the Dodd–Frank Wall Street Reform and Consumer Protection Act, and this was signed into law by President Obama on July 21.²⁵³ President Obama also signed into law a bill to restore unemployment benefits for millions of Americans who have been out of work for six months or more.

As of early July, 2010, there remained four major bills to put through Congress: A Deficit Reduction Act, an Expanded Trade and Export Act, a Comprehensive Immigration Act, and an Energy Independence and Climate Change Act. On July 22, 2010, the effort to push forward with the Climate Change Act collapsed due to Republican opposition to a carbon tax. A major problem also remains with regard to the Bush tax cuts

on the health care bill.

²⁵⁰Cloture is a motion aimed at bringing debate to an end. It originally required a two-thirds majority, but since 1975 has required a super-majority of 60. As Mann and Ornstein (2008) observe, until the 1950’s there was only an average one cloture motion a year. After 2008, the number increased to about one a week. Ornstein (2010) notes that in the current Congress there are now two a week.

See also Koger (2010) and Binder (2003) and the earlier work by Binder and Smith (1996).

²⁵¹However, Scott Brown did vote with the Democrats in the Finance Bill in July.

²⁵²Brady and Volden (2005) use this phrase when discussing politics from Carter to Bush.

²⁵³This complex bill was 2300 pages long. Russ Feingold, a Democrat, voted against the bill, because it was not strong enough. Three moderate New England Republicans, Snowe and Collins of Maine, and Scott Brown of Massachusetts, voted for the bill. The death of Senator Robert Byrd of West Virginia made it more difficult to summon the required 60 votes for cloture.

of 2001 and 2003, which are due to expire at the end of 2010. If these bills, and the resolution of the tax cuts, prove impossible to enact because of Republican opposition, the electorate may blame the G.O.P.

Given these uncertainties surrounding policy choices in the legislature, it is hardly surprising that voters in the United States doubt that government can be effective. Part of the problem would appear to be the degree of political polarization that results from the power of interest groups located in the opposed quadrants of the policy space.

We have followed Miller and Schofield (2008) and emphasized the potential conflict between economically conservative and socially conservative Republican activists. In Indiana in February 2010, the incumbent Democrat Senator, Evan Bayh, announced that he would retire, because of “strident partisanship, unyielding ideology and a corrosive system of campaign financing.” His announcement set off a contest by local “tea party” social conservatives against the Republican National Committee’s support for Dan Coats, an economically conservative contender for the Senate seat. On May 18, Rand Paul, a Tea Party libertarian, won the Republican nomination in the primary for the Senate seat for Kentucky. His remarks after the election suggested that he thought that the Civil Rights Act of 1964 was too broad. These remarks triggered considerable controversy. These examples just illustrate the degree to which contenders for political office face opposition from activist groups with very different agendas. This is very clear from the response to Obama’s policies from economically conservative business interests, located at R in Figure 5.7, and the tea party, socially conservative interests located at C in the Figure.²⁵⁴

For example, in 2009, health care, pharmaceutical and insurance lobbyists²⁵⁵ spent approximately \$650 million on lobbying itself, and about \$210 million on media advertising, while the oil and gas industry spent about \$560 million.²⁵⁶ It would seem inevitable that the importance of lobbying can only increase in the future.²⁵⁷ The Supreme Court decision, *Citizens United v. Federal Election Commission*, on January 21, 2010, removed limits on campaign contributions and will further increase the importance of activist contributions. An earlier Court decision, *Federal Election Commission v. Wisconsin Right to Life Inc.* had allowed corporations to buy advertisements supporting candidates as long as they did not appeal explicitly for the election or defeat of a particular candidate. *Citizens United* removed this limitation.

In his State of the Union address in late January, 2010, President Obama said the court had “reversed a century of law that I believe will open the floodgates for special interests — including foreign corporations — to spend without limit in our elections.”

²⁵⁴Krugman noted in the *New York Times* (May 24, 2010) that most of the business interests are spending heavily on supporting Republican opposition to Democrat policies. See Rasmussen and Schoen (2010) for the growth of the tea party.

²⁵⁵The pharmaceutical industry was a strong supporter of reform of health care, because of an agreement with Obama to protect the industry’s profits.

²⁵⁶Tomasky (2010) gives a figure of \$3.47 billion for spending by lobbyists in the non election year of 2009, citing data from the Center for Responsive Politics.

²⁵⁷Indeed, Herrera, Levine and Martinelli (2008) observe that spending by parties in federal campaigns went from 58 million dollars in 1976 to over 1 billion in 2004 in nominal terms.

Dworkin (2010) later called the Supreme Court decision “an unprincipled political act with terrible consequences for the nation.”

In July, 2010, the Federal Election Commission approved the creation of two “independent” campaign committees, one each from the left and right, expressly designed to take advantage of the lack of spending limits. One committee is being set up by the Club for Growth, the conservative advocate for low taxes and less government. The other, called Commonsense Ten, with close ties to the Democrats, will raise money from individuals, corporations and unions. Both groups will be able to spend unlimited amounts, thanks to the *Citizens United* decision. A Democrat effort to impose new campaign finance regulations before the November congressional election was defeated on July 27 when all 61 Senate Republicans blocked a vote on a bill that would force special interest groups to disclose their donors when purchasing political advertisements. A second attempt at cloture on the bill failed by 59 to 39 in the Senate on September 23.²⁵⁸

5.4.1 The 2010 Election

In the November, 2010 mid-term election large amounts of money were funneled through non-profit advocacy groups that can accept unlimited donations and are not required to disclose their donors. As of November 1, 2010, it is estimated that these groups had spent \$280 million, 60% from undisclosed donors. Three activist groups, the US Chamber of Commerce, American Crossroads and the American Action Committee had spent \$32.8 million, \$21.6 million and \$17 million respectively.

Former Bush advisors, Karl Rove and Ed Gillespie, first formed American Crossroads as a 527 independent-expenditure-only committee, but was required to disclose donors. They then formed Crossroads Grassroots Policy Strategies (GPS) as a 501(c)(4) social welfare nonprofit, which means it does not need to disclose donors, but is not supposed to be used for political purposes. GPS spent \$17 million. The Chamber of Commerce is a 501(c)(6) nonprofit, but corporations that donate to the Chamber must disclose these contributions in their tax filings. These corporations include Dow Chemical, Goldman Sachs, Prudential Financial and Murdoch’s New Corporation.

South Carolina Senator, Jim DeMint, used the Senate Conservatives Fund as a PAC to funnel about a \$1million to many of the more radical Tea Party candidates. Indeed, a key element of the campaign was that these activist bodies were able to target House and Senate races where incumbent Democrats were weak. Total campaign spending was about \$4 billion, with Republican spending somewhat higher than total Democrat spending..

The extremely high level of expenditure (especially for a midterm election) is particularly interesting because there is evidence that the policy positions of activists on the social axis has become more polarized over the last forty years (Layman et al. 2010). This polarization appears to have benefited the wealthy in society and may well account for the increase the inequality in income and wealth distribution that has occurred

²⁵⁸ As usual it required 60 votes.

(Hacker and Pierson (2006, 2010, Pierson and Skocpol, 2007).

Ultimately, the electorate seems to have blamed incumbents, particularly Democrats, for economic woes. The Democrats lost 63 seats in the House, leading to a Republican majority of 242 to 192. In the Senate the Democrats lost 6 seats but retained a majority of 51 to 46 (with 3 generally pro-Democrat Independents).²⁵⁹ Many of the newly elected members of Congress received the backing of the Tea Party and vocally subscribed to extreme policy stances like abolishing the Federal Reserve, unemployment benefits, and even income taxes. Further, preliminary demographic studies of the Tea Party indicate that they are predominantly older, middle class suburban and rural white Americans²⁶⁰. This demographic make-up leads one to postulate that the Tea Party is a representation of a populist movement supported primarily by elites in the South and West. Although tea party supporters are opposed to deficit spending, they generally are supportive of social security and medicare, and want to reduce the deficit by cutting other programs. Perhaps most striking about the Tea Party is the immediate impact they are having on Congress itself; as of this writing the Republican House leadership has just created a special leadership post for an incoming freshman Representative from the Tea Party wing.

Because of the plurality nature of the U.S. electoral system, parties have to build a winning coalition of mobilized disaffected activists and current party activists (Miller and Schofield, 2003). Many of the tea party activists see themselves as conservative independents, opposed to big business, despite the fact that large corporations and wealthy individuals heavily funded many of the tea party candidates campaigns. Even before the 112th Congress entered session the Republican Party supported the wealthy benefactors by insisting on blocking all legislation during the lame duck session until the wealthiest two percent of Americans received the same extension on their tax cuts that the other 98 percent were set to receive.

This Republican measure included blocking discussion on repealing the “Don’t Ask, Don’t Tell” legislation, immigration reform legislation, a nuclear arms treaty and even legislation allocating funds to provide healthcare to September 11, 2001 first responders.

In an effort to close his career with parting advice about compromise retiring Connecticut Senator Chris Dodd gave his valedictory speech on the Senate floor on November 30, 2010 with remarks including the following:

From the moment of our founding, America has been engaged in an eternal and often pitched partisan debate. That’s no weakness. In fact, it is at the core of our strength as a democracy, and success as a nation. Political bipartisanship is a goal, not a process. You don’t begin the debate with bipartisanship – you arrive

²⁵⁹This was the backlash predicted by Bunch (2010). However, the Democrat losses may be due to the spending pattern. The *New York Times* analysis suggested that in 21 House districts where groups supporting Republican candidates spent about \$2 million, they won 12.

²⁶⁰Skocpol and Williamson (2010) have been collecting survey and interview data on the Tea Party since its emergence and although their findings are only preliminary, all indications are that Tea Party members are a very specific demographic sub-group with traditional populist concerns. See also Rasmussen and Schoen (2010).

there. And you can do so only when determined partisans create consensus – and thus bipartisanship. In the end, the difference between a partisan brawl and a passionate, but ultimately productive, debate rests on the personal relationships between Senators.

Another elder statesman in the Senate, Indiana's Richard Lugar, clearly felt the same way as Senator Dodd after the 2010 election as he defied the Republican Party over their various demands. Senator Lugar has said that the environment in Washington was the most polarized he had seen since joining the Senate in 1977. John C. Danforth, the former Republican senator from Missouri, remarked that

If Dick Lugar, having served five terms in the U.S. Senate and being the most respected person in the Senate and the leading authority on foreign policy, is seriously challenged by anybody in the Republican Party, we have gone so far overboard that we are beyond redemption.

President Obama eventually struck a deal to allow the tax cuts to be extended for all Americans (in exchange for an extension of unemployment benefits) despite the fact that even the most positive economic forecasts do not predict these tax cuts to the wealthy will bring unemployment down by more than 0.1 percent over the two year lifespan of the tax cut extension. Other provisions of the \$801 billion bill would grant tax breaks for schoolteachers, mass transit commuting expenses and landowners who invest in conservation techniques. This compromise angered many in the liberal wing of Democratic Party as they saw compromise as a betrayal of President Obama's progressive values. In the wake of persistent attack by several prominent liberal Democrats, Obama invited former President Bill Clinton to give a White House press conference in support of the compromise. On Monday 13 December, the Republican bargaining ploy worked. The Senate voted to halt debate on the tax cut bill, and the bill passed the Senate by 81 to 19 two days later. The House speaker, Nancy Pelosi of California, accused Republicans of forcing Democrats "to pay a king's ransom in order to help the middle class." Nonetheless, at midnight on 16 December, 139 House Democrats voted with 138 House Republicans for the bill, against 112 Democrats and 36 Republicans. President Obama signed the bill into law the next day.

After this initial compromise was struck, the logjam seemed to have broken as Congress struggled to assemble a stopgap measure to finance the government at least into the first months of 2011. However, House and Senate Republicans derailed a \$1.2 trillion spending measure put forward by Senate Democrats, and promised to use their majority in the new House to shrink government.

On December 18, the "Dream Act" Bill, to allow illegal immigrant students to become citizens, failed on a Senate vote of 55-41, but the Senate did vote 65 to 31 to repeal the "Don't Ask, Don't Tell" legislation, making it possible for gays to serve openly in the military. The House had previously approved this repeal by 250 to 175.

The Senate also voted 59 to 37 to reject an amendment to the arms control treaty, New Start, with Russia. The amendment would have killed the treaty because any

change to the text would have required the United States and Russia to renegotiate the treaty. On December 22, the Senate voted 71 to 26 for the treaty. This treaty was seen as the most tangible foreign policy achievement of President Obama. Thirteen Republicans joined a unanimous Democratic caucus to vote in favor, exceeding the two-thirds majority required by the Constitution.

The Senate also voted for a \$4.3 billion bill to cover medical costs for rescue workers after the 2001 terrorist attack. The House immediately voted for the bill 206 to 60, and it was sent to President Obama to sign into law. Congress also passed a defense authorization bill covering costs for Afghanistan and Iraq.²⁶¹ However, the bill made it more difficult to transfer detainees from Guantánamo.

As Obama said:

I think it's fair to say that this has been the most productive post-election period we've had in decades, and it comes on the heels of the most productive two years that we've had in generations. If there's any lesson to draw from these past few weeks, it's that we are not doomed to endless gridlock. We've shown in the wake of the November elections that we have the capacity not only to make progress, but to make progress together.

One of the first moves by the House in the new 112th Congress was to vote, on January 19, 2011, to repeal the Health Care Bill by a margin of 245 to 189. However, this repeal cannot pass the Democrat majority in the Senate. The budget that Obama released on February 14, 2011 attempted to deal with a record deficit of \$1.6 trillion. The growing costs of social security, Medicare and Medicaid make this very difficult, particularly in view of the Republican demand for reductions in tax. Partisan conflict continued in the House, as the Republican majority pushed through a plan to cut the budget by \$60 billion, on a vote of 235 to 189, together with amendments that would stop government funding for Planned Parenthood, and block money for the health care overhaul.

It seemed that the political system was again in gridlock with the parties completely polarized over the question of the US public debt. The debt ceiling was at \$14.3 trillion and the current US Treasury debt is \$14.29 trillion.²⁶² Republicans demanded a reduction in spending and the maintenance of tax cuts, while Democrats basically wanted the opposite. The shutdown of government in early April, 2011, was only just averted by a compromise that cut the budget by \$38 billion. After much wrangling, the House passed legislation on April 14, to finance the federal government for part of the remaining fiscal year. The final House vote was 260 to 167, with 59 members of the Republican majority and more than half the Democratic minority voting against the legislation. The bill also passed the Senate 81 to 19, again with many Republicans opposed. On April

²⁶¹ On December 21, Prime Minister Nuri Kamal al-Maliki of Iraq was able to get approval from the Iraq Parliament for a government coalition, consisting of Shia, Sunni and Kurd.

²⁶² Of this \$6.2 trillion is held by the US government: \$2.7 trillion in the Social Security Trust Fund, \$1.9 trillion in other government agencies and \$1.6 trillion in the Federal Reserve. China and Hong Kong hold \$1.3 trillion, other countries hold \$3.2 trillion, the remaining \$3.6 trillion is held by pension funds etc.

15, the House also voted 235 to 193 to approve the fiscal blueprint for 2012, drafted by Representative Paul D. Ryan, Republican of Wisconsin and chairman of the Budget Committee. The blueprint proposed a cut in expenditure of \$5.8 trillion over the next decade.

The House on Friday July 29, finally approved a plan for a short-term increase in the debt ceiling and cuts in spending. The vote was 218-210, with 22 Republicans unwilling to support the efforts by House Speaker John A. Boehner to get a bill approved. This ended a week of intense fighting among Republicans. The end game then shifted to the Senate which tabled the House proposal. On August 1 the House of Representatives passed a compromise bill, 269-161, supported by Democrats, increasing the debt ceiling by \$400 billion, with an additional \$500 billion through February, with spending caps of over \$900 billion. A Joint Committee was set up to determine future cuts of over \$1 trillion. The Senate passed the bill 74-26 on August 2 with 19 Republicans, and 6 Democrats and one independent voting against. Obama immediately signed the bill into law. Despite the eventual compromise on the debt ceiling, on August 5 Standard and Poor, the credit rating agency, downgraded US Federal debt from AAA to AA+, and the Dow industrial index dropped about 20% in the following days. However, demand for U.S. Treasury Bonds increased.

Later in August the 2012 Republican Presidential primary season began. Early frontrunners included Tea Party darlings Representative Michele Bachman, Representative Ron Paul, and Governor Rick Perry. Former Governor Mitt Romney openly admitted seeking a more centrist route to the nomination but he will have to contend with activist money such as the PAC "Make Us Great Again" which plans on supporting Rick Perry to the tune of \$55 million.

On September 13, President Obama acted on the economic turmoil set off by the Debt Ceiling debate, Standard and Poor downgrade and continuing European debt crisis by sending a \$447 billion jobs bill to Congress. Initial reaction from Republicans indicated a willingness to accept some measures of the bill, coupled with an insistence on keeping tax cuts for the wealthiest and resistance to closing corporate loopholes. On November 21, however, the Joint Committee to reduce the deficit announced that it could not come to any agreement, but declared "We remain hopeful that Congress can build on this committee's work and can find a way to tackle this issue in a way that works for the American people and our economy." The Dow closed about 2% down for the day.

President Obama, in the first stage of his administration, made every effort to recreate the American New Deal compact, and possibly a new global compact, to begin to deal with the possibility of economic collapse and a fractured world facing the possibility of catastrophic climate change. This compact could be an analogue of the Bretton Woods system created after World War II. A start has been made in this direction, as indicated by the agreement, in April, 2009, of the G-20 group of Industrial countries, under pressure from Obama, to make \$850 billion, as well as \$150 billion in Special Drawing Rights, available through international financial institutions such as the IMF and World Bank. As noted before, Obama also pushed through the Copenhagen Ac-

cord in December 2009, a possible beginning of an attempt to deal with climate change. However, opposition by the Republican Party suggests that major legislation on climate change is very unlikely in the near future. It seems that China is likely to be more successful at curbing carbon emissions and developing clean energy.

It is possible that Obama will be able to continue with some of the policy changes that he hoped to implement.

In his speech in Westminster Hall, London, on March 25, 2011, Obama clearly showed his awareness of the problems he faces:

Our action, our leadership is essential to the cause of human dignity. And so we must act, and lead with confidence in our ideals, and an abiding faith in the character of our people, who sent us all here today.

5.5 Concluding Remarks

It seems to be the case that formal models of elections based on position and valence alone are quite inadequate to account for political outcomes. The following remarks and inferences suggest that any formal model of US elections must explicitly include activist groups:

(i) The equilibrium analysis of spatial models of US presidential elections indicates that candidates should converge to positions very close to the electoral mean in order to maximize vote shares.

(ii) However, estimates of candidate positions indicate that they are located in opposed quadrants of the policy space.

(iii) The incompatibility of the equilibrium locations and the estimated positions can be explained by the influence of activists in US elections.

(iv) Activist influence has increased over the past decade, and will probably become even more important.

(v) Although the distribution of voter positions may not change dramatically, so the distribution cannot be seen to be polarized, the positions of candidates for office have become more polarized. The system of primaries in US elections is likely to further enhance the influence of activists on candidates.

(vi) Because of this polarization of candidate positions, a shift in the party controlling the presidency will have significant policy implications.

(vii) The same argument holds for members of Congress, and we would expect activist influence to increase the degree of polarization in Congress.²⁶³

(viii) The influence of activists in the strongly majoritarian polity of the United States is the fundamental cause of these policy shifts.

(ix) Because the winner of the presidential election will generally be located some

²⁶³ Conflict between the parties over health care, in 2009 and 2010, as discussed above, is just one illustration of this phenomenon.

distance from the electoral center, the policies supported by the President will generally not be supported by an electoral majority. This phenomenon can be seen with regard to the reform of health care, supported by Obama in 2009/2010. This policy is certainly located in the upper left quadrant of the policy space. In January 22, 2010, it was estimated that about 39% of the electorate supported the health plan while 55% do not.

(x) In between elections, diametrically different policy positions will be aggressively supported by opposed lobbying groups.

(xi) Actual policy choices will depend on complex bargaining between the President and Congress. As the health care issue illustrates, the supramajoritarian voting rule in the Senate will tend to favor the *status quo*.

(xii) The heterogeneity of activist-induced policy preferences in Congress,²⁶⁴ together with a non-centrist presidential policy position can thus result in so-called “gridlock.”²⁶⁵

(xiii) There is an increasing perception in the electorate that Congress has become dysfunctional. More importantly, as Fiorina and Abrams (2009) has noted, there seems to be a “disconnect” between the distribution of electoral preferences and the policy options offered by competing Presidential candidates.

(xiv) In the future, health, energy and climate are likely to continue to be important policy areas that will attract powerful activist groups that will influence political choices in ways that are unlikely to be Pareto optimal for the society at large.

(xv) Religion, and evangelical interest groups will likely become increasingly important in both Presidential and Congressional elections.

(xvi) There is evidence that the policy positions of activists on the social axis has become more polarized over the last forty years (Layman et al. 2010).

(xvii) This polarization appears to have benefited the wealthy in society and may well account for the increase in the increase in inequality in income and wealth distribution that has occurred (Hacker and Pierson (2006, 2010, Pierson and Skocpol, 2007). Kaletsky (2010) has suggested a fundamental reason why pro-business activists are so willing to provide resources to political agents who are willing to institute and maintain tax cuts for the rich in the U.S. It is simply that the U.S. tax system is quite progressive. The richest 10% pay 48% of total household taxes, so the rich stand to gain substantially from bribing political agents.²⁶⁶

It thus appears that the political institutions in the U.S., including both the plurality nature of the electoral system and the structure of the tax system, have a profound effect on the way political choices are made.

In the following chapters we shall first model elections in other polities whose elections are based on plurality rule, namely Canada and Great Britain. We shall also exam-

²⁶⁴Work by Jeong et al (2011) estimated the policy positions of US senators with regard to the 2006 immigration reform act and found the Republican senator positions to be very heterogenous, but all clearly in the lower right hand quadrant of the policy space.

²⁶⁵This of course contradicts the argument by Bernhardt *et al.* (2009) that divergence is welfare enhancing.

²⁶⁶European taxes are focused on consumption rather than income taxes, so the share in France of the richest 10% is only 28%.

ine elections in polities which have electoral systems that are more “proportional” than the US. These polities include the Netherlands, Belgium, Turkey, Israel, and Poland. In Chapter 9 we shall examine the “partial democracies” of Russia, Georgia and Azerbaijan, sometimes called “anocracies,” where only a limited aspect of full democracy is institutionalized .

Our purpose will be to determine the extent by which electoral systems have an impact on the convergence coefficients, and therefore on the likelihood that electoral considerations can induce convergence to an electoral mean

5.6 Appendix 1: Questions for the 2008 ANES.

1. Do you think the government should provide more services than it does now, fewer services than it does now, or about the same number of services as it does now?
 2. Do you favor, oppose, or neither favor nor oppose the U.S. government paying for all necessary medical care for all Americans?
 3. A proposal has been made that would allow people to put a portion of their Social Security payroll taxes into personal retirement accounts that would be invested in stocks and bonds. Do you favor this idea, oppose it, or neither favor nor oppose it?

I am going to ask you three questions, and ask you to choose which of two statements in these questions comes closer to your own opinion.

 4. One, the main reason government has become bigger over the years is because it has gotten involved in things that people should do for themselves. Two, government has become bigger because the problems we face have become bigger.
 5. One we need a strong government to handle today's complex economic problems. Two, the free market can handle these problems without government being involved.
 6. One, the less government, the better. Two there are more things that government should be doing.
 7. This country would be better if we worried less about how equal people are. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
 8. Do you think that big companies should pay a larger percent of their profits in taxes than small businesses do, that big companies should pay a smaller percent of their profits in taxes than small businesses do, or that big companies and small businesses should pay the same percent of their profits in taxes?
 9. Should federal spending on welfare programs be increased, decreased, or kept about the same?
 10. Do you favor, oppose, or neither favor nor oppose the U.S. government making it possible for illegal immigrants to become U.S. citizens?
 11. Do you think the number of immigrants from foreign countries who are permitted to come to the United States to live should be increased a lot, increased a little, left the same as it is now, decreased a little, or decreased a lot?
 12. I'd like to describe a series of circumstances in which a woman might want to have an abortion. For each one, please tell me whether you favor, oppose, or neither favor nor oppose it being legal for the woman to have an abortion in that circumstance.
 1. staying pregnant would hurt the woman's health but is very unlikely to cause her to die.
 2. staying pregnant could cause the woman to die.
 3. the pregnancy was caused by sex the woman chose to have with a blood relative.
 4. the pregnancy was caused by the woman being raped.
 5. the fetus will be born with a serious birth defect.
 6. having the child would be extremely difficult for the woman financially.
 7. the child will not be the sex the woman wants it to be.

13. Do you favor or oppose laws to protect homosexuals against job discrimination?
14. Do you think homosexuals should be allowed to serve in the United States Armed Forces or don't you think so?
15. Do you think gay or lesbian couples, in other words, homosexual couples, should be legally permitted to adopt children?
16. Should same-sex couples be allowed to marry, or do you think they should not be allowed to marry?
17. This country would have many fewer problems if there were more emphasis on traditional family ties. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
18. Do you think the federal government should make it more difficult for people to buy a gun than it is now, make it easier for people, or keep the rules the same?
19. Some people feel that the government in Washington should make every effort to improve the social and economic position of blacks. Others feel that the government should not make any special effort to help blacks because they should help themselves. Where would you place yourself on this scale, or haven't you thought much about this?
20. Irish, Italians, Jewish and many other minorities overcame prejudice and worked their way up. Blacks should do the same without any special favors. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
21. Generations of slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
22. It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites. Do you agree strongly, agree somewhat, neither agree nor disagree, disagree somewhat, or disagree strongly with this statement?
23. We hear a lot of talk these days about liberals and conservatives. Where would you place yourself on a scale from liberal to conservative?

5.7 Appendix 2: Tables for 2008

Table A5.1 Factor loadings for economic and social policy.

| Question | Economic Policy | Social Policy |
|----------------------------|-----------------|---------------|
| 1. Government services | 0.53 | 0.12 |
| 2. Universal health care | 0.51 | 0.22 |
| 4. Government bigger | 0.50 | 0.14 |
| 5. Government or market | 0.56 | |
| 9. Welfare spending | 0.24 | |
| 6. Less government | 0.65 | |
| 7. Equality | 0.14 | 0.37 |
| 8. Tax Companies | 0.28 | 0.10 |
| 12. Abortion scale | | 0.55 |
| 11. Immigrant scale | 0.12 | 0.25 |
| 13-16. Gay scale | | 0.60 |
| 17. Traditional values | | 0.53 |
| 18. Gun access | 0.36 | |
| 19-22. Afr. Amer. scale | 0.14 | 0.45 |
| 23. Liberal v conservative | 0.30 | 0.60 |
| Eigenvalue | 1.93 | 1.83 |

Table A5.2 Descriptive data

| | Econ Policy | | | Social Policy | | | <i>n</i> |
|---------------|-------------|------|----------------|---------------|------|----------------|----------|
| | Mean | s.e. | 95% C.I. | Mean | s.e. | 95% C.I. | |
| Activists | | | | | | | |
| Democrats | -0.20 | 0.09 | [-0.38, -0.02] | 1.14 | 0.11 | [0.92, 1.37] | 80 |
| Republicans | 1.41 | 0.13 | [1.66, 1.16] | -0.82 | 0.09 | [-0.99, -0.65] | 40 |
| Non-activists | | | | | | | |
| Democrats | -0.17 | 0.03 | [-0.24, -0.11] | 0.36 | 0.04 | [0.29, 0.44] | 449 |
| Republicans | 0.72 | 0.06 | [0.60, 0.84] | -0.56 | 0.05 | [-0.65, -0.46] | 219 |
| | | | | | | | 788 |

Table A5.3. Obama and McCain perceived positions

| Question | Obama | McCain |
|---------------------------------------|-------|--------|
| Estimated position on economic policy | -0.22 | 0.59 |
| Estimated position on social policy | 0.75 | -0.37 |

Table A5.4 Factor loadings for candidate traits scores 2008

| Question | Obama Traits | McCain Traits |
|----------------------|--------------|---------------|
| Obama Moral | .72 | -.01 |
| Obama Caring | .71 | -.18 |
| Obama Knowledgeable | .61 | -.07 |
| Obama Strong | .69 | -.13 |
| Obama Honest | .68 | -.09 |
| Obama Intelligent | .61 | .08 |
| Obama Optimistic | .55 | .00 |
| McCain Moral | -.09 | .67 |
| McCain Cares | -.17 | .63 |
| McCain Knowledgeable | -.02 | .65 |
| McCain Strong | -.10 | .70 |
| McCain Honest | -.03 | .63 |
| McCain Intelligent | .11 | .68 |
| McCain Optimistic | -.07 | .57 |
| Eigenvalue | 3.07 | 3.00 |

Table A5.5. Spatial Logit Models for USA 2008^a

| Variable | (1) Spatial ^{b,c} | (2) Sp. & Traits | (3) Sp. & Dem. | (4) Full |
|--------------------------|----------------------------|-------------------|--------------------|--------------------|
| McCain valence λ | -0.84*** (7.6) | -1.08*** (8.3) | -2.60** (2.8) | -3.58*** (3.4) |
| Spatial β | 0.85*** (14.1) | 0.78*** (10.1) | 0.86*** (12.3) | 0.83*** (10.3) |
| McCain traits | | 1.30*** (7.6) | | 1.36*** (7.15) |
| Obama traits | | -1.02*** (6.8) | | -1.16*** (6.44) |
| Age | | | -0.01 (1.0) | -0.01 (1.0) |
| Gender (F) | | | 0.29 (1.26) | 0.44 (0.26) |
| African American | | | -4.16*** (3.78) | -3.79*** (3.08) |
| Hispanic | | | -0.55 (1.34) | -0.23 (0.51) |
| Education | | | 0.15* (2.5) | 0.22*** (3.66) |
| Income | | | 0.03 (1.5) | 0.01 (0.50) |
| Working Class | | | -0.54* (2.25) | -0.70** (2.59) |
| South | | | 0.36 (1.5) | -0.02 (0.07) |
| Observations | 788 | | | |
| log likelihood (LL) | -299 | -243 | -250 | -207 |
| AIC | 601 | 494 | 521 | 438 |
| BIC | 611 | 513 | 567 | 494 |

^a Vote for Obama is the baseline outcome

^b $|t - stat|$ in parentheses.

^c Throughout this volume we use the convention * : $prob < 0.05$; ** : $prob < 0.01$; *** : $prob <$

0.001

Table A5.6. Comparison of LL for US spatial models in 2008^a

| | JST | ST | S | T |
|-----|------|------|-----|-----|
| JST | na | 36 | 92 | 150 |
| ST | -7 | na | 55 | 114 |
| S | -92 | -55 | na | 58 |
| T | -150 | -114 | -58 | na |

^aJST=Joint spatial with traits, ST= spatial with traits, S=pure spatial, T=Pure traits.

5.8 Appendix 3: Tables for 2000 and 2004

Table A5.7 Spatial Logit Models for USA 2000 (Base=Gore)

| Variable | (1) $\mathbb{M}(\lambda, \beta)$. Spatial ^{a,b} | (2) $\mathbb{M}(\lambda, \alpha, \beta)$. Sp. & Traits | (3) $\mathbb{M}(\lambda, \theta, \beta)$. Sp. & Dem | (4) $\mathbb{M}(\lambda, \theta, \alpha, \beta)$. Full |
|------------------------|--|--|---|--|
| Bush valence λ | -0.43*** (5.05) | -0.69*** (5.64) | -0.39 (0.95) | 0.48 (0.72) |
| Spatial β | 0.82*** (14.9) | 0.35*** (3.69) | 0.89*** (14.8) | 0.38*** (3.80) |
| Bush trait | | 3.559*** (13.84) | | 3.58*** (13.60) |
| Gore trait | | -3.22*** (14.25) | | -3.15*** (13.64) |
| Age | | | -0.14** (2.33) | -0.22* (2.17) |
| Gender (F) | | | -0.139 (1.00) | -0.39 (1.41) |
| African American | | | -1.57*** (5.85) | -1.45*** (3.67) |
| Hispanic | | | -0.27 (0.77) | -0.23 (0.49) |
| Class | | | -0.20 (1.30) | -0.12 (0.47) |
| Education | | | 0.18*** (3.60) | 0.11 (1.32) |
| Income | | | 0.042*** (3.6) | -0.01 (0.32) |
| Observations | 1238 | 1238 | 1238 | 1238 |
| Log likelihood (LL) | -708 | -277 | -661 | -264 |
| AIC | 1420 | 563 | 1341 | 549 |
| BIC | 1431 | 586 | 1393 | 613 |

^a $|t - stat|$ in parentheses.

^b * : $prob < 0.05$; ** : $prob < 0.01$; *** : $prob < 0.001$

Table A5.8. Spatial Logit Models for USA in 2004 (Base=Kerry)

| Variable | (1) $\mathbb{M}(\lambda, \beta)$. Spatial ^{a,b} | (2) $\mathbb{M}(\lambda, \alpha, \beta)$. Sp. & Traits | (3) $\mathbb{M}(\lambda, \theta, \beta)$. Sp. & Dem | (4) $\mathbb{M}(\lambda, \theta, \alpha, \beta)$. Full |
|------------------------|--|--|---|--|
| Bush valence λ | -0.43*** (5.05) | -0.15 (1.00) | -1.72*** (3.50) | -0.670 (0.70) |
| Spatial coeff. β | 0.95*** (14.21) | 0.47*** (3.49) | 1.09*** (13.76) | 0.475*** (3.125) |
| Bush trait | | 4.18*** (11.49) | | 4.22*** (11.40) |
| Kerry trait | | -4.20*** (11.58) | | -4.14*** (11.13) |
| Age | | | -0.16** (2.61) | 0.03 (0.25) |
| Gender (F) | | | 0.08 (0.44) | -0.38 (1.18) |
| African American | | | -1.62*** (6.11) | -1.13** (2.30) |
| Hispanic | | | -0.26 (0.75) | 0.14 (1.75) |
| Class | | | 0.22 (1.20) | 0.26 (0.75) |
| Education | | | 0.15* (2.37) | 0.136 (1.12) |
| Income | | | 0.056*** (3.29) | 0.012 (0.038) |
| Observations | 935 | 935 | 935 | 935 |
| Log likelihood (LL) | -502 | -145 | -448 | -138 |
| AIC | 1007 | 299 | 914 | 298 |
| BIC | 1018 | 321 | 964 | 359 |

^a $|t - stat|$ in parentheses.

^b * : $prob < 0.05$; ** : $prob < 0.01$; *** : $prob < 0.001$

5.9 Appendix 4: The Formal Stochastic Model

A recent literature on elections has focussed on the effects of campaign expenditure on US election results (Coate, 2004; Meirowitz, 2008). Herrera et al. (2008) suggest that electoral volatility forces candidates to spend more, while Ashworth and Bueno de Mesquita (2007) suppose that candidates buy valence so as to increase their election chances. Snyder and Ting (2008) model the contracting game between interest groups and politicians. Grossman and Helpman (1994, 1994, 2001) provide some game theoretic foundations of a model of campaign contributions. In particular, Grossman and Helpman (1996: 265) define two distinct motives for activists:

Contributors with an *electoral* motive intend to promote the electoral prospects of preferred candidates. Those with an *influence motive* aim to influence the politicians' policy pronouncements.

Ansolabehere et al. (2003) provide an empirical analysis of Congressional and Presidential election campaign contributions up to 2000. They note that candidates, parties and organizations raised and spent about \$3 billion in the 1999-2000 election cycle. However, the federal government at that time spent about \$2 trillion, so the prize from influencing politics was of considerable value. The reason they offer that so little is spent is that contributions are a consumption good, rather than an investment good. However, they do note that the electoral motive is not insignificant: they suggest that the marginal impact of \$100,000 spent in a House race is about 1% in vote.

The essence of the model presented here is that it attempts to combine the electoral and influence motives: the resources used by candidates in seeking election victory come from the *contracts* they can make with their supporting activists. Essentially there is an arms race between candidates over these resources due to a feedback mechanism between politics and economics.

As the outcome of the election becomes more important, activists become increasingly aware that the resources they provide have become crucial to election victories, and they become more demanding of their chosen candidates. Because of the offer of resources, candidates are forced to move to more radical positions, and polarization increases.

We model this mechanism using an electoral model, based on Schofield (2006), that is an extension of the multiparty stochastic model of McKelvey and Patty (2006), modified by inducing asymmetries in terms of valence. The justification for developing the model in this way is the empirical evidence that valence is a natural way to model the judgements made by voters of party leaders and candidates.²⁶⁷ There are a number of possible choices for the appropriate model for multiparty competition. The simplest one, which is used here, is that the utility function for the agent j is proportional to the anticipated vote share, V_j , of the party in the election.²⁶⁸

²⁶⁷We can use the model either for party leaders or candidates for office, as in the United States. In the following we shall use the term *agents* to mean either one.

²⁶⁸For refining the model, and for empirical analysis, we can adapt the model so that parties choose positions

With this assumption, we can examine the conditions on the parameters of the stochastic model which are necessary for the existence of a pure strategy Nash equilibrium (PNE). Because the vote share functions are differentiable, we use calculus techniques to obtain conditions for positions to be locally optimal. Thus we examine what we call *local pure strategy Nash equilibria* (LNE). From the definitions of these equilibria it follows that a PNE must be a LNE, but not conversely.

The key idea underlying the formal model is that party leaders attempt to estimate the electoral effects of policy choices, and choose their own positions as best responses to other party declarations, in order to maximize their own vote share. The stochastic model essentially assumes that candidates cannot predict vote response precisely, but that they can estimate the effect of policy proposals on the expected vote share. Implicitly we assume that party leaders rationally anticipate the electoral outcome of any policy decision they make. Parties use focus groups in addition to regularly polling voters in order to determine the electoral response to local policy changes in the period leading up to the election. In the model with valence, the stochastic element is associated with the weight given by each voter, i , to the average perceived quality or valence of the agent.

The valence of each party, or candidate, j , is affected by the activist functions, which specify the resources available to j .

Definition 5.1. *The Stochastic Vote Model* $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$ *with Activist Valence.*

The data of the spatial model is a distribution, $\{x_i \in X\}_{i \in N}$, of voter ideal points for the members of the electorate, N , of size n . We assume that X is a compact convex subset of Euclidean space, \mathbb{R}^w , with w finite. Without loss of generality, we adopt coordinate axes so that $\frac{1}{n} \sum x_i = 0$. By assumption $0 \in X$, and this point is termed the *electoral mean*, or alternatively, the *electoral origin*. Each of the parties in the set $P = \{1, \dots, j, \dots, p\}$ chooses a policy, $z_j \in X$, to declare prior to the specific election to be modeled.

Let $\mathbf{z} = (z_1, \dots, z_p) \in X^p$ be a typical vector of candidate policy positions.

We define a stochastic electoral model, which utilizes socio-demographic variables and voter perceptions of character traits. For this model we assume that voter i utility is given by the expression

$\mathbf{u}_i(x_i, \mathbf{z}) = (u_{i1}(x_i, z_1), \dots, u_{ip}(x_i, z_p))$ where

$$u_{ij}(x_i, z_j) = \lambda_j + \mu_j(z_j) + (\theta_j \cdot \eta_i) + (\alpha_j \cdot \tau_i) - \beta \|x_i - z_j\|^2 + \varepsilon_j = u_{ij}^*(x_i, z_j) + \varepsilon_j. \quad (5.5)$$

Here $u_{ij}^*(x_i, z_j)$ is the observable component of utility. The constant term, λ_j , is the exogenous *valence* of agent j , and the exogenous valence vector $\lambda = (\lambda_1, \lambda_2, \dots, \lambda_p)$ is assumed to satisfy $\lambda_p \geq \lambda_{p-1} \geq \dots \geq \lambda_2 \geq \lambda_1$. In empirical multinomial logit models, the valence vector, λ , is given by the intercept terms for each agent. The points $\{x_i : i \in N\}$ are the preferred policies of the voters and $\mathbf{z} = \{z_j : j \in P\}$ are the positions of the agents. The term $\|x_i - z_j\|$ is simply the Euclidean distance between

to maximize their seat shares, relative to a given constituency structure. We adopt the simplifying vote share assumption in order to present the essential structure of the formal model.

x_i and z_j . The error vector $\varepsilon = (\varepsilon_1, \dots, \varepsilon_j, \dots, \varepsilon_p)$ is distributed by the type I extreme value distribution, as assumed in empirical MNL estimation (Train, 2003), and defined below. The variance of ε_j is fixed at $\frac{\pi^2}{6}$. By definition β has dimension $\frac{1}{L^2}$, where L is whatever unit of measurement is used in X .

Sociodemographic aspects of voting are modeled by θ , a set of k -vectors $\{\theta_j : j \in P\}$ representing the effect of the k different sociodemographic parameters (class, domicile, education, income, gender and ethnic background) on voting for party j while η_i is a k -vector denoting the i^{th} individual's relevant "sociodemographic" characteristics. The compositions $\{(\theta_j \cdot \eta_i)\}$ are scalar products, called the *sociodemographic valences* for j .

The terms $\{(\alpha_j \cdot \tau_i)\}$ are scalars giving voter i 's perceptions and beliefs. These can include perceptions of the character traits of agent j , or beliefs about the state of the economy, etc. We let $\alpha = (\alpha_1, \dots, \alpha_p)$. A *trait score* can be obtained by factor analysis from a set of survey questions asking respondents about the traits of the agent, including 'moral', 'caring', 'knowledgable', 'strong', 'honest', 'intelligent', etc. The perception of traits can be augmented with voter perception of the state of the economy, etc. in order to examine how anticipated changes in the economy affect each agent's electoral support.

The terms $\{\mu_j : j \in P\}$ are the *activist valence functions*. In essence, these terms are endogenous to the model, so we may regard these as *endogenous*, rather than exogenous valence functions. The full endogenous model including activists is denoted $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$. The partial models include a pure spatial model, $\mathbb{M}(\lambda, \beta)$, a pure sociodemographic model, $\mathbb{M}(\lambda, \theta)$, a spatial trait model, $\mathbb{M}(\lambda, \alpha, \beta)$, and joint models, with or without traits, $\mathbb{M}(\lambda, \theta, \alpha, \beta)$ and $\mathbb{M}(\lambda, \theta, \beta)$.

In all models, voter behavior is modeled by a probability vector. The probability that a voter i chooses party j at the vector \mathbf{z} is

$$\rho_{ij}(\mathbf{z}) = \Pr[[u_{ij}(x_i, z_j) > u_{il}(x_i, z_l)], \text{ for all } l \neq j]. \quad (5.6)$$

$$= \Pr[\varepsilon_l - \varepsilon_j < u_{ij}^*(x_i, z_j) - u_{il}^*(x_i, z_j), \text{ for all } l \neq j]. \quad (5.7)$$

Here \Pr stands for the probability operator generated by the distribution assumption on ε . The *expected vote share* of agent j is

$$V_j(\mathbf{z}) = \frac{1}{n} \sum_{i \in N} \rho_{ij}(\mathbf{z}). \quad (5.8)$$

This definition assumes that each voter has equal weight, $\frac{1}{n}$. The following analysis can be carried out when voters have different weight. The differentiable function

$$\mathbf{V} = (V_1, \dots, V_p) : X^p \rightarrow \mathbb{R}^p$$

is called the *agent profile function*.

Definition 5.2: The Type I Extreme Value Distribution, Ψ .

(i) The cumulative distribution, Ψ , has the closed form

$$\Psi(h) = \exp[-\exp[-h]],$$

with probability density function

$$\psi(h) = \exp[-h] \exp[-\exp[-h]]$$

and variance $\frac{1}{6}\pi^2$.

(ii) For each voter i , and agent j , the probability that a voter i chooses agent j at the vector \mathbf{z} is

$$\rho_{ij}(\mathbf{z}) = \frac{\exp[u_{ij}^*(x_i, z_j)]}{\sum_{k=1}^p \exp u_{ik}^*(x_i, z_k)}. \quad (5.9)$$

In this stochastic electoral model it is assumed that each agent j chooses z_j to maximize V_j , conditional on $\mathbf{z}_{-j} = (z_1, \dots, z_{j-1}, z_{j+1}, \dots, z_p)$.

Definition 5.3. Equilibrium Concepts.

(i) A strategy vector $\mathbf{z}^* = (z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*)$ is a *local Nash equilibrium* (LNE) of \mathbf{V} iff, for each agent j , there exists a neighborhood X_j of z_j^* in X such that

$$V_j(z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*) \geq V_j(z_1^*, \dots, z_j, \dots, z_p^*) \text{ for all } z_j \in X_j.$$

(ii) A strategy vector $\mathbf{z}^* = (z_1^*, \dots, z_{j-1}^*, z_j^*, z_{j+1}^*, \dots, z_p^*)$ is a *pure strategy Nash equilibrium* (PNE) iff X_j can be replaced by X in (i).

(iv) The strategy z_j^* is termed a *local strict best response*, a *local weak best response*, or a *global best response*, respectively to $\mathbf{z}_{-j}^* = (z_1^*, \dots, z_{j-1}^*, z_{j+1}^*, \dots, z_p^*)$ depending on which of the above conditions is satisfied. We can also define strict local Nash equilibria (SLNE) and strict Nash equilibria (SPNE) by requiring strict inequalities in the definition.

From the definitions, it follows that if \mathbf{z}^* is a PNE it must be an LNE.

Notice that in this model, each agent is uncertain about the precise electoral outcome, because of the stochastic component of voter choice.

In real life, agents use focus groups and opinion poll data to estimate the effect of their policy decisions on their vote shares at the time of election. The model essentially assumes that agents utilize such information by searching for a "local equilibrium" policy position in order to gain as many votes as possible.

It follows for the model $\mathbb{M}(\lambda, \mu, \theta, \alpha, \beta)$, that for voter i , with ideal point, x_i , the probability, $\rho_{ij}(\mathbf{z})$, that i picks j at \mathbf{z} is given by

$$\rho_{ij}(\mathbf{z}) = [1 + \sum_{k \neq j} \exp(f_{kj})]^{-1} \quad (5.10)$$

where

$$f_{kj} = u_{ik}^*(x_i, z_k) - u_{ij}^*(x_i, z_j). \quad (5.11)$$

$$\text{Thus } \frac{d\rho_{ij}}{dz_j} = \{2\beta(x_i - z_j) + \frac{d\mu_j}{dz_j}(z_j)\}[\rho_{ij} - \rho_{ij}^2]. \quad (5.12)$$

(Here we use the notation $\frac{d\rho_{ij}}{dz_j}$ to mean the gradient). The first order condition for \mathbf{z}^* to be a LNE is given by

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} = 0. \quad (5.13)$$

We then use the gradient equation for $\frac{d\rho_{ij}}{dz_j}$ to show that an equilibrium \mathbf{z}^* must be a *balance solution*.

Definition 5.4: The balance solution for the model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$.

Let $[\rho_{ij}(\mathbf{z})] = [\rho_{ij}]$ be the n by p matrix of voter probabilities at the vector \mathbf{z} , and let

$$[\varpi_{ij}] = \left[\frac{\rho_{ij} - \rho_{ij}^2}{\sum_{k=1}^n (\rho_{kj} - \rho_{kj}^2)} \right] \quad (5.14)$$

be the n by p matrix of weighting coefficients.

The *balance equation* for z_j^* is given by expression

$$z_j^* = \frac{1}{2\beta} \frac{d\mu_j}{dz_j} + \sum_{i=1}^n \varpi_{ij} x_i. \quad (5.15)$$

The vector $\sum_i \varpi_{ij} x_i$ is a convex combination of the set of voter ideal points. This vector is called the *weighted electoral mean* for agent j . Define

$$z_j^{el} = \sum_i \varpi_{ij} x_i. \quad (5.16)$$

and

$$\mathbf{z}^{el} = (z_1^{el}, \dots, z_p^{el}).$$

The balance equations for $j = 1, \dots, p$ can then be written as

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j^*) + \frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j^*) = 0. \quad (5.17)$$

The first term in this equation is termed the *centripetal marginal electoral pull of agent j* and is defined at z_j by

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j) = [z_j^{el} - z_j].$$

It is a gradient vector pointing from z_j towards the *weighted electoral mean*, z_j^{el} , of the agent. This weighted electoral mean is that point where the electoral pull is zero. Notice that the each entry in the vector $\mathbf{z}^{el} = (z_1^{el}, z_2^{el}, \dots, z_p^{el})$ depends on all other entries. The vector $\frac{d\mu_j}{dz_j}$ is called the *marginal activist pull for agent j* .

In vector notation we write:

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) = [\mathbf{z}^{el} - \mathbf{z}^*].$$

$$\frac{d\mathbf{E}^*}{d\mathbf{z}}(\mathbf{z}^*) + \frac{1}{2\beta} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}^*) = 0.$$

If the vector \mathbf{z}^* satisfies the system of balance equations, for all j , then call \mathbf{z}^* a *balance solution*.

The following theorem is proved in Schofield (2006b).

The Balance Theorem. Consider the electoral model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ based on the Type I extreme value distribution, and including both exogenous and activist valences.

(i) The first order condition for \mathbf{z}^* to be an LNE is that it is a balance solution.

(ii) If all activist valence functions are highly concave, in the sense of having negative eigenvalues of sufficiently great magnitude, then a balance solution will be a LNE.

□

Notice that if X is open, then this first order condition at \mathbf{z}^* is necessary for \mathbf{z}^* to be a PNE. We implicitly assume that any relevant \mathbf{z}^* will lie in the interior of X .

In the case that the activist valence functions and sociodemographic terms are identically zero, we call this the *pure spatial model*, denoted $\mathbb{M}(\boldsymbol{\lambda}, \beta)$.

In this case, the first order condition is

$$\frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} \quad (5.18)$$

$$= \frac{1}{n} \sum_{i \in N} \{2\beta(x_i - z_j)\} [\rho_{ij} - \rho_{ij}^2] = 0. \quad (5.19)$$

Suppose that all z_j are identical. Then all ρ_{ij} are independent of $\{x_i\}$ and thus of i , and ρ_{ij} may be written as ρ_j . Then for each fixed j , the first order condition is

$$\frac{dV_j(\mathbf{z})}{dz_j} = 2\beta[\rho_j - \rho_j^2] \sum_{i \in N} [(x_i - z_j)] = 0 \quad (5.20)$$

Thus, when there is only exogenous valence, then for all j , balance solution satisfies $z_j^* = \frac{1}{n} \sum_{i \in N} x_i$, the *electoral mean*. We denote by \mathbf{z}_0 the vector where each z_j is given by the electoral mean, and call this vector the *joint electoral mean*²⁶⁹

However, when the valence functions $\{\mu_j\}$ are not identically zero, then it is the case that generically \mathbf{z}_0 cannot satisfy the first order condition. Instead the vector $\frac{d\mu_j}{dz_j}$ “points towards” the position at which the activist valence is maximized. When this marginal or gradient vector, $\frac{d\mu_j}{dz_j}$, is increased (as activists become more willing to contribute to the agent) then the equilibrium position is pulled away from the weighted electoral mean of agent j , and we can say the “activist effect” for the agent is increased. In the two agent case, if the activist valence functions are fixed, but the exogenous valence, λ_j , is increased, or λ_k , (for $k \neq j$) is decreased, then the weighted electoral

²⁶⁹Since we can renormalize and set $\sum x_i = 0$, we can write $\mathbf{z}_0 = (0, \dots, 0)$ and call this vector the joint origin.

mean, z_j^{el} , approaches the electoral origin. Thus the local equilibrium of agent j is pulled towards the electoral origin. We can say the “electoral effect” is increased. Notice also that when the sociodemographic or trait terms are included, in the *joint spatial models*, denoted $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$ and $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ then again the weighted electoral means and the electoral mean \mathbf{z}_0 need not coincide. For the joint models the weighted electoral mean can be found by simulation.

The second order condition for an LNE at \mathbf{z}^* depends on the negative definiteness of the Hessian of the activist valence function. If the eigenvalues of these Hessians are negative at a balance solution, and of sufficient magnitude, then this will guarantee that a vector \mathbf{z}^* which satisfies the balance condition will be a LNE. Indeed, this condition can ensure concavity of the vote share functions, and thus of existence of a PNE.

5.9.1 Model with Multiple Activist Groups

We adapt the model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$, presented in Schofield and Cataife (2007), where there are multiple activist groups for each agent.

(i) For each agent, j , let $\{A_j\}$ be a family of potential activists, where each $k \in A_j$ is endowed with a utility function, U_k , which is a function of the position z_j . The resources allocated to j by k are denoted $R_{jk}(U_k(z_j))$. The total activist valence function for agent j is the linear combination

$$\mu_j(z_j) = \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))). \quad (5.21)$$

where $\{\mu_{jk}\}$ are functions of the contributions $\{R_{jk}(U_k(z_j))\}$, and each μ_{jk} is a concave function of R_{jk} .

(ii) Assume the marginal change of μ_{jk} is given by $\frac{d\mu_{jk}}{dz_j} = a_k^*(z_j) \frac{dR_{jk}}{dz_j}$ where $a_k^*(-)$ is a differentiable and positive function of z_j ,

(iii) Assume also that the marginal provision of resources is given by $\frac{dR_{jk}}{dz_j} = a_k^{**}(z_j) \frac{dU_k}{dz_j}$ where again $a_k^{**}(-)$ is a differentiable and positive function of z_j ,

(iv) then the valence functions for j are given by

$$\frac{d\mu_{jk}}{dz_j}(z_j) = a_k^*(z_j) \frac{dR_{jk}}{dz_j} = a_k^*(z_j) a_k^{**}(z_j) \frac{dU_k}{dz_j}. \quad (5.22)$$

(iv) Let $b_k^*(z_j) = a_k^*(z_j) a_k^{**}(z_j)$. Then under these assumptions, the first order equation $\frac{d\mu_j}{dz_j} = 0$ becomes

$$\frac{d\mu_j}{dz_j} = \sum_{k \in A_j} \frac{d}{dz_j} [\mu_{jk}(R_{jk}(U_k(z_j)))] \quad (5.23)$$

$$= \sum_{k \in A_j} b_k^*(z_j) \frac{dU_k}{dz_j} = 0. \quad (5.24)$$

Now renormalize so that

$$b_k(z_j) = \frac{b_k^*(z_j)}{\sum_{k \in A_j} b_k^*(z_j)} \text{ with all } b_k(z_j) > 0. \quad (5.25)$$

Then the *Contract Set* generated by the family $\{A_j\}$ is the locus of points satisfying the gradient equation

$$\sum_{k \in A_j} b_k(z_j) \frac{dU_k}{dz_j} = 0, \text{ where } \sum_{k \in A_j} b_k(z_j) = 1 \text{ and all } b_k(z_j) > 0. \quad (5.26)$$

These coefficients $\{b_k(z_j) : k \in A_j\}$ specify how the activist groups coalesce to provide support for the agent j , at z_j . For some position, z_j^* on this contract set, the activist valence, $\mu_j(z_j^*)$ will be maximized. This will not however maximize the vote share. The vote share maximizing point will lie on the *Balance Locus* for the agent j , defined for the family, $\{A_j\}$, as the solution to the first-order gradient equation

$$[z_j^{el} - z_j^*] + \frac{1}{2\beta} \left[\sum_{k \in A_j} b_k(z_j^*) \frac{dU_k}{dz_j} \right] = 0. \quad (5.27)$$

In principle, this equation allows each agent to contract with its set of activists to choose a policy position. The agents, in return, provide resources prior to the election. As noted above, Grossman and Helpman (1996), in their game theoretic model, consider two distinct motives for interest groups:

Contributors with an *electoral motive* intend to promote the electoral prospects of preferred candidates, [while] those with an *influence motive* aim to influence the politicians' policy pronouncements.

The above model allows both motives. It remains however, to solve the commitment problem, over whether the agent does indeed move to a policy position that is compatible with the contracts made with the agents.

The simplest case, discussed in Schofield and Cataife (2007) is in two dimensions, where each leader has two activist groups. In this case, the contract set for each agent's supporters will, generically, be a one-dimensional arc. Miller and Schofield (2003) also supposed that the activist utility functions were ellipsoidal, mirroring differing saliences on the two axes. In this case the contract curves would be *catenaries*, and the balance locus would be a one dimensional arc. The balance solution for each leader naturally depends on the positions of opposed leaders, and on the coefficients, as indicated above, of the various activists. The determination of the balance solution can be obtained by computing the vote share Hessian along the balance locus. Because the activist valence functions can be expected to be concave in the activist resources, the Hessian of the overall activist valence, μ_j , can be expected to have negative eigenvalues. For this reason, the Balance Theorem gives a formal reason to expect existence of a PNE.

Notice that because of the way z_j^{el} is defined, the position z_j^* can be interpreted as a *weighted utilitarian welfare function*, where the weights refer to voters and activists.²⁷⁰

5.9.2 The Model without Activist Valence Functions.

We now apply the Theorem to the pure spatial model $\mathbb{M}(\lambda, \beta)$, by setting $\mu = \theta = \alpha \equiv \mathbf{0}$.

As we have shown above, the *joint electoral mean* \mathbf{z}_0 satisfies the first order condition for a LNE. We now consider the second order condition.

Definition 5.5: The Convergence Coefficient of the Model $\mathbb{M}(\lambda, \beta)$ when the space X has dimension w .

(i) Define

$$\rho_1 = \left[1 + \sum_{k=2}^p \exp[\lambda_k - \lambda_1] \right]^{-1}. \quad (5.28)$$

(ii) Let X be endowed with an orthogonal system of coordinate axes

$(1, \dots, s, \dots, t, \dots, w)$. For each coordinate axis let $\xi_t = (x_{1t}, x_{2t}, \dots, x_{nt}) \in \mathbb{R}^n$ be the vector of the t^{th} coordinates of the set of n voter ideal points. Let $(\xi_s, \xi_t) \in \mathbb{R}$ denote scalar product. The covariance between the s^{th} and t^{th} axes is denoted $(\sigma_s, \sigma_t) = \frac{1}{n}(\xi_s, \xi_t)$ and $\sigma_s^2 = \frac{1}{n}(\xi_s, \xi_s)$ is the electoral variance on the s^{th} axis. Note that these variances and covariances are taken about the electoral means on each axis.

(iii) The symmetric $w \times w$ *electoral covariance matrix* ∇_0 is defined to be $\frac{1}{n} [(\xi_s, \xi_t)]_{t=1, \dots, w}^{s=1, \dots, w}$.

(iv) The *electoral variance* is

$$\sigma^2 = \sum_{s=1}^w \sigma_s^2 = \frac{1}{n} \sum_{s=1}^w (\xi_s, \xi_s) = \text{trace}(\nabla_0).$$

(iii) The w by w *characteristic matrix*, of agent 1 is given by

$$C_1 = 2\beta(1 - 2\rho_1)\nabla_0 - I. \quad (5.29)$$

(iv) The *convergence coefficient of the model* $\mathbb{M}(\lambda, \beta)$ is

$$c \equiv c(\lambda, \beta) = 2\beta[1 - 2\rho_1]\sigma^2. \quad (5.30)$$

Observe that the β -parameter has dimension L^{-2} , so that c is dimensionless. We can therefore use c to compare different models.

Note also that agent 1 is by definition the agent with the lowest valence, and ρ_1 , as defined above, is the probability that a generic voter will choose this agent when all agents are located at the origin. The estimate of the probability ρ_1 depends only on the comparison functions $\{f_{kj}\}$, as given above and these can be estimated in terms of the valence differences.

The following result is proved in Schofield (2007a).

The Mean Voter Valence Theorem.

²⁷⁰See Acemoglu and Robinson (2006a), Proposition A.5, for a somewhat similar model.

(i) The joint mean \mathbf{z}_0 satisfies the first order condition to be a LNE for the model $\mathbb{M}(\boldsymbol{\lambda}, \beta)$.

(ii) The necessary and sufficient second order condition for SLNE at \mathbf{z}_0 is that C_1 has negative eigenvalues.²⁷¹

(iii) A *necessary* condition for \mathbf{z}_0 to be a SLNE for the model $\mathbb{M}(\boldsymbol{\lambda}, \beta)$ is that $c(\boldsymbol{\lambda}, \beta) < w$.

(iv) A *sufficient* condition for convergence to \mathbf{z}_0 in the two dimensional case is that $c < 1$. \square

Notice that (iii) follows from (ii) since the condition of negative eigenvalues means that

$$\text{trace}(C_1) = 2\beta[1 - 2\rho_1]\sigma^2 - w < 0.$$

In the case $c(\boldsymbol{\lambda}, \beta) = w$, then $\text{trace}(C_1) = 0$, which means either that all eigenvalues are zero, or at least one is positive. This degenerate situation requires examination of C_1 . The additional condition $c < 1$ is sufficient to guarantee that $\det(C_1) > 0$, which ensures that both eigenvalues are negative.

The expression for C_1 has a simple form because of the assumption of a single distance parameter β . It is possible to use a model with different coefficients $\boldsymbol{\beta} = \{\beta_1, \beta_2, \dots, \beta_w\}$ on each dimension. In this case the characteristic matrix can readily be shown to be

$$\mathbf{C}_1 = 2(1 - 2\rho_1)\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta},$$

where $\boldsymbol{\beta}$ is the diagonal matrix of the the β coefficients, while $\boldsymbol{\beta}\nabla_0\boldsymbol{\beta}$ is the covariance matrix where each axis is weighted by the coefficients $\boldsymbol{\beta} = \beta_1, \beta_2, \dots, \beta_w$. The necessary condition in this case is that $\text{trace}(\mathbf{C}_1) < 0$,

or

$$2(1 - 2\rho_1)\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta}) < \beta_1 + \beta_2 \dots + \beta_w.$$

The convergence coefficient in this case is

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_1)\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

again giving the necessary condition of $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) < w$.

Note that if C_1 has negative eigenvalues, then the Hessians of the vote shares for all agents are negative definite at the joint mean, \mathbf{z}_0 . When this is true, then the joint mean is a candidate for a PNE, and this property can be verified by simulation.

When the convergence condition $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) < w$ is violated the the joint origin cannot be a SPNE.

In the degenerate case $c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = w$ it is again necessary to examine the characteristic matrix to determine whether the joint mean can be a PNE.

To estimate the standard error on ρ_j , and thus on $c(\boldsymbol{\lambda}, \boldsymbol{\beta})$, we use Taylor's Theorem, which asserts that

²⁷¹In the usual way, the condition for an LNE is that the eigenvalues are negative semi-definite.

$$\rho_j(\lambda_j + h) = \rho_j(\lambda_j) + h \frac{d\rho_j}{d\lambda_j} = \rho_j(\lambda_j) + h\rho_j(1 - \rho_j). \quad (5.31)$$

5.9.3 The Spatial Model with Agent Policy Preferences

For the model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$, if we associate the utilities $\{U_k\}$ with leaders of the activist groups for the agents, then the combination $\sum_{k \in A_j} b_k \frac{dU_k}{dz_j}$ from the multiple agent model may be interpreted as the marginal policy utility of agent j , induced by the activist support.

To see this suppose that each agent were to maximize a utility function, \mathbb{V} , given by

$$\mathbb{V}_j(\mathbf{z}) = \delta_j \mu_j(z_j) + \frac{1 - \delta_j}{n} \sum_i \rho_{ij}(\mathbf{z})$$

where μ_j is no longer an activist function, but a policy determined component of the agent's utility function, while $\delta_j \in [0, 1]$ is the weight given to the policy preference. Models involving candidate preferences have been proposed by Wittman (1977), Calvert (1985), Duggan and Fey (2005), Bernhardt et al (2007, 2009a,b) and Peress (2010).

In this equation we assume that there are no activist functions, so $\{\rho_{ij}(\mathbf{z})\}$ can be computed using the model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$.

If we let $\{z_j^{\mathbb{V}^*}\}$ be the LNE solution with these policy preferences, then the solutions for $\{z_j^{\mathbb{V}^*}\}$ will depend on j , and so ρ_{ij} will depend $\{x_i \in X\}_{i \in N}$. Thus the ρ_{ij} cannot be written as ρ_j , and the first order condition becomes

$$\frac{d\mathbb{V}_j(\mathbf{z})}{dz_j} = \delta_j \frac{d\mu_j}{dz_j}(z_j) + \frac{1 - \delta_j}{n} \sum_{i=1}^n 2\beta(x_i - z_j)[\rho_{ij} - \rho_{ij}^2] = 0$$

or

$$z_j^{\mathbb{V}^*} (1 - \delta_j) \sum_{k \in N} [\rho_{kj} - \rho_{kj}^2] = \frac{n\delta_j}{2\beta} \frac{d\mu_j}{dz_j} + (1 - \delta_j) \sum_{i=1}^n [\rho_{ij} - \rho_{ij}^2] x_i.$$

$$\begin{aligned} \text{Thus } z_j^{\mathbb{V}^*} &= \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j} + \sum_{i \in N} [\varpi_{ij}] x_i \\ &= \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j} + z_j^{el}. \end{aligned}$$

where

$$n^* = \frac{n}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}.$$

The new “balance equation” becomes

$$[z_j^{el} - z_j^{\mathbb{V}^*}] + \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j}(z_j^{\mathbb{V}^*}) = 0.$$

Here $\frac{d\mu_j}{dz_j}(z_j)$ is a gradient at a position, z_j , which points towards the policy preferred position of the agent.

Suppose now that each agent, j , has contracted with the various activists groups in A_j , and the activists have provided resources which have been deployed to influence voters. If we now estimate the spatial model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ without activists, at the time of the election, then the effect of these resources will be incorporated in the parameters of the model. Simulation of this model will give a weighted electoral mean, z_j^{el} . Suppose further that the agent is *committed* to the contract with the activists, so that the agent's equilibrium position, z_j^{V*} , is that which is obtained from the model where the agent has a policy position induced from this contract. This gives our final result.

The Activist Theorem. Suppose each agent, j , is committed to a contract with a family of activists $\{A_j\}$ with utility functions $\{U_k : k \in A_j\}$. Let z_j^{el} be the estimated equilibrium position according to the model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ at the time of the election. Then the influence of the activists is given by the set of equations

$$[z_j^{V*} - z_j^{el}] = \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \frac{d\mu_j}{dz_j}(z_j^{V*}) \equiv \frac{n^* \delta_j}{2(1 - \delta_j)\beta} \sum_{k \in A_j} b_k \frac{dU_k}{dz_j} \text{ for } j \in P.$$

The advantage of this version of the result is that while the activist resources affect the voter probabilities, these are already included in the estimation of the model $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \boldsymbol{\alpha}, \beta)$ and the estimated weighted means $\{z_j^{el}\}$. Thus the effect of activist support is subsumed in the empirical estimates of the various measures of valences. If the activist utility functions, or activist preferred positions are known, then this equation can be used to estimate the activist effects.

Of course, this does not allow us to solve for the nature of the contracts, but it does give a way of estimating the effects of the contracts between agents and activists.

We may readily extend this model to consider situations where the activist groups have the option of choosing from among a set of possible agents, all with varying exogenous valences and preferences (Schofield and Sened 2006). In principle, we can also have interest groups contributing to many agents.

In the applications of this model, we shall with some abuse of notation write z_j^* for z_j^{V*} . When we do not know the activist locations, we shall use the simple balance equation as in the Balance Theorem.

5.9.4 Extension of the Activist Model: Targeting Voters

As before we let $\{A_j\}$ be the family of activist supporters for j and now write

$$\mathbf{R}_j(z_j) = \sum_{k \in A_j} R_{jk}(U_k(z_j)). \quad (5.32)$$

for the total resources obtained by agent j from the various activist groups. These resources are denominated in terms of time (times skilled labor rate) or money, so we can take the units as dollars, or a convenient unit of currency.

These resources are now used to target the individual voters and the voter utility function is now

$$\begin{aligned} u_{ij}(x_i, z_j) &= \lambda_j + \mu_i(m_{ij}) + (\theta_j \cdot \eta_i) + (\alpha_j \cdot \tau_i) - \beta \|x_i - z_j\|^2 + \varepsilon_j \\ &= u_{ij}^*(x_i, z_j) + \varepsilon_j. \end{aligned}$$

Here $\mu_i(m_{ij})$ is the the valence effect of the expenditure of resources (m_{ij}) on the targeting of voter i .by agent j . We assume that the greater the resources m_{ij} spent on persuading voter i , the greater the implicit valence associated with candidate j , so $\frac{d\mu_i(m_{ij})}{dm_j} > 0$. We may also assume decreasing returns: $\frac{d^2\mu_i(m_{ij})}{dm_j^2} < 0$. Obviously we can partition the voters into different categories, in terms of their sociodemographic valences. Note that different agents may target the same voter or group of voters.

We assume that, for each j , the budget constraint is satisfied:

$$\mathbf{R}_j(z_j) = \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))) \quad (5.33)$$

$$= \sum_{i \in N} m_{ij} \quad (5.34)$$

We now assume that j solves the optimization problem that we now construct. Since $\mathbf{R}_j(z_j)$ determines the budget constraint for j , we can write $m_{ij} \equiv m_{ij}(z_j)$, so

$$\mu_i(m_{ij}) \equiv \mu_i(m_{ij}(z_j)) \equiv \mu_{ij}(z_j).$$

We shall also assume that the solution to the optimization problem is smooth, in the sense that $\mu_{ij}()$ is a differentiable function of z_j . Just as in (5.13) we can now obtain the first order condition:

$$\frac{d\rho_{ij}(\mathbf{z})}{dz_j} = \{2\beta(x_i - z_j) + \frac{d\mu_{ij}(z_j)}{dz_j}\}[\rho_{ij} - \rho_{ij}^2].$$

This gives a more general balance condition as follows:

$$\begin{aligned} 0 &= \frac{dV_j(\mathbf{z})}{dz_j} = \frac{1}{n} \sum_{i \in N} \frac{d\rho_{ij}}{dz_j} \\ &= \frac{1}{n} \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] \{2\beta(x_i - z_j) + \frac{d\mu_{ij}(z_j)}{dz_j}\}. \end{aligned}$$

$$\text{So } z_j \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] = \sum_{i \in N} [\rho_{ij} - \rho_{ij}^2] \left\{ x_i + \frac{1}{2\beta} \frac{d\mu_{ij}(z_j)}{dz_j} \right\}.$$

$$\text{Hence } z_j^* = \frac{\sum_i \left[[\rho_{ij} - \rho_{ij}^2] \left[x_i + \frac{1}{2\beta} \frac{d\mu_{ij}(z_j)}{dz_j} \right] \right]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}$$

$$\text{or } z_j^* = \sum_{i=1}^n \varpi_{ij}(x_i + \gamma_i) \text{ where } \gamma_i = \frac{1}{2\beta} \frac{d\mu_{ij}(z_j)}{dz_j}$$

$$\text{and } \varpi_{ij} = \frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]}$$

$$\text{This can be written } [z_j^* - z_j^{el}] = \sum_{i=1}^n \varpi_{ij} \gamma_i \text{ where } z_j^{el} = \sum_{i=1}^n \varpi_{ij} x_i.$$

$$\text{When } \frac{d\mu_{ij}}{dz_j}(z_j) = \frac{d\mu_j}{dz_j}(z_j)$$

this reduces to the previous result

The difference now is that instead of there being a single *centrifugal marginal activist pull* $\frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j)$ there is an *aggregate activist pull*

$$\begin{aligned} & \sum_{i=1}^n \varpi_{ij} \gamma_i \\ &= \frac{1}{2\beta} \sum_{i=1}^n \frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]} \frac{d\mu_{ij}}{dz_j}(z_j) \end{aligned}$$

determined by the budget constraint

$$\begin{aligned} \mu_j(z_j) &= \sum_{k \in A_j} \mu_{jk}(R_{jk}(U_k(z_j))) \\ &= \sum_{i \in N} m_{ij} \end{aligned}$$

Notice that the first order condition depends on the marginal terms, $\frac{d\mu_{ij}}{dz_j}(z_j)$, associated with policy positions, and these will depend on the marginal valence effects $\frac{d\mu_i(m_{ij})}{dm_j}$. Although these valence effects can be assumed to exhibit decreasing returns, these will vary across different classes of voters. The plausibility of existence of Nash equilibria turns on whether the induced second order terms $\frac{d^2\mu_{ij}}{dz_j^2}(z_j)$ have negative eigenvalues. The assumption of negative eigenvalues would give a useful corollary to the activist theorem.

Note also that if ρ_{ij} is close to 0 or 1, then ϖ_{ij} will be close to 0, so the optimal calculation will be complex, though in principle solvable. It is plausible the agent should expend resources on pivotal voters for whom ρ_{ij} is close to 1/2.²⁷²

To sketch an outline of a general model to endogenize activist support, we first let

$$\rho : X^p \times \mathbb{B}^{n \times p} \rightarrow [0, 1]^{n \times p}$$

specify the electoral mapping in terms of candidate positions in X^p and the distribution, in $\mathbb{B}^{n \times p}$, of resources $\{m_{ij}\}$ to all voters.²⁷³

²⁷²Stokes (2005) make a somewhat similar inference, discussing clientist models of politics, where m_{ij} is a monetary bribe to i . Obviously the marginal benefit to a poor voter is greater than to a wealthy voter, under the usual assumption of decreasing marginal utility for money. However, it would seem necessary to translate the bribe into a valence component, as outlined here.

Dal Bo (2007) also considers a model of bribery but does not consider income effects *per se*.

²⁷³It is reasonable to assume that the resource distributions lie in a compact ball, namely $\mathbb{B}^{n \times p}$.

We then let

$$\mathbf{V} = V_1 \times \dots \times V_p : X^p \times \mathbb{B}^{n \times p} \rightarrow [0, 1]^p$$

be the *agent profile function*, mapping agent positions and voter distributions to vote shares, as given by the above models. Indeed, for a more general model we could consider multiparty systems where agents form beliefs about coalitions behavior, as suggested in Schofield and Sened (2006). In this case the mapping would be

$$\mathbf{V} = V_1 \times \dots \times V_p : X^p \times \mathbb{B}^{n \times p} \rightarrow \mathbb{R}^p.$$

We let the \mathbf{k} activists have preferences over the positions taken by the p political agents and agent vote shares, so the *activist profile function* is a map

$$\mathbf{U} : X^p \times [0, 1]^p \rightarrow \mathbb{R}^{\mathbf{k}}.$$

It is reasonable to suppose that both \mathbf{V} and \mathbf{U} are differentiable. We now regard the activists as principals who choose offers to make to the political agents. This offer can be regarded as a mapping

$$\mathbf{U}^* : X^p \rightarrow \mathbb{B}^p.$$

which specifies the provision of activist resources to the agents. Note that we assume that these principals make inferences about how the agents will respond to the offer mapping, on the basis of common knowledge about the electoral mapping, ρ .

The agents in turn choose a best response to \mathbf{U}^* . We seek is an equilibrium to a game form which may be written

$$\begin{aligned} \mathbf{U}^* \otimes \mathbf{V} & : X^p \rightarrow X^p \times \mathbb{B}^p \rightarrow X^p \times \mathbb{B}^{n \times p} \rightarrow \mathbb{R}^{\mathbf{k}} \times [0, 1]^p \\ & : (\mathbf{z}) \rightarrow (\mathbf{z}, \mathbf{U}^*(\mathbf{z})) \rightarrow (\mathbf{z}, \mathbf{m}) \rightarrow ((\mathbf{U}(\mathbf{z}, \mathbf{V}((\mathbf{z}, \mathbf{m}))), \mathbf{V}((\mathbf{z}, \mathbf{m}))) \end{aligned}$$

On the basis of the offer mapping, \mathbf{U}^* , the agents choose a position vector \mathbf{z} and a distribution matrix, $\mathbf{m} \in \mathbb{B}^{n \times p}$, such that (\mathbf{z}, \mathbf{m}) a LNE for the agent profile function, \mathbf{V} , subject to the constraint that \mathbf{m} is compatible with the offer $\mathbf{U}^*(\mathbf{z})$.

This is an extremely complex dynamical game, and we do not attempt to explore the full ramifications of this model here.²⁷⁴ If we assume that the offer mapping \mathbf{U}^* is differentiable, then we can use a result by Schofield (2005) which uses differentiability and a boundary condition on the compact space $X^p \times \mathbb{B}^p$, to assert that a LNE for a game form of this type will generically exist. Notice, however, that the game form just presented attempts to endogenize activist choices. It is quite possible that, in actual applications of the model, the activist offer mapping may be non differentiable, as activists may switch allegiance from one agent or party to another.²⁷⁵

²⁷⁴See Coram (2010) for a dynamical version of a similar model. Acemoglu and Robinson (2008) also develop a model based on Markov Perfect Equilibrium where the elite, activists, have different preferences for the public good, in X and contribute to the *de facto* power of the political leader. However, they do not assume competing political leaders.

²⁷⁵The “matching” model proposed by Jackson and Watts (2010) embeds the Nash equilibrium within a coalition game, and would allow the principals to switch from one agent coalition to another.

Earlier results of Schofield (1978) and McKelvey (1979) had suggested chaos could be generic in electoral models.²⁷⁶ The application of this model (in Chapter 1) to the historical development of the U.S. political economy suggests that the equilibria of the model are subject to both “circumferential” and “radial” transformations over time.

5.10 Appendix 5: Computations for the Empirical Model for the U.S. in 2008

From Table A5.5, we obtain

$$(\lambda_{Obama}, \lambda_{McCain}, \beta) = (0, -0.84, 0.85).$$

$$(\rho_{McCain}, \rho_{Obama}) = \left(\frac{e^0}{e^0 + e^{0.84}}, \frac{e^{0.84}}{e^0 + e^{0.84}} \right) = (0.30, 0.70)$$

$$\begin{aligned} \text{Thus } C_{McCain} &= [2\beta(1 - 2\rho_{McCain})\nabla_0] - I = [2 \times 0.85 \times 0.4 \times \nabla_0] - I \\ &= (0.68)\nabla_0 - I \\ &= (0.68) \begin{bmatrix} 0.80 & -0.13 \\ -0.13 & 0.83 \end{bmatrix} - I = \begin{bmatrix} 0.54 & -0.09 \\ -0.09 & 0.56 \end{bmatrix} - I \\ &= \begin{bmatrix} -0.46 & -0.09 \\ -0.09 & -0.44 \end{bmatrix}. \end{aligned}$$

$$c = 2\beta(1 - 2\rho_{McCain})\text{trace}\nabla_0 = 2(0.85)(0.4)(1.63) = 1.1.$$

The determinant of C_{McCain} is positive and the trace negative, so both eigenvalues are negative, showing that the mean is an LNE. The lower 95% estimate for ρ_{McCain} is 0.26, and the upper 95% estimate for β is 0.97, so a very conservative upper estimate for $\beta(1 - 2\rho_{McCain})$ is $0.97 \times 0.48 = 0.47$, so the upper estimate for $c = 1.53$, giving an estimate for C_{McCain} of

$$\begin{aligned} &(0.94) \begin{bmatrix} 0.80 & -0.09 \\ -0.09 & 0.83 \end{bmatrix} - I \\ &= \begin{bmatrix} 0.75 & -0.13 \\ -0.13 & 0.78 \end{bmatrix} - I \\ &= \begin{bmatrix} -0.25 & -0.13 \\ -0.13 & -0.22 \end{bmatrix}, \end{aligned}$$

which still has negative eigenvalues.

We also considered a spatial model where the x and y axes had different coefficients, $\beta_1 = 0.8$, $\beta_2 = 0.92$.

²⁷⁶See also Riker (1980, 1982, 1986).

Using

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_{lib})\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

with $\frac{1}{2}(\beta_1 + \beta_2) = \frac{1}{2}(0.80 + 0.92) = 0.86$ and $\rho_{lib} = 0.25$, we find

$$\begin{aligned} c(\boldsymbol{\lambda}, \boldsymbol{\beta}) &= \frac{2(0.4)}{0.86}\text{trace} \begin{bmatrix} (0.80)^2(0.80) & (0.80)(0.92)(-0.13) \\ (0.80)(0.92)(-0.13) & (0.92)^2(0.83) \end{bmatrix} \\ &= (0.93)\text{trace} \begin{bmatrix} 0.51 & -0.09 \\ -0.09 & 0.70 \end{bmatrix} = (0.93)(1.21) = 1.23. \end{aligned}$$

For the characteristic matrix,

$$\begin{aligned} \mathbf{C}_{McCain} &= 2(1 - 2\rho_{McCain})\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta} \\ &= 2(0.4) \begin{bmatrix} 0.51 & -0.09 \\ -0.09 & 0.70 \end{bmatrix} - \begin{bmatrix} 0.80 & 0 \\ 0 & 0.92 \end{bmatrix} \\ &= \begin{bmatrix} -0.41 & -0.07 \\ -0.07 & -0.56 \end{bmatrix} - \begin{bmatrix} 0.80 & 0 \\ 0 & 0.92 \end{bmatrix} \\ &= \begin{bmatrix} -0.39 & -0.07 \\ -0.07 & -0.36 \end{bmatrix} \end{aligned}$$

The analysis showed the the Hessian for this case had negative eigenvalues, so again \mathbf{z}_0 is a LNE. This model is essentially the same as the model with a single β .

Chapter 6

Elections in the United Kingdom

6.1 Introduction

In recent years there has been much discussion, using both theoretical and empirical tools, about the fundamental electoral incentives of political leaders in democratic societies. One model that is employed has been based on *partisan constituencies*. The idea here is that party leaders can fairly easily obtain information about the policy positions of their supporters,²⁷⁷ and each can respond by advocating policies that are close to the mean of the preferences of their respective supporters. Such a feature would satisfy the ideological congruence between citizens and policy makers (Huber and Powell, 1994; Ezrow, 2010). The term “responsible parties” (Adams, 2001) has been used to characterize the divergent policy choices that are likely in such a system of political competition. It has also been shown by Bernhardt *et al* (2009c), in a variant of such a model, that the choice between different policy options, induced by responsible parties, can, under some circumstances, enhance electoral welfare.

On the other hand, as we have discussed in Chapter 5, the standard Downsian (1957) model of political competition is that of “opportunistic,” office seeking parties. Each voter is assumed to choose the party whose policy position is closest while parties are assumed to maneuver so as to gain as many votes as possible. The usual Downsian spatial models suggest that convergence to the electoral mean is to be expected. In contrast, Roemer (2001, 2011) has offered a hybrid model of political competition where each party comprises various groups with different agendas: Downsian “opportunists” who simply want to maximize their party’s vote share and “guardians” who champion the interests of the party’s core constituency.²⁷⁸

As discussed in Chapter 5, Stokes (1963, 1992) emphasized many years ago that the non-policy judgments, or *valences*, of party leaders by the electorate are just as important as electoral policy preferences. These judgments may effect the centripetal tendency to the electoral mean.

²⁷⁷See Bernhardt *et al.* (2009a,b) and the many papers and books by James Adams and his co-authors.

²⁷⁸Roemer focuses on tax policy and only considers a two party model, but does show the existence of a non-centrist equilibrium.

Schofield (2005b) used the notion of valence to examine the 1992 and 1997 elections in Great Britain and found some evidence that the Labor²⁷⁹ party position had moved closer to the electoral mean between 1992 and 1997, while the Conservative party position had moved further away. However, there was no evidence of the convergence predicted by the Downsian theory of election. In a recent analysis of party movement from 1945 to 2005, Nagel and Wiezien (2010) also find no evidence of convergence, though they only consider one dimension of policy, using the data obtained by Budge et al. (2001).

In this chapter we use the results of the British Election Study (BES) for 2005 and 2010 to construct a pure spatial models of these elections. We use a variety of measures of valence, in order to obtain a better estimate of the extent to which the electoral center exerts a centripetal attraction on the parties. Although we mention the election results in Northern Ireland, we only examine the elections in England Scotland and Wales. Using vote information, we can infer a preferred policy point, x_i , in a policy space X , for each voter. Consistent with the notion of *partisan constituency*, we assume each party, j , say, is located at the mean position, z_j , in X , of its voters.

Following the results in Chapter 5, we assume that valence can be measured in a number of ways. The first kind of valence, *exogenous valence*, λ_j , is a measure of the voters' *overall common* evaluation of the ability of a party leader or to provide good governance. Since voters' perceptions are formed prior to the election, we regard these variables as held constant at the time of an election. Thus they are independent of the party's position. Exogenous valence can also be called *bias* in favor of one or other of the party leaders.

In addition to exogenous valence, the models also incorporate *sociodemographic* valences. Whereas exogenous valence measures a common bias across all voters, sociodemographic allows these perceptions of the candidates to vary across relevant sociodemographic categories.

We use these valence models to determine the response of party leaders to the electoral situation: that is we compute the equilibrium candidate positions in the context of these various models.²⁸⁰ Our simulation of the combined model, based on both position and sociodemographic valences, allows us to estimate the *local Nash equilibria* (LNE) to the vote maximizing game. As before, we use a simulation routine to determine the LNE. Our estimation lead us to conclude that the LNE for the pure spatial models are at *the electoral origin* for both elections. For the pure spatial models that we construct, we compute the *convergence coefficient*, denoted c , as before. Chapter 5 has shown that a sufficient condition for convergence is that $c < 1$, while a necessary condition is $c < w$, where w is the dimension of the policy space. Our computations show that the convergence coefficients are all quite similar, $c = 0.84$ in 2005 and $c = 0.98$ in 2010. For the regional models in 2005 we find the convergence coefficients to be 0.75 for England, 0.97 for Scotland and 0.80 for Wales. In 2010, the regional convergence coefficients are

²⁷⁹We use the U.S. spelling for labor.

²⁸⁰Just as in Clarke, Sanders et al. (2009), we use factor analysis of the survey responses to obtain a two dimensional representation of the voter preferred positions.

1.09 for England, 1.51 for Scotland, and 2.12 for Wales. Aside from Plaid Cymru in Wales, in 2010, these results suggest that vote maximizing party leaders should adopt positions at the electoral origin.²⁸¹

Sanders et al. (2011) comment, valence theory is based on the assumption that “voters maximize their utilities by choosing the party that is best able to deliver policy success.” The authors go on to note that an overall assessment of a party leader by a voter “provides a simple affective heuristic for arriving at an evaluation of that leader’s party.”

We follow this logic and utilize estimates of the electoral perception of character traits. Electoral models involving electoral perceptions of leader traits has formed the basis for recent extensive analysis of British, Canadian and US electoral response by Clarke, Sanders, Stewart and Whiteley (2005, 2009) and Clarke, Kornberg and Scotto (2009).

For elections in Britain, they argue that electoral responses

were a reflection largely of [the] changing perceptions of the decision-making competence of the main political parties and their leaders. At any point in time, [the] preferences were strongly influenced by their perceptions of the capacity of the rival parties—the putative alternative governments of the day—to solve the major policy problems facing the country.

We incorporate electoral perceptions of political leaders of the three major parties as well as the two regional parties, the Scottish National Party and Plaid Cymru. In comparing the 2005 and 2010 elections, we find very strong evidence that Gordon Brown’s exogenous valence, in all the 2010 models relative to the other party leaders, was much lower than Blair’s exogenous valence in 2005. This was the fundamental reason why Labor essentially lost the election, and Cameron, leader of the Conservative Party, was able to form a majority coalition with the Liberal Democrats, under the leadership of Clegg. For the spatial model we find that Brown’s low valence meant that the LNE was not at the electoral mean.

Moreover, in all models we find that the versions involving traits are superior to the pure spatial models. However, combining the spatial model with traits gives the statistically superior model. All β -coefficients (the measure of the importance of the spatial component) were found to have t-values of order 10. As in the analysis in Chapter 5, we can reject the null hypothesis that the spatial component is statistically insignificant.

While the traits model has the virtue of statistical significance, and can be used to estimate the changing electoral perceptions in the lead-up to an election, it gives only one half of the relationship between voters and parties. The trait characteristics are presumed to be based, to some extent at least, on integrating the quality of policy decisions in the past, or by estimating the likelihood of good decisions in the future

²⁸¹ Aside from the Welsh example for 2010, we estimate that with probability greater than 95%, all the Hessians have negative eigenvalues.

(Penn, 2009). Suppose these estimates are independent of current declared policies. If the spatial element is statistically relevant, then, as in the Downsian model, the party could make a policy move so as to increase its vote, perhaps by attracting voters who do not have a strong opinion about the quality of the party leaders.

To examine this possibility we examine the difference in vote shares attained at the local Nash equilibrium and at the initial position. We focus on whether the LNE is a stable attractor, in the sense that parties will have an incentive to shift their positions towards the equilibrium.

Assuming that parties are initially located at the *partisan constituency* vector, \mathbf{z}^* , say, then we can use the stochastic model to compare the estimate of the vector of vote shares, $\mathbf{V}(\mathbf{z}^*)$, at the positions, \mathbf{z}^* , with the vote shares, $\mathbf{V}(\mathbf{z}^{el})$, at the local Nash equilibrium, \mathbf{z}^{el} . Because the structure of the formal model, it is convenient to use the criterion that the lowest valence leader, say $j = 1$, will be advantaged. However, the stochastic model involves statistical risk, and to deal with risk we take as the estimate for the vote share for party j to be the *lower 95% estimate of the vote share at the equilibrium*, denoted $V_j(\mathbf{z}^*)$. We then define the *vote margin* for a low valence party, $j = 1$, to be $\delta = V_1(\mathbf{z}^{el}) - V_1(\mathbf{z}^*)$ and say that \mathbf{z}^{el} is a *stable attractor* if $\delta > 0$. In this case the opportunists in the party can argue that it is worth changing position to \mathbf{z}^{el} to gain votes. If the equilibrium is not a stable attractor, however, then the core supporters of the party would insist on positioning at, or close to, \mathbf{z}^* .

Almost all equilibria in the spatial traits models for Britain and the regions had LNE that were close to the electoral means. Moreover, the lower 95% lower estimates of vote shares at the electoral means in these various regional models were less than the sample shares. We infer that any centripetal tendency towards the electoral mean would be quite weak. Indeed, By our definition, none of these equilibria were stable attractors.²⁸²

For the 2010 election, however, we also found that the trait indices for Gordon Brown, the Labor leader, were much lower than the other two party leaders, Clegg and Cameron. Our equilibrium analysis suggests that the equilibrium vote maximizing position for Brown under the traits model was very close to his estimated position. We estimate that the Labor party vote share would be *lower* at this equilibrium than at \mathbf{z}^* . By our definition, such an equilibrium is not even an attractor.

While much recent research has modeled the trait characteristics of political leaders in a number of countries, here we are interested in the optimal response of leaders to these electoral perceptions. Since these perceptions are distributed in the electorate, a rational leader should adjust policies to take advantage of this distribution, if possible.

However, electoral success also depends on the resources made available by party activists.²⁸³ The preferred positions of activists can be assumed to influence the location of the parties. In our analysis we use various methods to estimate the positions of activists, and find these positions to be very similar to those of party partisans. This

²⁸²The electoral mean in the Welsh election in 2010 was not an LNE, but a saddlepoint, and the LNE away from the origin involved Plaid Cymru changing its policy significantly.

²⁸³Roemer (2011) uses the term “militants” for those who are concerned to defend the principles of the party.

provides additional support for inferring that parties adopt positions at, or very close to, the partisan constituency positions. While equilibrium analyses have suggested that parties will tend to the electoral mean, we contend that these models do not provide an accurate picture of party positioning.

In order to account for the discrepancy between the estimated positions and the positions obtained by equilibrium analysis, we focus on the fourth kind of valence, namely *activist valence*. The estimated positions of activists for the two major parties were, on average, somewhat more extreme than that of party voters. Thus suggests that activists had the effect of further anchoring parties close to their partisan constituency positions.

6.1.1 Activist Influences.

Earlier work by Schofield (2005b) suggests that when Tony Blair took over from John Smith as leader of the Labor²⁸⁴ Party, then the exogenous valence, λ_{lab} , of the party increased up to the 1997 election. Conversely, the exogenous valence, λ_{con} , for the Conservatives, under John Major, fell.²⁸⁵ Major resigned after the 1997 election, and William Hague became leader of the Conservatives. In the June 2001 election in the United Kingdom, the Labor Party, under Tony Blair repeated its election victories of 1997 by taking 413 (out of 646) seats against the Conservative Party, under Hague, and the Liberal Democrats, led by Charles Kennedy. Hague resigned after this second electoral defeat, and Iain Duncan Smith became leader of the Opposition. In need of more popular leadership, Michael Howard took over as Leader of the Opposition in November, 2003.

In the election of May, 2005, Blair again repeated his success by leading the party to victory with 356 seats. It was generally assumed that the Labor Party lost 57 seats, while the Conservatives gained 32, because of the British involvement in Iraq. Michael Howard stepped down as opposition leader in December 2005 and David Cameron became leader of the Conservative Party.

Since the coefficients in the equation for the electoral pull for the Conservative Party depend on $\lambda_{con} - \lambda_{lab}$, the valence Theorem in Chapter 5 implies that the effect of an increase in $\lambda_{con} - \lambda_{lab}$ would be to increase the marginal effect of activism for the Conservative Party, thus pulling the optimal position away from the party's weighted electoral mean. The opposite conclusion holds for the Labor Party, since increasing $\lambda_{lab} - \lambda_{con}$ has the effect of reducing the marginal activist effect. Figure 6.1 gives an illustration based on an activist model for Britain for recent elections. There are two dimensions. The Labor Party, under Blair, benefits from resources from two potential activist groups, with preferred policy positions at L and E. The contract curve, or activist catenary, connects the preferred positions of an activist group (L) on the economic left and an activist group (E), supporting membership of the European Union.

²⁸⁴Throughout we use the American spelling labor, rather than the British spelling, labour.

²⁸⁵For discussion of the nature of party competition in Britain from 1992 on see Clarke, Stewart and Whiteley (1997, 1998).

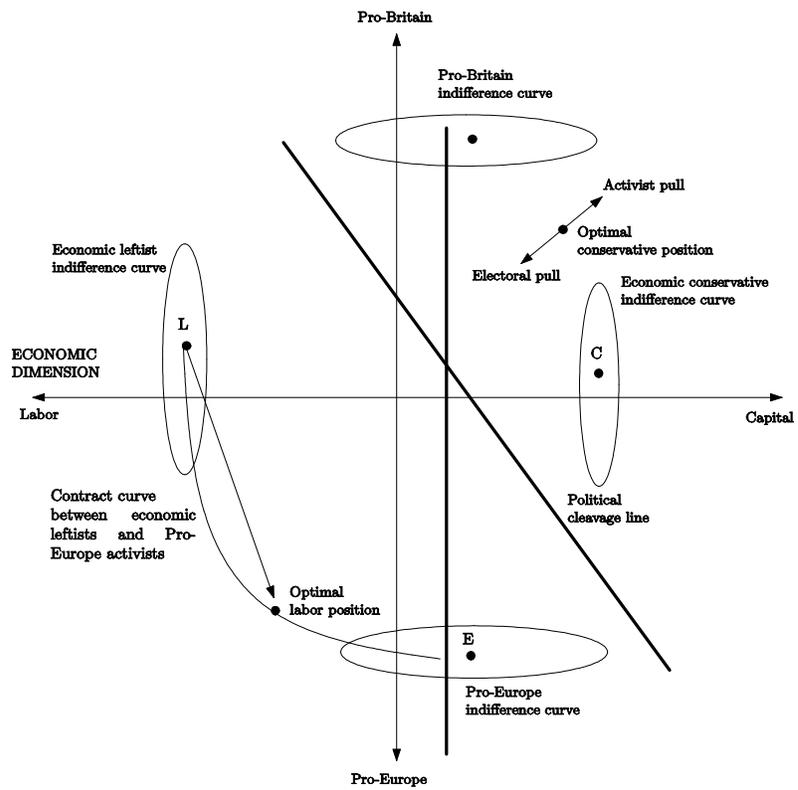


Figure 6.1: Activists in Britain in 1997

The optimal Labor position will be determined by a version of the balance equation

$$\left[\frac{d\mathcal{E}_{lab}^*}{dz_{lab}} - z_{lab}^* \right] + \frac{1}{2\beta} \left[\frac{d\mu_{lab,L}}{dz_{lab}} + \frac{d\mu_{lab,E}}{dz_{lab}} \right] = 0 \quad (6.1)$$

which equates the “electoral pull” against the two “activist pulls,” generated by the two different activist functions, $\mu_{lab,L}$ and $\mu_{lab,E}$. In the same way, if there are two activist groups for the Conservatives, generated by functions $\mu_{con,B}$ for pro-British activists and $\mu_{con,C}$ for economic conservatives, then we obtain a balance equation:

$$\left[\frac{d\mathcal{E}_{con}^*}{dz_{con}} - z_{con}^* \right] + \frac{1}{2\beta} \left[\frac{d\mu_{con,C}}{dz_{con}} + \frac{d\mu_{con,B}}{dz_{con}} \right] = 0. \quad (6.2)$$

In the elections of May, 2005 and 2010, the optimal positions of the two major parties would depend on the overall valences of the party leaders.

6.2 The Election in 2005

In the June 2001 election in the United Kingdom, the Labor Party, under Tony Blair repeated its election victories of 1997 by taking 413 (out of 646) seats against the Conservative Party, led by William Hague, and the Liberal Democrats, led by Charles Kennedy. Hague resigned after the election, and Iain Duncan Smith became leader of the Opposition. In need of more popular leadership, Michael Howard became leader of the Conservative Party in November, 2003. In the election of May, 2005, Blair again repeated his success by leading the party to victory with 356 seats. It was generally assumed that the Labor Party lost 57 seats, while the Conservatives gained 32, because of the British involvement in Iraq. Howard stepped down as opposition leader in December 2005 and David Cameron became leader of the Conservative Party.

Tables 6.1, 6.2 and 6.3 give the election results for the United Kingdom as a whole, as well as separate Tables for England, Scotland, Wales and Northern Ireland in 2005. Figure 6.2 illustrates the pattern of party success in the United Kingdom.

| Party | Vote ^a % | Seats ^b | Seat % |
|-------------------------|---------------------|--------------------|--------|
| Conservative Party: | 32.3 | 198 | 30.7 |
| Labor Party | 35.3 | 356 | 55.1 |
| Liberal Democrat Party | 22.1 | 62 | 9.6 |
| Scottish National Party | 1.5 | 6 | 0.9 |
| Plaid Cymru | 0.6 | 3 | 0.45 |
| Total | 91.8 | 625+3 ^c | 96.7 |

^a Percentage of total UK vote, including approximately 670,000 votes (2.8%) in N.Ireland.

^b excluding 18 seats (2.8%) in N.Ireland

^c Others: Independent, Respect, Health Concern, Greens with about 5.4% vote and 0.5% seats.

| Party ^a | England | | | Scotland | | | Wales | | |
|--------------------|---------|-------|--------|----------|-------|--------|--------|-------|--------|
| | Vote % | Seats | Seat % | Vote % | Seats | Seat % | Vote % | Seats | Seat % |
| Con | 35.6 | 194 | 36.8 | 15.8 | 1 | 1.7 | 21.4 | 3 | 7.5 |
| Lab | 35.4 | 286 | 54.2 | 39.5 | 41 | 69.5 | 42.5 | 29 | 72.5 |
| LibDem | 22.8 | 47 | 8.9 | 22.6 | 11 | 18.6 | 18.5 | 4 | 10.0 |
| SNP | | | | 17.7 | 6 | 10.2 | | | |
| PC | | | | | | | 12.6 | 3 | 7.5 |
| Total | 93.8 | 527 | | 95.6 | 59 | 100 | 95.2 | 40 | 100 |

^a Con: Conservative Party; Lab: Labor Party; LibDem: Liberal Democrat Party;

SNP: Scottish National Party; PC: Plaid Cymru.

| Party | Vote share ^a % | Seat | Seat share ^b % |
|----------------------|---------------------------|------|---------------------------|
| Independent | - | - | - |
| Democratic Unionist | 0.9 | 9 | 1.3 |
| Ulster Unionists | 0.1 | 1 | 0.15 |
| Social Dem and Labor | 0.5 | 3 | 0.46 |
| Sinn Féin | 0.6 | 5 | 0.77 |
| Total | 2.1 | 18 | 2.8 |

^a Percentage of total UK vote

^b Seat share as percentage of total UK seats

We use the results from the British Election Study (BES) to construct a pure spatial model of the election. This model suggests that Labor won the election because of the significant valence difference between Blair and Howard. We also ran separate models for England, Scotland and Wales. These models show that the valence differences between Blair and Howard were particularly pronounced in Scotland and Wales.

Table A6.1 to A6.4 gives the questionnaire from the BES and the details of the factor analysis (Tables A6.1 to A6.21 are in the Appendices to this chapter). The first and second factors explain about 41% of the variance of the 13 question responses. As can be seen in Table A6.2, the first factor is strongly associated with the issue of EU, Immigrants, Asylum seekers and Terrorism. We call this the *nationalism* dimension. We have oriented this axis so that a high value means stronger nationalism. The second dimension is *economic*. The items of "tax/spend", "free market", "international monetary transfer", "international companies" and "worry about job loss overseas" have strong influence in this dimension. In the economic dimension, a higher value indicates a market oriented attitude. We used the economy as the x-axis and nationalism as the y-axis.

We also considered other questions measuring social values such as voters' views on minorities, gender role, censorship, environment, and death penalty, but the loadings were less than 0.20 in the first two factors. The analysis is based on responses to these 13 questions, with 1564 respondents from England, Scotland and Wales. On the 0-10 scale, those who reported relatively stronger voting intention (> 7) for a party were taken as the party's voter. Respondents who said they "volunteered to get involved in

politics” were coded as activists. The factor analysis then gives a set $\{x_i\}$ of voter positions, that we regard as the voters ideal points.

The positions of Labor, the Conservative Party and the Liberal Democrats on the two dimensions were estimated using the result of the factor analysis and the respondents’ voting intentions. The position of party j is denoted z_j and is estimated by taking the mean value, z_j , of those voters for the party, using these high scores of the respondents who intended to vote for the party. As mentioned in the introduction, we call z_j the *partisan constituency* position of the party. We later examine elections in England, Scotland and Wales, based on a sample size of 1564 consisting of those respondents who voted for either the three large parties or the two regional parties). We thus were able to obtain estimates of the positions of the two regional parties, the Scottish National Party and Plaid Cymru in Wales. Figure 6.3 presents the smoothed electoral distribution and the estimated partisan constituency positions of the parties.²⁸⁶ The distribution of activists and the activist means, by party, are given in Figure 6.4.

Table A6.6 (Model 1) gives the pure spatial model for just the three largest parties, with a single β -coefficient.²⁸⁷

We used the LibDem party as the baseline for the pure spatial model, for Great Britain, with 1114 respondents (ie. those who voted for the Labor, Conservative and Liberal Democratic parties in Great Britain). Below, we give the regional models for England, Scotland and Wales based on a sample size of 1564 consisting of those respondents who voted for either the three large parties or the two regional parties). The sample proportions for the three major parties in Great Britain were 41.5%, 34.0%, and 24.5%, respectively. These are similar to the actual vote shares in Great Britain, excluding minor parties and Northern Ireland of 39.4%, 36.0%, 24.6%, respectively.²⁸⁸

The estimates for the positions of these five parties were:

$$\mathbf{z}_{2005}^* = \begin{bmatrix} \text{Party} & \text{Lab} & \text{Lib} & \text{Cons} & \text{SNP} & \text{PC} \\ \text{Econ} & -0.393 & -0.192 & 0.522 & -0.12 & -0.31 \\ \text{Nat} & -0.470 & -0.949 & 0.907 & -0.11 & 0.04 \end{bmatrix},$$

while the activist means, for the three major parties were:

$$\mathbf{z}_{2005}^{\text{act}} = \begin{bmatrix} \text{Party} & \text{Labor} & \text{Lib} & \text{Cons} \\ \text{Econ} & -0.404 & -0.216 & 0.998 \\ \text{Nat} & -1.608 & -1.508 & 0.856 \end{bmatrix}.$$

This suggests that Conservative Party activists, on average, are much more right wing (on the x -axis) than Conservative voters, while activists for the Labor Party and Liberal Democratic Party tend to be more supportive of the EU.

²⁸⁶We use LAB (Labor), CON (Conservatives), LIB (Liberal Democrats), SNP for the Scottish Nationalists and PC for Plaid Cymru to denote these estimated positions.

²⁸⁷In these tables and those for 2010 we include the Log Likelihoods, the Akaike Information Criterion (AIC) and McFadden’s R^2 . Lower values of AIC indicate better model performance. We also estimated the spatial model with separate β -coefficients, $(\beta_{\text{Econ}}, \beta_{\text{Nat}})$.

²⁸⁸We can call this a three-way set of vote shares, since it gives the shares just between these three parties.

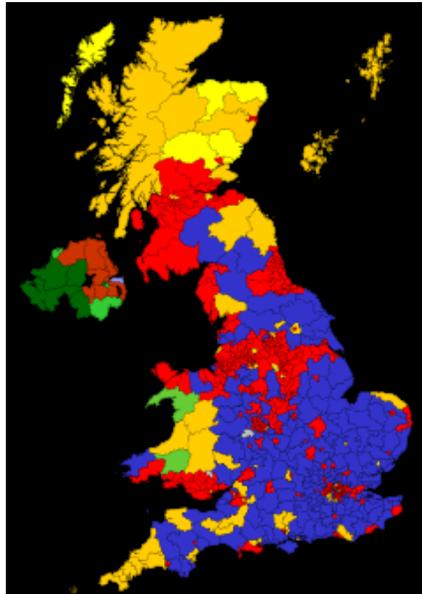


Figure 6.2: The electoral map in the UK 2005, with Conservative constituencies in blue, Labor in red, Lib Dems in amber, SNP in yellow, and PC in green. Northern Ireland is split between four other small parties.

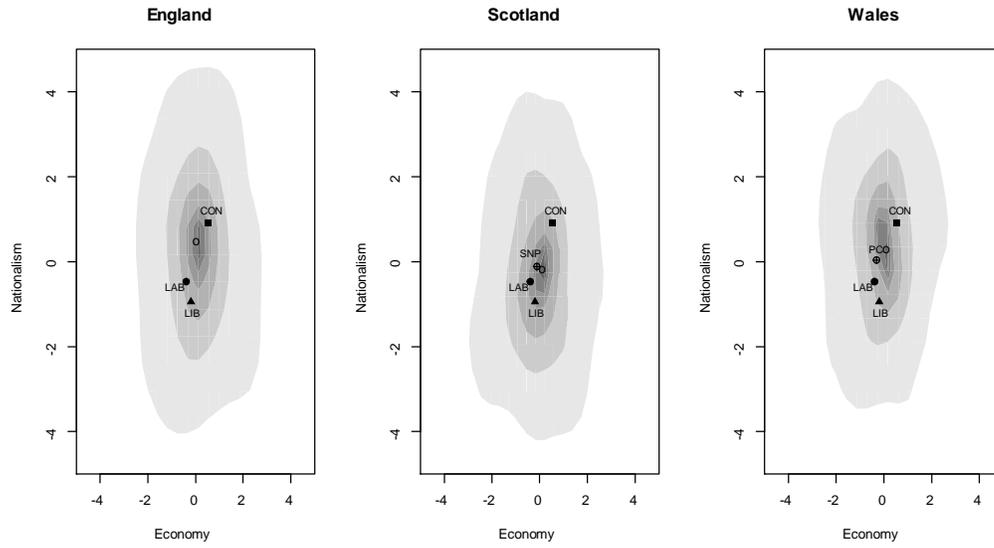


Figure 6.3: Smoothed electoral distributions and party locations in the regions in 2005

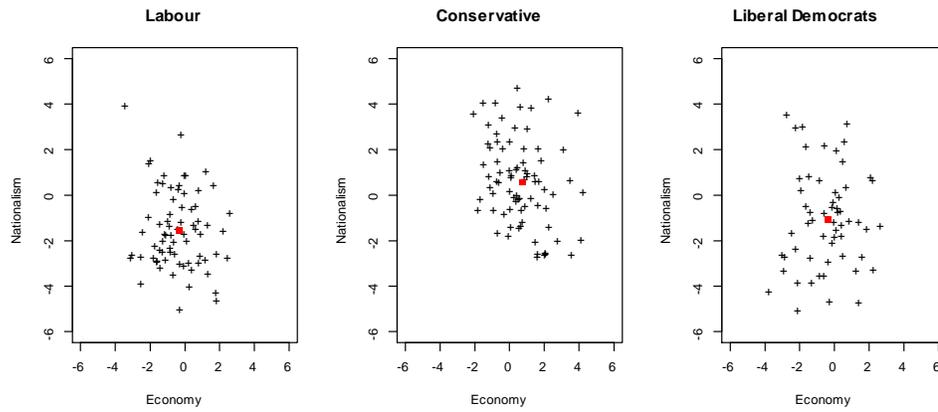


Figure 6.4: Activists and activist means (red dot) by party in 2005

6.2.1 Pure Spatial Models for Great Britain in 2005

The pure spatial model in Table A6.6 gives

$$(\lambda_{Lab}, \lambda_{Con}, \lambda_{Lib}, \beta) = (0.52, 0.27, 0, 0.15).$$

Thus the probability a generic voter picks the Liberal Democratic party, when all parties are at the origin, is:

$$\rho_{Lib} = \frac{\exp(0)}{\exp(0.52) + \exp(0.27) + \exp(0)} = 0.25.$$

Under the pure spatial model, the probability that a generic voter picks each of the parties is given by the vector :

$$\rho_s = (\rho_{Lab}, \rho_{Con}, \rho_{Lib}) = (0.42, 0.33, 0.25).$$

Appendix 3 to this chapter shows formally that the convergence coefficient for this three party game is $c(\lambda, \beta) = 0.84$.²⁸⁹ We also show that the upper 95% bound on $c(\lambda, \beta)$ is 0.97. Table A6.7 gives the 95% bounds on these estimates of ρ_s .

This implies that the joint mean, $\mathbf{z}_0 = (0.0, 0.0)$, is an LNE. This was confirmed by simulation. The predicted three way vote shares among these parties at \mathbf{z}_0 are given by ρ_s .

These compare with the three way split of sample shares:

$$(s_{Lab}, s_{Con}, s_{Lib}) = (0.415, 0.34, 0.245).$$

and the actual three-way split of vote shares among these parties:

$$(\nu_{Lab}, \nu_{Con}, \nu_{Lib}) = (0.394, 0.36, 0.246).$$

Comparison of the estimated equilibrium vote shares under the pure spatial model and the sample shares at the estimated partisan constituency positions suggests that the Liberal Democrat Party's lower 95% vote share, taken just with the three parties, would be 0.22 which is lower than three way sample vote share of 0.245. Since the vote margin is negative, then by our definition, the equilibrium for the pure spatial model in Britain is not a *stable attractor*. To examine this inference more closely, we consider the regional models.

Pure Spatial Models for England Scotland and Wales in 2005 Table A6.8 gives the results of the pure spatial model for the regions of England, Scotland and Wales, while Figures 6.3 gave the electoral distributions and party positions in the regions. The sample sizes in the three regions were 942, 362 and 260 respectively. We did not consider the spatial model in Great Britain previously with the small regional parties, the SNP and PC, because they only competed in the regions. These regional models

²⁸⁹We show in Appendix 3 that the upper 95% bound on $c(\lambda, \beta)$ is 1.08, but that the Hessian has negative eigenvalues with probability in excess of 95%.

included these regional parties. In these regional estimations, all β -coefficients are low and the convergence coefficients take very similar values to those obtained for the election in Great Britain.

The regional convergence coefficients can be estimated to be

$$((c^{eng}, c^{sct}, c^{wales}) = (0.75, 0.97, 0.80)$$

Moreover, with 95% probability, all the Hessians of the low valence parties have negative eigenvalues in the three regional models. We infer that convergence to the joint regional means is an equilibrium prediction for all parties.²⁹⁰ Table A6.7 gives further details on the various 95% bounds for the regional estimates for 2005.

Predicted vote shares at the regional joint means by the pure spatial models are:

| | | |
|----------|----------------------|-------------------------------|
| England | (Lab, Con, Lib) | =(0.376, 0.360, 0.264) |
| Scotland | (Lab, Con, Lib, SNP) | =(0.403, 0.212, 0.202, 0.184) |
| Wales | (Lab, Con, Lib, PC) | =(0.416, 0.248, 0.222, 0.114) |

The three or four way sample vote shares are:

| | | |
|----------|----------------------|-------------------------------|
| England | (Lab, Con, Lib) | =(0.364, 0.384, 0.251) |
| Scotland | (Lab, Con, Lib, SNP) | =(0.406, 0.202, 0.207, 0.185) |
| Wales | (Lab, Con, Lib, PC) | =(0.412, 0.262, 0.208, 0.119) |

Actual three or four way vote shares are:

| | | |
|----------|----------------------|-------------------------------|
| England | (Lab, Con, Lib) | =(0.38, 0.38, 0.24) |
| Scotland | (Lab, Con, Lib, SNP) | =(0.413, 0.165, 0.237, 0.185) |
| Wales | (Lab, Con, Lib, PC) | =(0.448, 0.226, 0.194, 0.132) |

The valence of the Conservative Party is obviously much lower in Scotland ($\lambda_{Con}^{sct} = 0.05$) and in Wales ($\lambda_{Con}^{wales} = 0.11$), than in England ($\lambda_{Con}^{eng} = 0.31$), so we obtain $\rho_{Con}^{eng} = 0.36$, $\rho_{Con}^{sct} = 0.212$, $\rho_{Con}^{wales} = 0.248$ for the vote shares for this party if the parties were at the regional equilibria.²⁹¹ When the parties are at their partisan constituency positions, then the four-way vote shares of the Conservative Party are lower in Scotland (16.5%) and Wales (22.6%) than in England (38%).

We argue that this difference in the vote shares is because the party is located far from the center in contrast to the Liberal Democrats, Scottish Nationals and Plaid Cymru. We infer that the Conservative Party obtains almost its votes in England (about

²⁹⁰In the estimations, the valences of the SNP in Scotland and Plaid Cymru in Wales are not significantly different from zero. Assuming valences of zero would give *higher* estimates of ρ_{snp}^{sct} and ρ_{con}^{wales} , and therefore *lower* values of c^{sct} and c^{wales} . Using the 95% bounds to construct appropriate bounds on our estimates of the convergence coefficient provides a more robust confirmation of our conclusion. The calculations can be found at the working paper, Schofield et al. (2011c).

²⁹¹The 95% lower bound on ρ_{con}^{sct} is 0.16 and the lower bound on ρ_{con}^{wales} is 0.18. See Table A6.9.

8.1 million out of a total of 8.8 million), and does not compete effectively in Scotland or Wales.

The valence of the Labor Party is $\lambda_{Lab}^{sct} = 0.69$ in Scotland and $\lambda_{Lab}^{wales} = 0.63$ in Wales, which are both much higher than in England ($\lambda_{Lab}^{eng} = 0.35$), giving $\rho_{Lab}^{sct} = 0.40$, and $\rho_{Lab}^{wales} = 0.42$, in contrast to $\rho_{Lab}^{eng} = 0.38$. These estimations are close to the four-way vote shares in these regions (41.3% and 44.8% in Scotland and Wales, respectively). This suggests that Labor gained from the more extreme position of the Conservatives. The 80 seats Labor won in Scotland and Wales, as well as its relatively high valence in these regions, gave it an electoral advantage in general.

Notice that the vote share of the SNP of 1.5% in Britain is due entirely to a vote share in Scotland of 17.7% while $\rho_{SNP}^{sct} = 0.18$. Similarly, the vote share of 0.6% for PC (Plaid Cymru) in Britain is due to a vote share of 13.2% in Wales, while $\rho_{pc}^{wales} = 0.12$. We estimate that the two regional parties also gained because of their centrist positions in comparison to the more extreme position of the Conservative Party.

In Scotland and Wales the four-way vote shares for the Liberal Democrats were 23.7% and 19.4%, while $\rho_{Lib}^{sct} = 0.20$ and $\rho_{Lib}^{wales} = 0.22$. We infer that the difference between the actual vote shares and the estimated regional probabilities for this party at the joint origin is due to the location of the Liberal Democrats at a quite pro-Europe position on the Nationalism axis. In Scotland it gains votes because of the more extreme position of the Conservative Party, and in Wales it loses votes because of the slightly more centrist positions of Plaid Cymru, and even Labor.²⁹² Notice that the seat share of the Liberal Democrats is much higher in Scotland than in England, even though the vote shares are almost the same. We infer this advantage is enhanced because the relative valence of the Conservative Party is much lower in Scotland and the Liberal Democrats gain as a result.

It is obvious from these estimates that Labor depends to a considerable degree on electoral support in Scotland and Wales, with its main competitors in Scotland being the Lib Dems followed by the SNP. In Wales, Labor has only weak competition from the Conservatives and Lib Dems. The electoral distributions suggest that voters in Scotland are slightly more supportive of Europe, and voters in Wales are slightly less supportive of Europe, than in Great Britain as a whole. Devolution and increased support for the SNP in Scotland will affect the electoral chances for Labor. In the 2010 election that we next examine Labor was able to retain its 41 seats in Scotland, but lost 3 seats in Wales..

For 2005, we see that in England, the predicted vote share of the LibDems at the LNE was 0.26, but the lower 95% estimate was 0.23, which was below its sample vote share (0.251) at the vector of partisan constituency positions. In Scotland, the lower vote share of the SNP at the LNE was $\rho_{SNP}^{sct} = 0.14$ which is less than the sample share of $s_{SNP} = 0.185$. In Wales, the lower vote share of PC was $\rho_{PC}^{sct} = 0.08$ which is less than the sample share $s_{pc} = 0.12$. (Table A6.7 gives the sample vote shares in the regions, together with lower and upper estimates of these predicted vote shares at the LNE.)

²⁹²We can infer that the vote shares of the three smaller parties are due to their positions relative to the two larger parties.

None of the regional equilibria for the pure spatial models are a *stable attractors*.

Comparing voters and activists for the three main parties we can infer that Conservative activists on average strongly prefer a policy position that is the upper right quadrant of the policy space. Activists for the Liberal Democrats and Labor are even more supportive of Europe than their party voters, on average, while their activists have similar preferences to the party voters on the economic axis. These activist preferences restrain the party from moving to the LNE that we have identified. We now examine the effects of traits.

6.2.2 The Spatial Model with Traits in 2005

We used survey questions on the party leader traits (in Table A6.3) to construct a trait index using factor analysis, as in Table A6.5. Table 6A.6.6 gives the result of the various models with traits alone, the spatial model with traits, with and without sociodemographic variables. Tables 6A.9 to 6A.11 in Appendix 1 give further results on the regional aspects of the 2005 election.²⁹³

Notice that Q.1 in Table A6.3 refers to voters' feelings about the party leaders. The response to this question gives an indication of the valence, or attractiveness of the leader. However, Q. 2 and Q. 4 deal with competence and trust, while Q.3 asks whether the leader is responsive to voter concerns.

The pure spatial model for Great Britain, just for the three major parties has a Log Likelihood (LL) of -1136, while the pure traits model has a LL of -754. Table A6.6 shows that when the spatial component is added the LL becomes -748 (a significant change of +6). The β - coefficients are still highly significant in the spatial models with traits and sociodemographics, with t-values of 3.7 and 4.7 respectively. The valence terms for Blair in these two models are dominated by the traits measures and the estimates for the exogenous valence terms for Blair are not statistically significant in the traits models, with or without sociodemographics. (See Table A.6.17 at the end of the Appendix for a comparison of overall loglikelihood differences for the models for 2005.)

We redid the traits analysis for the three regions, obtaining measures for the trait indices for the SNP leader, Salmond, in Scotland and the Plaid Cymru leader, Llwyd, in Wales, and analyzed all trait, spatial and sociodemographic models by region. The loglikelihoods are obviously superior for the general models with traits and sociodemographics. For example, in England, the LL of the pure spatial model is -945 (as shown in Table A6.8) while we found the traits model had a far superior value of -463. Adding the spatial component to traits we find the LL becomes -460, while adding the sociodemographics we obtain a LL of -440. In the regional spatial traits models, the β -coefficients are significant ($t > 2.5$) in England and Scotland, but not in Wales, while the exogenous valence term for Blair is significant only in Scotland ($t = 3.5$) in the spatial traits model, but not when the sociodemographic terms are included.

These analyses suggest that the spatial and traits models do complement on another.

²⁹³ Additional details on these models can be found at Schofield et al. (2011c).

Since the spatial component is significant for these models, we can estimate local Nash equilibria under vote maximizing behavior by the parties for the various spatial traits models.

For example, the local equilibrium for the spatial traits model including sociodemographics is

$$\mathbf{z}_{sts}^{el} = \begin{bmatrix} Party & Lab & Lib & Con \\ Econ & -0.07 & -0.04 & 0.16 \\ Nat & -0.31 & -0.20 & 0.14 \end{bmatrix}$$

with an expected vote share of

$$\rho_{sts} = (\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{sts} = (0.41, 0.34, 0.25),$$

We see the vote share of the LibDems at the estimated spatial trait equilibrium is almost identical to the sample vote share at the partisan constituency positions. Although the traits models are statistically superior to the pure spatial models, the equilibria are little changed, and by the criterion we use, these joint traits equilibria are not stable attractors.

6.3 The Election of 2010.

Gordon Brown became leader of the Labor Party and Prime Minister on 27 June 2007 after the resignation of Tony Blair, while Nicholas Peter Clegg became leader of the Liberal Democrats on 18 December 2007. Brown's popularity fell dramatically as a result of various scandals involving the Labor Party as well as the economic crisis.²⁹⁴ The outcome of the May 6, 2010 election was a hung Parliament with no majority party. Gordon Brown formally resigned as Prime Minister on May 11 and David Cameron formed the next government, in alliance with the Liberal Democrats, with Clegg as deputy Prime Minister.

Fairly obviously, the electorate lost any faith it may have had in Gordon Brown because of the dire consequences of the recession. On September 25, 2010, Edward Miliband was elected leader of the Labor Party.

After the election it became obvious that the United Kingdom faced a deficit (the public sector borrowing requirement) of £140 billion (about \$240 billion, or 11% of GDP) and a total debt of £820 (about 56% of GDP).²⁹⁵ The new coalition government of Conservative and Liberal Democrat had to deal with the issue, and by September had begun to propose various cuts in government spending, of about £83 billion (or \$130 billion), including possibly a 20% cut in defense. The government announced

²⁹⁴The UK public net debt had increased from about 53% of GDP to about 68% in three years. This however was much lower than the US, which reached 120%, as well as Germany, about 77% and Greece, 108%.

²⁹⁵The North Sea oil windfall of about \$400 billion had been dissipated without very much to show. It is not unlikely that Scotland will in the future try to capture for itself some of the 30 billion barrels of oil estimated to still lie under the North Sea.

in October that it intended to cut the child welfare benefit (about \$32/week for the first child) for any family making over \$70,000/annum. These cuts were followed by a proposed substantial reduction in the support for British universities, increase in student fees, and the elimination of hundreds of thousands of public sector jobs. In a vote on 9th December 2010, the coalition government voted 323 in favour and 302 against, with a majority of only 21, to raise university fees to a maximum of £9,000 per annum from £3000.²⁹⁶ There were quite violent student protests on November 12 and later on December 9 in London.

By March, 2011, it became apparent that the result of the austerity program would be a cut in real household income of about 2%.

| Party | Vote ^a % | Seats | Seat % |
|-------------------------|---------------------|--------------------|--------|
| Conservative Party: | 36.1 | 307 | 47.0 |
| Labor Party | 29.0 | 257 | 39.6 |
| Liberal Democrat Party | 23.0 | 57 | 8.8 |
| Scottish National Party | 1.7 | 6 | 0.9 |
| Plaid Cymru | 0.6 | 3 | 0.46 |
| Total | 90.4 ^b | 630+2 ^b | 96.76 |

^a Percentage of total UK vote.

^bOthers: Independent, Greens, British National Party, UK Independence Party, etc. with about 7.4% vote in total, in Great Britain, plus approx. 675,000 votes (2.2%) of the vote for parties in N.Ireland with 18 seats (2.3%)

6.3.1 Modelling the election of 2010

We proceeded in the same way as for 2005 to construct a factor space based on the 2010 BES. Tables A6.13 give the survey questions and Table A6.14 gives the Factor Analysis. To construct the factor space, we used the eight survey items specified in Table A6.14.²⁹⁷

The sample ($n=6409$) included respondents who participated both in pre- and post-election surveys, voted for Lab, Con, Lib, SNP or PC, and were without missing data points in the variables regarding vote choice, issue dimensions, traits and sociodemographic. The sample contained 5466, 636 and 307 respondents from England, Scotland and Wales, respectively. The sample party vote shares were

$$(Lab, Con, Lib, SNP, PC) = (0.281, 0.40, 0.289, 0.025, 0.05).$$

comparable to the national vote shares shown in Table 6.4.

²⁹⁶Obviously, many Liberal Democrats voted against the government.

²⁹⁷We also included several other policy related items such as War-in-Afghanistan and Reducing crime vs. the rights of suspects. However, the contribution of these items was very low in either of the dimensions.

The first dimension is *Nationalism* and the second one is *Economy*. A larger value in the *Nationalism* dimension is strongly associated with disapproval of Britain's EU membership and disagreement with Britain's further cooperation with the EU. On the *Economic* dimension, those who prefer tax-cut, disagree to increasing tax-free allowance to £10,000, to the "mansion" tax, to limiting pension tax relief, and to "ecotax" have higher values. In sum, a larger value on the first dimension indicates stronger nationalism while on the second dimension it indicates pro-market attitudes. Following the usual convention, we represent the economic dimension as the x-axis and the nationalism dimension as the y-axis. Using the factor scores, we estimated the party positions. Each party position is estimated as the mean of the voters who intended to vote for the party before the election using the (Vote Intention item in pre-election surveys). Note that the number of respondents whose voting intention was for one of the five parties is different from the number of respondents whose actual vote was for the parties. Among those who voted for one of the five parties on the election day, 5627 respondents said they would vote for the parties in the following way: 1801 for Lab, 2456 for Con, 1174 for LibDem, 165 for SNP and 31 for PC. Note that 782 respondents answered that they would vote for other parties or did not answer the voting intention question, but then voted for one of those parties on the election day. By this method, the party partisan constituency positions were estimated to be

$$\mathbf{z}_{2010}^* = \begin{bmatrix} \textit{Party} & \textit{Lab} & \textit{Lib} & \textit{Con} & \textit{SNP} & \textit{PC} \\ \textit{Econ} & -0.205 & -0.349 & 0.392 & -0.392 & -0.074 \\ \textit{Nat} & -0.437 & -0.431 & 0.449 & -0.25 & 0.229 \end{bmatrix}.$$

To determine activists, we used the survey question "on a scale of 0 to 10, where 10 means a great deal of influence and 0 means no influence, how much influence do you have on politics and public affairs?"

Those who answered 6 or higher values were regarded as activists ($n = 774$).

Figures 6.5 and 6.6 shows the voter and activist distribution by region, as well as the party constituency positions. Figure 6.7 shows the activist distributions by party. Using the post-election response to the question "who did you vote for", we partitioned the sample into various classes depending on vote choice and whether the voter was an activist or not. The mean position of all respondents ($n = 6218$) who did vote for one of the three major parties was (0.010, 0.003), while the activist mean was (-0.048, -0.277). The partition of the 746 activists for the three major parties was: 309 for Lab, 241 for Con, 196. for LibDem, about 12% of the sample. We thus found the activist means by party to be given by the following:

$$\mathbf{z}_{2010}^{act} = \begin{bmatrix} & \textit{Lab} & \textit{Lib} & \textit{Con} \\ \textit{Econ} & -0.18 & -0.42 & 0.42 \\ \textit{Nat} & -0.63 & -0.58 & 0.40 \end{bmatrix}$$

Activists for both the Labor and the Liberal Democrat parties appear to be more favorably disposed to the European Union than the party voters. Conservative activists

are only slightly more right wing on the economic axis, and slightly less opposed to Europe, on average, than the party voters.

We also used the trait perceptions of the party leaders, given in Table A6.13 to perform a factor analysis of the trait perceptions. Table A6.15 reports the factor loadings for the three major party leaders, while Table A6.16 reports the results for the various logit models: pure spatial, pure traits, spatial with traits and joint (spatial, traits and sociodemographics). Table A6.18 makes clear that the traits model is far superior to the pure spatial model. However, the difference in loglikelihoods between the pure traits model and the spatial model with traits is a significant +123 (while the β -coefficient in the spatial traits model has a t -value of 14.9). Adding sociodemographics gives a significant difference in loglikelihoods of +37 (Again the β -coefficient in the spatial traits model with sociodemographics has a t -value of 14.7).. The AIC measures also drop significantly, as new variables are added.

Comparing Table A6.6 (Model 1), the pure spatial model for 2005, with Table A6.16 (Model 1), the pure spatial model for 2010, we see immediately that Brown has low exogenous valence²⁹⁸ relative to Clegg in 2010, and this value was much lower than Blair's exogenous valence²⁹⁹ relative to Kennedy in 2005. Even when trait perceptions are included, the valence estimates for Blair are significantly positive and higher³⁰⁰ for the two nested models with traits, and spatial with traits, than for Brown in the same models:³⁰¹.

| | England | | | Scotland | | | Wales | | |
|--------------------|---------------------|-------|---------------------|---------------------|-------|---------------------|---------------------|-------|---------------------|
| Party ^a | Vote ^b % | Seats | Seat ^c % | Vote ^b % | Seats | Seat ^c % | Vote ^b % | Seats | Seat ^c % |
| Con | 43.0 | 297 | 55.9 | 16.7 | 1 | 16.9 | 26.1 | 8 | 20.0 |
| Lab | 30.6 | 191 | 36.0 | 42.0 | 41 | 69.4 | 36.2 | 26 | 65.0 |
| LibDem | 26.4 | 43 | 8.1 | 18.9 | 11 | 18.6 | 20.1 | 3 | 7.5 |
| SNP | | | | 19.9 | 6 | 10.1 | | | |
| PC | | | | | | | 11.3 | 3 | 7.5 |
| Total | 100 | 531 | | 97.5 | 59 | 100 | 93.7 | 40 | 100 |

^a Con: Conservative Party; Lab: Labor Party; LibDem: Liberal Democrat Party, SNP: Scottish National Party; PC: Plaid Cymru ^bPercentage regional vote share, ^cPercentage regional seat share

²⁹⁸ $\lambda_{Lab}^{2010} = -0.04$ with $t = 1.3$.

²⁹⁹ $\lambda_{Lab}^{2005} = +0.52$ with $t = 6.8$.

³⁰⁰ Table A6.6 (models 2 and 3) show that ($\lambda_{Lab}^{2005} = +0.19; +0.18$) are both statistically significant but with $t \simeq 1.7$.

³⁰¹ Table A6.16 (models 2 and 3) show that ($\lambda_{Lab}^{2010} = -0.96; -0.98$) are both statistically significant and negative, with $t > 15.0$. The lower 95% bounds on Blair's valence are higher than the upper 95% bounds on Brown's valence. These comparisons are not strictly valid, but they are indicative.

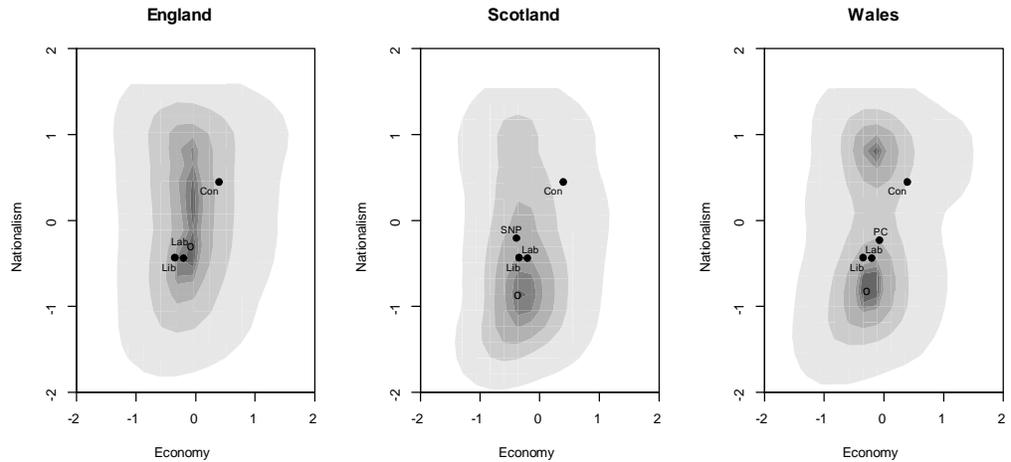


Figure 6.5: Voter distributions and party positions in the regions in 2010

| Party | Vote share ^a % | Seat | Seat share ^b % |
|----------------------|---------------------------|------|---------------------------|
| Alliance | 0.1 | 1 | 0.15 |
| Democratic Unionist | 0.6 | 8 | 1.20 |
| Independent (N.Down) | 0.1 | 1 | 0.15 |
| Social Dem and Labor | 0.4 | 3 | 0.45 |
| Sinn Féin | 0.6 | 5 | 0.75 |
| Total | 1.8 | 18 | 2.8 |

^aPercentage total UK vote ^bPercentage total UK seat share

6.3.2 Pure spatial models for Great Britain and the regions in 2010

We also ran the pure spatial model for the three regions, England, Scotland and Wales, with sample sizes for the regional models of 5465, 636, and 307 respectively. Table A.6.19 gives the results of the pure spatial model for the regions of England, Scotland and Wales. Figures 6.5 and 6.6 show the voter and activist distributions in the three regions along with the party positions. We use the same criteria as in the national model for activists. The numbers of activists are 718, 87 and 43 in England, Scotland, and Wales, respectively. Clearly the activist distributions are quite different from the

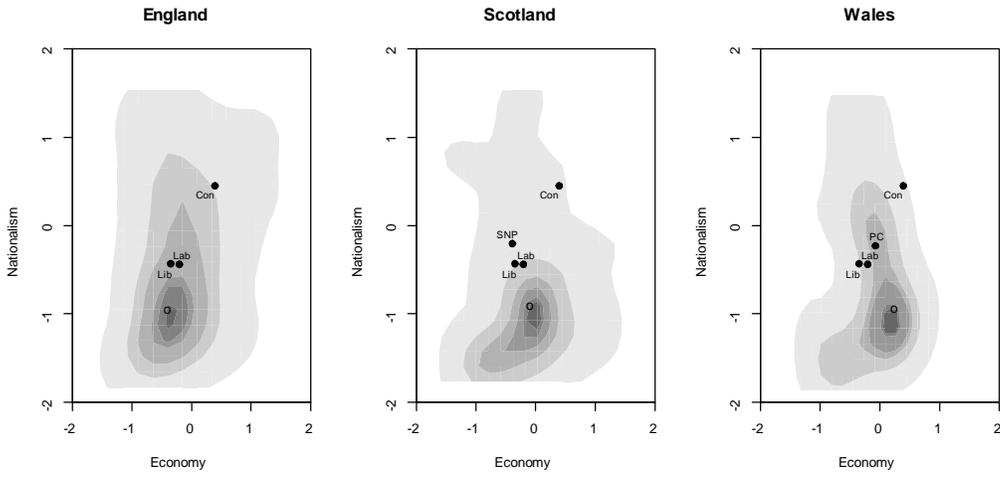


Figure 6.6: Smoothed activist distributions in the regions in 2010

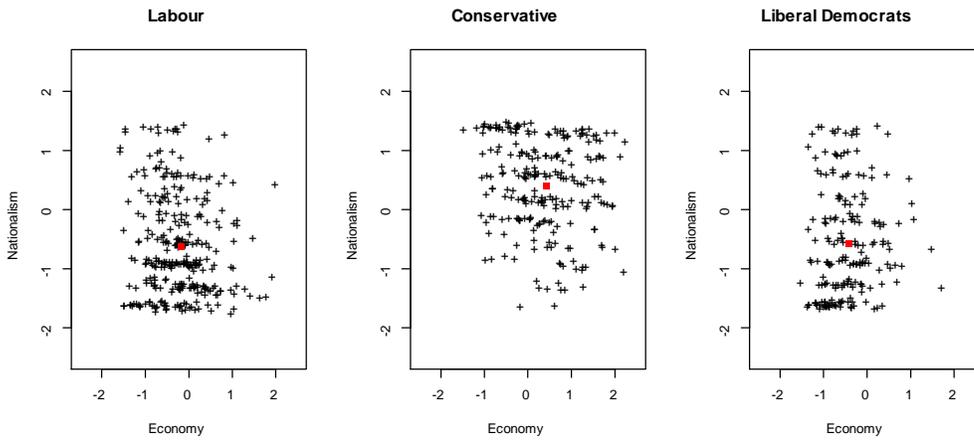


Figure 6.7: Activist distributions and activist means (red dot) by party in 2010

respondent distributions. The sample vote share in each region is as follows:

| | | |
|----------|----------------------|-------------------------------|
| England | (Lab, Con, Lib) | (0.268, 0.434, 0.298) |
| Scotland | (Lab, Con, Lib, SNP) | (0.362, 0.162, 0.230, 0.247). |
| Wales | (Lab, Con, Lib, PC) | (0.349, 0.293, 0.251, 0.107). |

Compared with the actual election results given in Table 6.5, the sample used in this analysis is somewhat biased toward the Liberal Democratic party. The predicted vote shares at the regional LNE were found to be:

| | | |
|----------|----------------------|-------------------------------|
| England | (Lab, Con, Lib) | (0.284, 0.395, 0.321) |
| Scotland | (Lab, Con, Lib, SNP) | (0.364, 0.151, 0.234, 0.251) |
| Wales | (Lab, Con, Lib, PC) | (0.353, 0.252, 0.270, 0.126). |

Table A6.20 gives the predicted vote shares at the joint means, together with the lower 95% estimates. For Wales, the regional mean was not an LNE. Instead the Hessian of the PC had a saddle at the mean, and the LNE was some distance from the mean. It is possible that the LNE, \mathbf{z}_s^{wales} , is a stable attractor. although none of the other regional equilibria are stable attractors.

Comparing the valences of Blair in 2005 and of Brown in 2010 across the regions we see again that Brown's exogenous valences are significantly lower than Blair's. For Blair we have ($\lambda_{Lab}^{eng} = 0.35$, $\lambda_{Lab}^{sct} = 0.69$, $\lambda_{Lab}^{wales} = 0.63$) and for Brown, ($\lambda_{Lab}^{eng} = -0.12$, $\lambda_{Lab}^{sct} = 0.44$, $\lambda_{Lab}^{wales} = 0.33$).³⁰²

6.3.3 Traits Models for 2010

Table A6.21 gives the regional traits models. Comparing the valences of Blair in 2005 and of Brown in 2010 across the regions we see again that Brown's exogenous valences are significantly lower than Blair's. For the spatial traits models for Blair we have ($\lambda_{Lab}^{eng} = -0.23$, $\lambda_{Lab}^{sct} = 0.89$, $\lambda_{Lab}^{wales} = 0.97$) and for Brown, ($\lambda_{Lab}^{eng} = -1.02$, $\lambda_{Lab}^{sct} = -0.96$, $\lambda_{Lab}^{wales} = -0.37$).³⁰³

The β -coefficients in the spatial traits models are highly significant, $t > 38.0$, for Great Britain and all regions, so we can examine the spatial traits model.

Estimation of vote maximizing equilibria for the models in Great Britain with three parties with traits were as follows:

(i) spatial traits model

$$\mathbf{z}_{st}^{el} = \begin{bmatrix} & Lab & Lib & Con \\ Econ & -0.21 & -0.10 & 0.07 \\ Nat & -0.34 & -0.11 & 0.19 \end{bmatrix}$$

³⁰²For England and Scotland the t -values exceed 3.0.

³⁰³For England and Scotland the t -values exceed 4.0.

with vote shares

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{st} = (0.29, 0.41, 0.30).$$

(ii) spatial traits model with sociodemographics:

$$\mathbf{z}_{sts}^{el} = \begin{bmatrix} & Lab & Lib & Con \\ Econ & -0.21 & -0.11 & 0.05 \\ Nat & -0.34 & -0.14 & 0.15 \end{bmatrix}$$

with vote share

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib})_{sts} = (0.30, 0.42, 0.29).$$

The sample vote share was

$$(s_{Lab}, s_{Con}, s_{Lib})^{GB} = (0.290, 0.412, 0.298).$$

so again these LNE were not stable attractors.

Because the various estimates of Brown's trait valence are much lower than the other two leaders, we find that the Labor party equilibrium position is fairly close to its estimated position. According to the model, Cameron would have gained 42% of the three party vote by moving closer to the origin.

6.4 Conclusion

Comparing 2005 and 2010, it is clear that Labor lost the 2010 election because of Brown's low exogenous valence, as measured in all nested models, including the regional models. In particular, the drop in Brown's exogenous valence, as measured by the spatial traits model, meant that in England in 2010, the Conservatives took 43% of the vote to Labor's 30.6%. In 2005, these two parties each took about 35%. The Lib Dems increased their vote share in England from 22.8% in 2005 to 26.4%, in 2010, because both Brown and Cameron had exogenous valences lower than the LibDem leader, Clegg.³⁰⁴

We have based the analysis in this chapter on the supposition that parties are located at the *partisan constituency positions*. On this assumption we have shown that the spatial component adds statistical significance to the pure traits model. We have performed the thought experiment to locate local equilibria to these various models. To deal with the stochastic uncertainty of the spatial model, we have argued that an equilibrium needs to be a stable attractor for a low valence party so that the opportunists in the party would be able to persuade the party to shift position to the equilibrium.

The local vote maximizing equilibrium at the joint mean is confirmed for the pure spatial models for the election in Great Britain, in 2005, considering just the three major parties, as well as in the regions when small regional parties are included. We obtain the

³⁰⁴In Blair's new book (Blair, 2010) he writes of Gordon Brown, "Political Calculation, yes. Political feelings, no. Analytical intelligence, absolutely. Emotional intelligence, zero."

The British electorate appear to have had the same feelings.

same result for 2010, except possibly for Plaid Cymru in Wales. However, these local equilibria do not appear to be local attractors.

In 2010, the large traits differences between Brown and the other two leaders gives divergent equilibria, with Brown's equilibrium position relatively close to his estimated position. Because activists for the parties tend to have somewhat more extreme positions than the party voters, activists will exert themselves to maintain the party at a position they find more congenial.

6.5 Appendices: Tables for the British Elections in 2005 and 2010

Appendix 1: Tables for the Election of 2005

Table A6.1. 2005 Survey Questions for Great Britain

1. Thinking of the Euro, which of the following statements on this card would come closest to your own view?
 2. The first issue is Britain's membership in the European Union. You'll see on this show card that the end of the scale marked 0 means that Britain should definitely get out of the EU, and the end of the scale marked 10 means that Britain should definitely stay in the EU. Where would you place yourself on this scale?
 3. Using the 0 to 10 scale on this card, where the end marked 0 means that government should cut taxes and spend much less on health and social services, and the end marked 10 means that government should raise taxes a lot and spend much more on health and social services, where would you place yourself on this scale?
- Please tick one box on each line to show how much you agree or disagree with each of these statements:
4. Immigrants make Britain more open to new ideas and cultures.
 5. Immigrants take jobs away from people who were born in Britain.
 6. Private enterprise is the best way to solve Britain's economic problems.
 7. The government has the right to put people suspected of terrorism in prison without trial.
 8. Immigrants increase crime rates.
 9. Immigrants generally are good for Britain's economy.
 10. Most asylum seekers who come to Britain should be sent home immediately.
 11. The ability of banks and companies to move money across borders seriously undermines the British government's ability to manage the economy.
 12. Big international companies are a threat to democratic government in Britain.
 13. I am very concerned about the loss of British jobs to countries overseas.

Voters and Activists

14. **Voters.** Using the scale of 0 to 10 where 0 means very unlikely and 10 means very likely, how likely it is that you would ever vote for the following parties.

Vote choice was given by a response >7 to this question.

15. **Activists:** Over the past few years, have you ever volunteered to get involved in politics or community affairs?

Those who answered yes were coded as activists.

Total sample size for regional models= 1564,

Total sample size for voters for major parties in Great Britain= 1149.

Sample size for activists=210.

| Table A6.2. Sociodemographic Survey items in 2005 | |
|--|--|
| 1. Age | What is your year of birth? We subtracted the year from 2010. |
| 2. Gender | What is your gender?(1) Male (2) Female |
| 3. Education | At what age did you finish full-time education? (1) 15 or younger - (5) 19 or older Those who are still at school or university are recoded as(5), since all the respondents are older than 19. |
| 4. Income | Which of the following represents the total income of your household from all sources before tax-including benefits, saving and so on? (1) Less than £5,000 - (16) More than £100,000 |

| Table A6.3. Survey items used for party leader traits in 2005 | |
|--|--|
| 1. | Using a scale that runs from 0 to 10, where 0 means strongly dislike and 10 means strongly like, how do you feel about? |
| 2. | Using a scale that runs from 0 to 10, where 0 means a very incompetent and 10 means a very competent leader, how would you describe? |
| 3. | Now, please use the 0 to 10 scale to indicate the extent to which the leaders respond to voters' concerns. How would you describe? |
| 4. | Now, please use the 0 to 10 scale to indicate how much trust you have for each of the party leaders, where 0 means no trust and 10 means a great deal. How much do you trust? |

| Table A6.4. 2005 Factor Loadings for British Election | | |
|--|-------------|---------|
| <i>n</i> =1149 | Nationalism | Economy |
| Euro | 0.30 | -0.17 |
| EU membership | -0.32 | 0.14 |
| Tax/Spend | -0.10 | 0.39 |
| Immigrant Culture | 0.32 | -0.03 |
| Immigrant Jobs | -0.34 | -0.00 |
| Free Market | -0.07 | 0.40 |
| Terrorism | -0.28 | -0.04 |
| Immigrant crime | -0.38 | 0.02 |
| Immigrant economy | 0.36 | -0.03 |
| Asylum seekers | -0.38 | 0.01 |
| Int'l money transfer | -0.17 | -0.48 |
| Int'l companies | -0.04 | -0.53 |
| Job loss overseas | -0.24 | -0.34 |
| SD | 1.99 | 1.28 |
| Cumulative variance | 0.31 | 0.43 |

| | Blair traits | Howard traits | Kennedy traits |
|----------------------------|---------------------|----------------------|-----------------------|
| Blair feeling | 0.91 | -0.12 | |
| Blair competent | 0.79 | | 0.20 |
| Blair responsive | 0.86 | | 0.13 |
| Blair trust | 0.94 | | |
| Howard feeling | -0.18 | 0.82 | |
| Howard competent | | 0.87 | 0.11 |
| Howard responsive | | 0.78 | 0.17 |
| Howard trust | | 0.90 | |
| Kennedy feeling | | | 0.82 |
| Kennedy competent | 0.13 | | 0.85 |
| Kennedy responsive | 0.14 | | 0.83 |
| Kennedy trust | 0.15 | 0.13 | 0.85 |
| Variance | 0.26 | 0.24 | 0.24 |
| Cumulative variance | 0.26 | 0.51 | 0.75 |

| Models | | Pure spatial (1) | Traits only (2) | Spatial+Traits (3) | Spatial+Traits +Socios (4) |
|---------------------|-----------------|---------------------|---------------------|-----------------------|-------------------------------|
| Party | Variable | Est (t-stat) | Est (t-stat) | Est (t-stat) | Est (t-stat) |
| | β | 0.15*** (12.56) | - | 0.06*** (3.71) | 0.08*** (4.73) |
| Lab | λ_{Lab} | 0.52 (6.84) | 0.19 (1.84) | 0.18 (1.68) | 0.70 (1.43) |
| | Blair trait | | 1.72*** (12.83) | 1.72*** (12.87) | 1.74*** (12.86) |
| | Howard trait | | -0.63*** (5.25) | -0.64*** (5.34) | -0.64*** (5.30) |
| | Kennedy trait | | -0.74*** (6.78) | -0.71*** (6.42) | -0.70*** (6.21) |
| | Age | | | | -0.01 (1.66) |
| | Education | | | | 0.03 (0.39) |
| | Gender (F) | | | | -0.11 (0.60) |
| | Income | | | | 0.0 (0.04) |
| Con | λ_{Con} | 0.27*** (3.22) | -0.28* (2.32) | -0.26* (2.18) | -2.63** (4.42) |
| | Blair trait | | -0.83*** (6.46) | -0.72*** (5.48) | -0.66*** (5.04) |
| | Howard trait | | 1.90*** (12.25) | 1.79*** (11.29) | 1.72*** (10.67) |
| | Kennedy trait | | -1.31*** (10.26) | -1.15*** (8.56) | -1.16*** (8.35) |
| | Age | | | | 0.02** (2.91) |
| | Education | | | | 0.13 (1.69) |
| | Gender (F) | | | | 0.05 (0.24) |
| | Income | | | | 0.14*** (4.08) |
| <i>n</i> | | 1149 | 1149 | 1149 | 1149 |
| Log Likelihood (LL) | | -1136 | -754 | -748 | -728 |
| AIC | | 2279 | 1518 | 1505 | 1475 |
| McFadden's R^2 | | 0.08 | 0.39 | 0.40 | 0.41 |

Table A6.7 2005 Sample Vote Shares and ρ by Region

| Party | Great Britain | | | England | | |
|--------|---------------------|--------|--------------------|---------------------|--------|--------------------|
| | S.vote ¹ | ρ | [L,U] ² | S.vote ¹ | ρ | [L,U] ² |
| Lab | 0.41 | 0.42 | [0.39,0.46] | 0.36 | 0.38 | [0.34,0.42] |
| Con | 0.34 | 0.33 | [0.29,0.36] | 0.38 | 0.36 | [0.32,0.40] |
| LibDem | 0.25 | 0.25 | [0.22,0.28] | 0.25 | 0.26 | [0.23,0.30] |
| c^3 | [0.62,0.84,1.08] | | | [0.53,0.75,1.00] | | |
| Party | Scotland | | | Wales | | |
| | S.vote ¹ | ρ | [L,U] ² | S.vote ¹ | ρ | [L,U] ² |
| Lab | 0.41 | 0.40 | [0.34,0.47] | 0.41 | 0.42 | [0.34,0.50] |
| Con | 0.20 | 0.21 | [0.16,0.27] | 0.26 | 0.25 | [0.20,0.32] |
| LibDem | 0.21 | 0.20 | [0.16,0.26] | 0.21 | 0.22 | [0.17,0.29] |
| SNP | 0.19 | 0.18 | [0.14,0.24] | - | | |
| PC | | | | 0.12 | 0.12 | [0.08,0.17] |
| c^3 | [0.53,0.97,1.47] | | | [0.35,0.80,1.30] | | |

¹ sample vote shares among respective parties. ² Lower and upper 95% bounds on ρ .

³ Lower 95% bound, best estimate and upper 95% bound on c .

| base LibDem | England | Scotland | Wales |
|------------------|---------------------|--------------------|--------------------|
| Var | Est (t-stat) | Est (t-stat) | Est (t-stat) |
| β | 0.14 *** (11.32) | 0.14 *** (5.93) | 0.11 *** (4.13) |
| λ_{Lab} | 0.35 *** (4.17) | 0.69 *** (4.82) | 0.63 *** (3.75) |
| λ_{Con} | 0.31 *** (3.42) | 0.05 (0.27) | 0.11 (0.55) |
| λ_{SNP} | | -0.10 (0.56) | |
| λ_{PC} | | | -0.66 ** (2.92) |
| n | 942 | 362 | 260 |
| LL | -945 | -460 | -327 |
| AIC | 1896 | 928 | 663 |
| McFadden's R^2 | 0.09 | 0.05 | 0.04 |

| | | England $n = 717$ | | Scotland $n = 241$ | | Wales $n = 108$ | |
|------------------|-----------------|--------------------------|-----------------|---------------------------|-----------------|------------------------|-----------------|
| Party | Variable | Est. | t-stat | Est. | t-stat | Est. | t-stat |
| Lab | λ_{Lab} | -0.21 | 1.46 | 0.88 *** | 3.47 | 1.01 ** | 2.75 |
| | Blair Traits | 1.83 *** | 10.07 | 1.55 *** | 5.33 | 1.26 *** | 3.40 |
| | Howard Traits | -0.61 *** | 3.96 | -0.45 | 1.66 | 0.01 | 0.03 |
| | Kennedy Traits | -0.63 *** | 4.52 | -0.88 ** | 3.25 | -0.65 | 1.87 |
| | Salmond Traits | | | -0.20 | 0.77 | | |
| | Llwyd Traits | | | | | -0.51 | 1.31 |
| Con | λ_{Con} | -0.08 | 0.60 | -0.59 | 1.63 | -0.93 | 1.49 |
| | Blair Traits | -0.99 *** | 5.94 | -0.43 | 1.38 | -0.03 | 0.08 |
| | Howard Traits | 2.02 *** | 10.35 | 1.89 *** | 4.82 | 2.71 *** | 3.83 |
| | Kennedy Traits | -1.22 *** | 7.99 | -1.31 *** | 3.84 | -2.41 *** | 3.63 |
| | Salmond Traits | | | -0.76 * | 2.50 | | |
| | Llwyd Traits | | | | | -0.78 | 1.28 |
| SNP | λ_{SNP} | | | -0.12 | 0.40 | | |
| | Blair Traits | | | -0.44 | 1.50 | | |
| | Howard Traits | | | 0.10 | 0.34 | | |
| | Kennedy Traits | | | -1.30 *** | 4.22 | | |
| | Salmond Traits | | | 0.95 ** | 3.10 | | |
| PC | λ_{PC} | | | | | -0.81 | 1.30 |
| | Blair Traits | | | | | 0.13 | 0.28 |
| | Howard Traits | | | | | 1.24 * | 2.30 |
| | Kennedy Traits | | | | | -1.85 ** | 2.78 |
| | Llwyd Traits | | | | | 2.37 ** | 3.20 |
| LL | | -463 | | -205 | | -84 | |
| AIC | | 943 | | 440 | | 199 | |
| McFadden's R^2 | | 0.40 | | 0.35 | | 0.41 | |

| Party | Variable | England | | Scotland | | Wales | |
|------------------|-----------------|-----------|--------|-----------|--------|----------|--------|
| | | Est. | t-stat | Est. | t-stat | Est. | t-stat |
| | β | 0.05 ** | 2.64 | 0.100 ** | 2.59 | 0.03 | 0.53 |
| Lab | λ_{Lab} | -0.23 | 1.55 | 0.89 *** | 3.50 | 0.97 ** | 2.60 |
| | Blair Traits | 1.84 *** | 10.13 | 1.51 *** | 5.20 | 1.24 *** | 3.35 |
| | Howard Traits | -0.63 *** | 4.05 | -0.46 | 1.69 | 0.02 | 0.04 |
| | Kennedy Traits | -0.59 *** | 4.25 | -0.83 ** | 3.07 | -0.62 | 1.77 |
| | Salmond Traits | | | -0.18 | 0.71 | | |
| | Llwyd Traits | | | | | -0.50 | 1.28 |
| Con | λ_{Con} | -0.07 | 0.48 | -0.42 | 1.14 | -0.97 | 1.54 |
| | Blair Traits | -0.85 *** | 4.98 | -0.40 | 1.27 | -0.00 | 0.00 |
| | Howard Traits | 1.89 *** | 9.49 | 1.75 *** | 4.35 | 2.66 *** | 3.75 |
| | Kennedy Traits | -1.06 *** | 6.60 | -1.09 ** | 3.06 | -2.27 ** | 3.21 |
| | Salmond Traits | | | -0.78 * | 2.49 | | |
| | Llwyd Traits | | | | | -0.75 | 1.22 |
| SNP | λ_{SNP} | | | -0.09 | 0.29 | | |
| | Blair Traits | | | -0.48 | 1.62 | | |
| | Howard Traits | | | 0.05 | 0.16 | | |
| | Kennedy Traits | | | -1.20 *** | 3.89 | | |
| | Salmond Traits | | | 0.94 ** | 3.02 | | |
| PC | λ_{PC} | | | | | -0.88 | 1.38 |
| | Blair Traits | | | | | 0.13 | 0.28 |
| | Howard Traits | | | | | 1.21 * | 2.26 |
| | Kennedy Traits | | | | | -1.79 ** | 2.68 |
| | Llwyd Traits | | | | | 2.41 ** | 3.23 |
| LL | | -460 | | -201 | | -84 | |
| AIC | | 938 | | 435 | | 201 | |
| McFadden's R^2 | | 0.41 | | 0.36 | | 0.41 | |

| Party | Variable | England | | Scotland | | Wales | |
|------------------|-----------------|-----------|--------|-----------|--------|----------|--------|
| | | Est. | t-stat | Est. | t-stat | Est. | t-stat |
| | β | 0.09 *** | 4.11 | 0.08 | 1.72 | 0.07 | 1.11 |
| Lab | λ_{Lab} | 0.58 | 0.78 | 1.54 | 1.16 | 1.27 | 0.61 |
| | Blair traits | 1.84 *** | 10.10 | 1.44 *** | 4.64 | 1.36 *** | 3.48 |
| | Howard traits | -0.61 *** | 3.90 | -0.47 | 1.64 | -0.01 | 0.02 |
| | Kennedy traits | -0.60 *** | 4.14 | -0.76 ** | 2.66 | -0.72 | 1.85 |
| | Salmond traits | | | -0.19 | 0.74 | | |
| | Llwyd traits | | | | | -0.50 | 1.26 |
| | gender (F) | -0.21 | 0.90 | -0.14 | 0.30 | 0.27 | 0.36 |
| | age | -0.01 | 1.54 | 0.01 | 0.41 | -0.02 | 0.73 |
| | educ | 0.06 | 0.75 | -0.11 | 0.65 | -0.11 | 0.45 |
| | income | 0.00 | 0.01 | -0.07 | 1.00 | 0.11 | 0.81 |
| Con | λ_{Con} | -2.85 ** | 3.28 | -2.12 | 1.22 | -3.80 | 1.23 |
| | Blair traits | -0.85 *** | 4.78 | -0.64 | 1.86 | 0.30 | 0.58 |
| | Howard traits | 1.90 *** | 9.10 | 1.79 *** | 4.25 | 2.45 *** | 3.35 |
| | Kennedy traits | -1.13 *** | 6.62 | -1.03 ** | 2.79 | -2.37 ** | 3.15 |
| | Salmond traits | | | -0.76 * | 2.36 | | |
| | Llwyd traits | | | | | -0.65 | 0.95 |
| | gender (F) | -0.05 | 0.20 | -0.07 | 0.12 | 0.56 | 0.58 |
| | age | 0.02 * | 2.07 | 0.04 | 1.86 | 0.01 | 0.29 |
| | educ | 0.28 ** | 2.96 | -0.12 | 0.48 | -0.12 | 0.30 |
| | income | 0.17 *** | 3.83 | 0.00 | 0.02 | 0.34 | 1.92 |
| SNP | λ_{SNP} | | | 0.92 | 0.62 | | |
| | Blair traits | | | -0.66 ** | 2.06 | | |
| | Howard traits | | | 0.12 | 0.35 | | |
| | Kennedy traits | | | -1.18 *** | 3.56 | | |
| | Salmond traits | | | 0.91 ** | 2.87 | | |
| | gender (F) | | | -1.33 ** | 2.51 | | |
| | age | | | 0.03 | 1.31 | | |
| | educ | | | -0.07 | 0.36 | | |
| | income | | | -0.04 | 0.44 | | |
| PC | λ_{PC} | | | | | -4.92 | 1.65 |
| | Blair traits | | | | | 0.42 | 0.85 |
| | Howard traits | | | | | 1.20 | 1.91 |
| | Kennedy traits | | | | | -2.10 ** | 2.68 |
| | Llwyd traits | | | | | 2.40 ** | 3.14 |
| | gender (F) | | | | | 1.24 | 1.31 |
| | age | | | | | 0.01 | 0.23 |
| | educ | | | | | 0.04 | 0.13 |
| | income | | | | | 0.30 | 1.95 |
| LL | | -440 | | -193 | | -79 | |
| AIC | | 914 | | 441 | | 214 | |
| McFadden's R^2 | | 0.43 | | 0.39 | | 0.45 | |

Appendix 2: Tables for the Election of 2010**Table A6.12. 2010 Survey Questions for Britain**

For the May 2010 British election, we use the result of BES Campaign Internet Panel Survey (BES CIPS), which was released on May 31, 2010. Both pre- and post-election surveys were utilized. The questions used in this analysis are the following:

Issue dimensions from both pre- and post-election surveys

1. Overall, do you approve or disapprove of Britain's membership in the European Union? (1) Strongly approve - (5) Strongly Disapprove
2. Please indicate if you agree or disagree with the following policy proposal. Have Britain co-operate more closely with the European Union. (1) Strongly agree - (5) Strongly disagree
3. Please indicate if you agree or disagree with the following policy proposal. Scrap Britain's Trident nuclear deterrent. (1) Strongly agree - (5) Strongly disagree
4. Using the 0 to 10 scale, where the end marked 0 means that government should cut taxes a lot and spend much less on health and social services, and the end marked 10 means the opposite where would you place yourself on this scale?
5. Please indicate if you agree or disagree with the following policy proposal. Exempt the first £10,000 of earnings from income tax. (1) Strongly agree - (5) Strongly disagree
6. Please indicate if you agree or disagree with the following policy proposal. Charge a 'mansion' tax on properties worth over £2 million. (1) Strongly agree - (5) Strongly disagree
7. Please indicate if you agree or disagree with the following policy proposal. Limit tax relief on pensions to the basic rate of tax. (1) Strongly agree - (5) Strongly disagree
8. Please indicate if you agree or disagree with the following policy proposal. Introduce new econ taxes including a fuel tax for airline flights. (1) Strongly agree - (5) Strongly disagree

Voters and Activists**Vote choice** from post-election surveys

Which party did you vote for in the General Election?

- (1) Labor (2) Conservative (3) Liberal Democrat (4) Scottish National Party (5) Plaid Cymru

Vote intention from pre-election surveys

If 'yes' to the question "Have you decided which party you will vote for?", which party is that?

If 'no' to the question, which party do you think you are most likely to vote for?

- (1) Labour (2) Conservative (3) Liberal Democrat (4) Scottish National Party (5) Plaid Cymru.

Activists

Political Influence On a scale from 0 to 10, where 10 means a great deal of influence and 0 means no influence, how much influence do you have on politics and public affairs?

Those who answered 6 or more to this question were regarded as activists ($n=746$).

Table A.6.13. 2010 Survey Questions for Britain: Sociodemographic and Traits
Sociodemographic pre-election survey items were the same as in Table A6.2.

Traits from both pre- and post-election surveys

- 1. Feeling** Using a scale that runs from 0 to 10, where 0 means strongly dislike and 10 means strongly like, how do you feel about [Gordon Brown, David Cameron, Nick Clegg, Alex Salmond, Ieuan Wyn Jones]?
- 2. Competence** Using a scale that runs from 0 to 10, where 0 means a very incompetent leader and 10 means a very competent leader, how would you describe [Gordon Brown, David Cameron, Nick Clegg, Alex Salmond, Ieuan Wyn Jones]?
- 3. knowledge** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think that in general he knows what he is talking about, or that he doesn't know? Please use the following scale where 0 means that [...] really doesn't know what he is talking about and 10 means he know very much what he is talking about.
 (0) Really does not know what he is talking about - (10) Knows very much what he is talking about
- 4. Interests** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think he has your best interests in mind, or that he does not think about your best interests? Please use the following scale where 0 means that Brown never has your best interests in mind, and 10 means that he always does.
- 5. trustworthy** When you listen to what [Gordon Brown, David Cameron, Nick Clegg] has to say, do you think generally that he tells the truth, or that he does not tell the truth? Please use the following scale where 0 means that he never tells the truth and 10 means that he always tells the truth.

| <i>n</i> = 6409 | Nationalism | Economy |
|---------------------|-------------|---------|
| 1.EU membership | 0.89 | |
| 2.EU cooperation | 0.85 | 0.18 |
| 3.Nuclear plan | 0.28 | 0.41 |
| 4.Tax-spend | -0.34 | -0.37 |
| 5.Tax exemption | | 0.39 |
| 6.Mansion tax | 0.13 | 0.64 |
| 7.Tax relief | | 0.30 |
| 8.Ecotax | 0.28 | 0.39 |
| <i>n</i> | 6409 | |
| Variance | 0.224 | 0.142 |
| Cumulative variance | 0.224 | 0.366 |

| | | Brown Trait | Cameron Trait | Clegg Trait |
|-----------------------|-------------|-------------|---------------|-------------|
| Brown | Feeling | 0.87 | -0.35 | |
| | Competence | 0.88 | -0.30 | |
| | Knowledge | 0.81 | -0.22 | 0.14 |
| | Interests | 0.87 | -0.26 | |
| | Trustworthy | 0.87 | -0.24 | 0.10 |
| Cameron | Feeling | -0.38 | 0.83 | |
| | Competence | -0.27 | 0.82 | 0.11 |
| | Knowledge | -0.23 | 0.83 | 0.11 |
| | Interests | -0.27 | 0.85 | |
| | Trustworthy | -0.20 | 0.84 | |
| Clegg | Feeling | | | 0.82 |
| | Competence | | | 0.84 |
| | Knowledge | | | 0.82 |
| | Interests | 0.16 | | 0.76 |
| | Trustworthy | 0.13 | 0.16 | 0.71 |
| <i>n</i> | | 6218 | | |
| % variance | | 0.28 | 0.26 | 0.21 |
| Cumulative % Variance | | 0.28 | 0.54 | 0.75 |

| Models | | Pure spatial (1) | Traits only (2) | Spatial+Traits (3) | Spatial+Traits +Socios (4) |
|------------------|-----------------|---------------------|---------------------|-----------------------|-------------------------------|
| Party | Variable | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) |
| | β | 0.86*** (38.45) | | 0.47*** (14.87) | 0.47*** (14.71) |
| Lab | λ_{Lab} | -0.04 (1.31) | -0.96*** (15.20) | -0.98*** (15.59) | -0.78** (3.26) |
| | Brown trait | | 1.76*** (27.25) | 1.77*** (27.32) | 1.77*** (27.09) |
| | Cameron trait | | -0.71*** (12.86) | -0.74*** (13.37) | -0.74*** (13.22) |
| | Clegg trait | | -0.97*** (18.50) | -0.94*** (18.07) | -0.93*** (17.65) |
| | age | | | | -0.01* (2.49) |
| | Education | | | | -0.21*** (6.71) |
| | Gender (F) | | | | 0.07 (0.85) |
| | Income | | | | -0.01 (0.61) |
| Con | λ_{Con} | 0.17*** (4.50) | -0.52*** (9.25) | -0.55*** (9.46) | -0.34** (2.85) |
| | Brown trait | | -1.60*** (25.03) | -1.28*** (19.22) | -1.26*** (18.53) |
| | Cameron trait | | 2.75*** (32.40) | 2.45*** (28.23) | 2.42*** (27.71) |
| | Clegg trait | | -1.41*** (21.86) | -1.15*** (17.24) | -1.16*** (17.23) |
| | age | | | | 0.01** (2.74) |
| | Education | | | | -0.05 (1.29) |
| | Gender | | | | 0.17 (1.73) |
| | Income | | | | 0.05*** (3.32) |
| <i>n</i> | | 6218 | 6218 | 6218 | 6218 |
| LL | | -5490 | -3421 | -3298 | -3261 |
| AIC | | 10983 | 6850 | 6606 | 6540 |
| McFadden's R^2 | | 0.19 | 0.49 | 0.51 | 0.52 |

| Table A.6.17. Comparison of Log Likelihood for Britain 2005 | | M ₂ | | |
|---|--------------------|----------------|-------------------|--------------------|
| | | Traits | Spatial + Traits. | Joint ^a |
| | Traits | na | 7 | -26 |
| M ₁ | Spatial and Traits | -7 | na | -19 |
| | Joint ^a | 26 | 19 | na |

^a Joint=spatial model with traits and sociodemographics

| Table A.6.18 Comparison of Log Likelihood for Britain 2010 | | M ₂ | | |
|--|--------------------|----------------|-------------------|--------------------|
| | | Traits | Spatial + Traits. | Joint ^a |
| | Traits | na | -123 | -160 |
| M ₁ | Spatial + Traits | 123 | na | -37 |
| | Joint ^a | 160 | 37 | na |

^a Joint=spatial model with traits and sociodemographics

| Table A6.19. 2010 Pure Spatial Models for the Regions | | | |
|---|--------------------|--------------------|--------------------|
| base=LibDem | England | Scotland | Wales |
| Var | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) |
| β | 0.86*** (36.12) | 0.78*** (10.17) | 0.92*** (8.39) |
| λ_{Lab} | -0.12*** (3.40) | 0.44*** (4.16) | 0.33* (2.22) |
| λ_{Con} | 0.21*** (5.36) | -0.44** (2.90) | -0.02 (0.10) |
| λ_{SNP} | | 0.07 (0.60) | |
| λ_{PC} | | | -0.85*** (4.03) |
| n | 5465 | 636 | 307 |
| LL | -4769 | -784 | -341 |
| AIC | 9545 | 1575 | 690 |
| McFadden's R^2 | 0.19 | 0.08 | 0.16 |

Table A6.20 2010 Sample Vote Shares and ρ by Region

| Party | Great Britain | | | England | | |
|-----------------------|---------------------|--------|--------------------|---------------------|--------|--------------------|
| | S.vote ^a | ρ | [L,U] ^b | S.vote ^a | ρ | [L,U] ^b |
| Lab | 0.29 | 0.31 | [0.29,0.32] | 0.27 | 0.28 | [0.27,0.30] |
| Con | 0.41 | 0.38 | [0.36,0.39] | 0.43 | 0.40 | [0.38,0.41] |
| LibDem | 0.30 | 0.32 | [0.30,0.33] | 0.30 | 0.32 | [0.31,0.34] |
| <i>c</i> ^c | [0.86,0.98,1.10] | | | [0.96,1.09,1.22] | | |
| Party | Scotland | | | Wales | | |
| | S.vote ^a | ρ | [L,U] ^b | S.vote ^a | ρ | [L,U] ^b |
| Lab | 0.36 | 0.36 | [0.32,0.41] | 0.35 | 0.37 | [0.30,0.44] |
| Con | 0.16 | 0.15 | [0.12,0.19] | 0.30 | 0.26 | [0.19,0.34] |
| LibDem | 0.23 | 0.23 | [0.20,0.28] | 0.25 | 0.26 | [0.21,0.33] |
| SNP | 0.25 | 0.25 | [0.21,0.30] | | | |
| PC | | | | 0.11 | 0.11 | [0.09,0.14] |
| <i>c</i> ^c | [1.07,1.51,1.98] | | | [1.53,2.12,2.75] | | |

^a sample vote shares among respective parties. ^b Lower and upper 95% bounds on ρ .

^c Lower 95% bound, best estimate and upper 95% bound on *c*.

| | | Pure trait | | | Spatial+trait | | |
|------------------|-----------------|----------------------|---------------------|---------------------|----------------------|---------------------|---------------------|
| Party | Var | England | Scotland | Wales | England | Scotland | Wales |
| | | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) |
| | β | | | | 0.48 *** (14.30) | 0.30 * (2.37) | 0.57 *** (3.72) |
| Lab | λ_{lab} | -0.99 *** (14.71) | -0.95 *** (4.16) | -0.33 (1.16) | -1.02 *** (15.08) | -0.96 *** (4.21) | -0.37 (1.29) |
| | Brown | 1.75 *** (25.02) | 1.87 *** (8.44) | 1.72 *** (6.06) | 1.76 *** (25.10) | 1.86 *** (8.45) | 1.73 *** (5.97) |
| | Cameron | -0.73 *** (12.26) | -0.68 *** (3.71) | -0.37 (1.48) | -0.76 *** (12.74) | -0.70 *** (3.81) | -0.39 (1.56) |
| | Clegg | -0.97 *** (17.14) | -0.85 *** (4.90) | -1.27 *** (4.69) | -0.94 *** (16.77) | -0.83 *** (4.81) | -1.19 *** (4.43) |
| Con | λ_{con} | -0.51 *** (8.55) | -1.00 *** (4.38) | -0.24 (0.87) | -0.53 *** (8.63) | -1.07 *** (4.47) | -0.40 (1.34) |
| | Brown | -1.64 *** (23.89) | -1.24 *** (5.02) | -1.23 *** (4.14) | -1.31 *** (18.41) | -1.00 *** (3.78) | -0.77 * (2.44) |
| | Cameron | 2.78 *** (30.61) | 2.78 *** (7.95) | 2.22 *** (6.20) | 2.47 *** (26.64) | 2.56 *** (7.18) | 1.96 *** (5.21) |
| | Clegg | -1.42 *** (20.65) | -1.63 *** (5.97) | -1.28 *** (4.27) | -1.16 *** (16.30) | -1.44 *** (5.14) | -0.84 * (2.50) |
| n | | 5465 | 479 | 274 | 5465 | 479 | 274 |
| LL | | -2983 | -269 | -157 | -2869 | -266 | -149 |
| AIC | | 5884 | 545 | 323 | 5746 | 539 | 307 |
| McFadden's R^2 | | 0.49 | 0.46 | 0.47 | 0.51 | 0.47 | 0.50 |

Appendix 3: Pure Spatial Models for Great Britain for 2005

The Appendix 4 to Chapter 5 has defined the electoral covariance matrix for any election. For the 2005 survey this was estimated to be

$$\nabla_0 = \begin{bmatrix} & x & y \\ x & 1.646 & 0.00 \\ y & 0.00 & 3.961 \end{bmatrix}.$$

with esd (electoral standard deviation) = $\sigma = 2.36$. The pure spatial model in Table A6,6 gives

$$(\lambda_{Lab}, \lambda_{Con}, \lambda_{Lib}, \beta) = (0.52, 0.27, 0, 0.15).$$

Thus the probability a generic voter picks the Liberal Democratic party, when all parties are at the mean, is:

$$\rho_{lib} = \frac{\exp(0)}{\exp(0.518) + \exp(0.272) + \exp(0)} = 0.250,$$

which is similar to the actual share of 24.6% and the sample share of 24.5% (with respect to the three major parties) in Great Britain.. The probabilities that a generic voter picks the various parties when all three parties are located at the electoral mean is given by the vector:

$$(\rho_{Lab}, \rho_{Con}, \rho_{Lib}) = (0.42, 0.33, 0.25).$$

Table A6.9 compares these estimates with the three way sample party shares, and also gives the lower and upper 95% estimates on ρ .

These values give the best estimate, on the basis of the pure spatial model, of the three-way vote shares when all parties are at the mean. The actual three-way split of vote shares among these parties was

$$(\nu_{Lab}, \nu_{Con}, \nu_{Lib}) = (0.394, 0.36, 0.246).$$

and the split of sample shares was

$$(s_{Lab}, s_{Con}, s_{Lib}) = (0.415, 0.34, 0.245).$$

The estimated vote shares at the joint mean, and the actual and sample three party vote shares are quite close. We now show formally that, when all parties are at the joint mean, then the Liberal Democrat Party has no unilateral incentive to move away from

the mean. From the Appendix we obtain:

$$\begin{aligned}
C_{Lib} &= 2\beta(1 - 2\rho_{lib})\nabla_0 - I \\
&= 2(0.150)(0.5) \begin{bmatrix} 1.646 & 0 \\ 0 & 3.961 \end{bmatrix} - I = \begin{bmatrix} 0.246 & 0 \\ 0 & 0.593 \end{bmatrix} - I \\
&= \begin{bmatrix} -0.754 & 0 \\ 0 & -0.407 \end{bmatrix}, \\
\text{with } c(\boldsymbol{\lambda}, \beta) &= 2\beta(1 - 2\rho_{lib})\text{trace}(\nabla_0) \\
&= 2(0.15)(0.5)(5.6) = 0.84.
\end{aligned}$$

Here the Lib Dems is the low valence party. From the Valence Theorem, the sufficient condition for convergence is satisfied, and we estimate that the joint mean is an LNE for the pure spatial model with three parties.

The 95% confidence interval of $\beta \in [0.15 \pm 1.96 \times 0.01] = [0.13, 0.17]$. Using Taylors Theorem gives the 95% bounds on ρ_{lib} as $[0.22, 0.28]$. Thus the lower and upper bounds of c^{GB} and C_{lib} are given by,

$$\begin{aligned}
c^{GB} &= [2(0.13)(1 - 2 \times 0.28)(5.61), 2(0.17)(1 - 2 \times 0.22)(5.61)] = [0.62, 1.08] \\
C_{lib} &= 2(0.13)(1 - 2 \times 0.28) \begin{bmatrix} 1.65 & 0.00 \\ 0.00 & 3.96 \end{bmatrix} - I, \quad 2(0.17)(1 - 2 \times 0.22) \begin{bmatrix} 1.65 & 0.00 \\ 0.00 & 3.96 \end{bmatrix} - I \\
&= \begin{bmatrix} -0.82 & 0.00 \\ 0.00 & -0.56 \end{bmatrix}, \quad \begin{bmatrix} -0.68 & 0.00 \\ 0.00 & -0.24 \end{bmatrix}
\end{aligned}$$

Again, the eigenvalues are negative and we can confirm that \mathbf{z}_0 is the LNE with probability over 95%.

Since the lower 95% bound on $\rho_{lib} = 0.22$ while $s_{Lib} = 0.245$, this gives a negative vote margin, so the LNE is not a stable attractor.

Comparison of the model with separate β -coefficients, $(\beta_{Econ}, \beta_{Nat})$ gave a difference in loglikelihoods is +28, suggesting that this model is superior to one with a single β -coefficient. We obtain:

$$c(\boldsymbol{\lambda}, \boldsymbol{\beta}) = \frac{2(1 - 2\rho_{lib})\text{trace}(\boldsymbol{\beta}\nabla_0\boldsymbol{\beta})}{\frac{1}{w}(\beta_1 + \beta_2 \dots + \beta_w)}$$

with $\frac{1}{2}(\beta_{Econ} + \beta_{Nat}) = \frac{1}{2}(0.388 + 0.131) = 0.255$ and $\rho_{lib} = 0.25$, we find

$$\begin{aligned}
c(\boldsymbol{\lambda}, \boldsymbol{\beta}) &= \frac{2(0.5)}{0.255}\text{trace} \begin{bmatrix} (0.388)^2 1.646 & 0 \\ 0 & (0.131)^2 3.961 \end{bmatrix} \\
&= (3.92)\text{trace} \begin{bmatrix} 0.24 & 0 \\ 0 & 0.08 \end{bmatrix} = 1.25,
\end{aligned}$$

while

$$\begin{aligned}\mathbf{C}_{lib} &= 2(1 - 2\rho_1)\boldsymbol{\beta}\nabla_0\boldsymbol{\beta} - \boldsymbol{\beta} \\ &= \begin{bmatrix} 0.24 & 0 \\ 0 & 0.08 \end{bmatrix} - \begin{bmatrix} 0.388 & 0 \\ 0 & 0.131 \end{bmatrix} \\ &\quad \begin{bmatrix} -0.148 & 0 \\ 0 & -0.05 \end{bmatrix}\end{aligned}$$

Again we find an LNE at the joint mean \mathbf{z}_0 . This was confirmed by simulation. but we also find that the LNE for this model is not a stable attractor.

The other calculations for the regions in 2005 and 2010 can be found in the working paper on these elections (Schofield *et al.*, 2011c).

Chapter 7

Elections in Canada, the Netherlands and Belgium

7.1 Introduction

This chapter continues with the effort to provide a unified model of the electoral process in order to account for a number of general empirical observations about the effects of political institutions. As Duverger (1954) and Riker (1953) have observed, there appears to be a relationship between the electoral rule in place, and the number of political parties in the polity. A highly majoritarian (or plurality) system tends to result in just two parties, while an electoral system based on proportional representation (PR) tends to give a fragmented political structure.³⁰⁵ Many authors have also argued that there is a relationship between fragmentation and the durability of government (Taylor and Hermann, 1971; Warwick, 1994). Other authors have argued that these differing constitutional rules profoundly affect the nature of the policy process (Bawn and Rosenbluth, 2005; Persson and Tabellini, 2000, 2003), and determine whether parties tend to diverge or cluster near the electoral mean.³⁰⁶

It is possible that the degree of political fragmentation is a direct consequence of the details of the electoral rule, and the opportunities these provide for strategic voting in the electorate. However, the formal spatial electoral model has not, in our view, been able to offer a plausible account of this relationship. Indeed, as discussed in Chapter 5, the extensive literature on formal “deterministic” or “stochastic” vote models tend to suggest that all parties should adopt vote maximizing positions at the center of the electoral distribution.³⁰⁷ Such models assume an underlying symmetry in the motivations and dispositions of party leaders, and as a result they are unable to account for the extreme heterogeneity of political configurations observed by Benoit and Laver (2006), for example, in their analysis of party positions in European polities.

³⁰⁵See Chapter 3.

³⁰⁶Dow (2001, 2011), Ezrow (2010, 2011).

³⁰⁷See Downs (1957), Riker and Ordeshook (1973), McKelvey and Patty (2006).

Here we consider a stochastic model of the 2004 election in Canada, and use the formal results to examine electoral equilibria for the parties. We estimate the vote margins of the low valence parties, the Greens and the New Democrat parties, and show that their vote margins are essentially negative. This implies that the various equilibria cannot be stable attractors. We argue that the leaders of the parties have no incentive to move to the equilibrium positions. We also suggest that the activists for each party provide inducements to the party to remain close to the partisan constituency position. We can then use the difference between the equilibrium positions and the partisan constituency positions as an estimate of the activist influence.

In essence, the empirical convergence coefficient for any model is a convenient measure of the electoral incentive of a small, or low valence, party to move from its estimated position to the LNE of the model. More generally, we can interpret the convergence coefficient as a measure of the centrifugal tendency exerted on parties pulling them away from the electoral origin. The estimated positions of the parties based on the partisan constituencies of the parties, allows us to draw some inferences about the influence of activist groups in this polity.

We then compare this analysis with some observations about coalition behavior in the Netherlands and Belgium, in order obtain an estimate of the different incentives for activist groups in these three countries..

7.2 Elections in Canada

In recent history, Canadians have consistently elected more than three parties to the Federal legislature.³⁰⁸ In the current parliament, the four major parties are the Liberal Party of Canada (LPC), the Conservative Party of Canada (CP), the New Democratic Party (NDP) and the separatist Bloc Québécois (BQ). The Green Party of Canada (GPC) is a relatively new party whose support has been steadily rising over the last few years. However, since only the first-past-the-post candidate in each riding gets elected to the legislature, the Green candidates have not obtained sufficient support to win a seat in the House of Commons. Other parties, with fewer votes, have also been unable to obtain seats in Parliament.

For the last twenty five years, the two major parties have fought each other to form the government. Table 7.1 gives the last four election results in Canada, while Table 7.2 give the results by province for 2004. As the Tables show, neither of these parties have been able to attain a majority in recent elections. Because the issue of Québec is so important in the last two decades of Canadian electoral history, we provide a brief sketch of political history in Canada.

7.2.1 A Brief Political History

Back in 1983, Brian Mulroney, from Quebec, became the leader of the Progressive Con-

³⁰⁸This section on Canada is written in collaboration with JeeSeong Jeon and Ugur Ozdemir.

servative Party, and was able to built a grand coalition that included socially conservative populists from the West, Quebec nationalists, and fiscal conservatives from Ontario and the Maritime provinces (Prince Edward Island, Nova Scotia and New Brunswick).

Pierre Trudeau resigned as Prime Minister in early 1984, and John Turner, elected Liberal leader in the 1984 convention, succeeded Trudeau as Prime Minister and called an election for September 4, 1984.

| Party ^a | 2000 | | | 2004 | | | 2006 | | | 2008 | | |
|--------------------------|-------------|------------|------------|-------------|------------|------------|-------------|------------|------------|--------------|------------|------------|
| | Vote % | Seat | Seat % | Vote % | Seat | Seat % | Vote % | Seat | Seat % | Vote % | Seat | Seat % |
| AP | 25.5 | 66 | 21.9 | | | | | | | | | |
| PC | 12.2 | 12 | 4.0 | | | | | | | | | |
| CP | | | | 29.63 | 99 | 32.14 | 36.3 | 124 | 40.26 | 37.65 | 143 | 46.42 |
| LPC | 40.8 | 172 | 57.1 | 36.73 | 135 | 43.83 | 30.2 | 103 | 33.44 | 26.26 | 77 | 25.00 |
| BQ | 10.7 | 38 | 12.6 | 12.39 | 54 | 17.53 | 10.5 | 51 | 16.56 | 9.98 | 49 | 15.90 |
| NDP | 8.5 | 13 | 4.3 | 15.68 | 19 | 6.16 | 17.5 | 29 | 9.41 | 18.18 | 37 | 12.01 |
| GPC | 0.8 | | | 4.29 | 0 | 0 | 4.5 | 0 | 0 | 6.78 | 0 | 0.00 |
| Ind | | | | 0.48 | 1 | 0.32 | 0.5 | 1 | 0.32 | 0.5 | 2 | 0.65 |
| Total^b | 98.5 | 301 | 100 | 99.2 | 308 | 100 | 99.5 | 308 | 100 | 99.35 | 308 | 100 |

^a AP=Alliance, PC=Progressive Conservative, CP= Conservative, LPC= Liberal, BQ=Bloc Québécois, NDP=New Democratic Party, GPC= Green Party, Ind=independent.

^b Other parties are not reported so total may not add to 100%.

| Region | Western Provinces | | | | | | | | | |
|--------------------------|--------------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|------------|
| | BC | | AB | | SK | | MB | | ON | |
| Provinces ^a | | | | | | | | | | |
| Party ^b | Vote | Seats | Vote | Seats | Vote | Seats | Vote | Seats | Vote | Seats |
| CP | 36.3 | 22 | 61.7 | 26 | 41.8 | 13 | 39.1 | 7 | 31.5 | 24 |
| LPC | 28.6 | 8 | 22.0 | 2 | 27.2 | 1 | 33.2 | 3 | 44.7 | 75 |
| BQ | | | | | | | | | | |
| NDP | 26.6 | 5 | 9.5 | | 23.4 | | 23.5 | 4 | 18.1 | 7 |
| GP | 6.3 | | 6.1 | | 2.7 | | 2.7 | | 4.4 | |
| Ind | 0.3 | 1 | | | 4.6 | | | | 0.3 | |
| Total^c | 98.1 | 36 | 99.3 | 28 | 99.7 | 14 | 98.5 | 14 | 99.0 | 106 |
| Region | Atlantic Provinces | | | | | | | | | |
| Provinces ^a | QC | | NB | | NS | | PEI | | NL | |
| Party ^b | Vote | Seats | Vote | Seats | Vote | Seats | Vote | Seats | Vote | Seats |
| CP | 8.8 | | 31.1 | 2 | 28.0 | 3 | 30.7 | 0 | 32.3 | 2 |
| LPC | 33.9 | 21 | 44.6 | 7 | 39.7 | 6 | 52.5 | 4 | 48.0 | 5 |
| BQ | 48.9 | 54 | | | | | | | | |
| NDP | 4.6 | | 20.6 | 1 | 28.4 | 2 | 12.5 | | 17.5 | |
| GPC | 3.2 | | 3.4 | | 3.3 | | 4.2 | | 1.6 | |
| Ind | 0.1 | | 0.2 | | 0.1 | | | | 0.6 | |
| Total^c | 99.4 | 75 | 99.9 | 10 | 99.5 | 11 | 99.9 | 4 | 100 | 7 |

^a BC= British Columbia, AB= Alberta, SK=Saskatchewan, MB = Manitoba, ON= Ontario, QC = Québec, NB = New Brunswick, NS= Nova Scotia, PEI = Prince Edward Island, NL = Newfoundland and Labrador.

^b AP=Alliance, CP= Conservatives, LPC= Liberals, BQ=Bloc Québécois, NDP=New Democratic, GPC= Greens, Ind=independent.³ Three seats go to the Territories.

The 1984 election marked a turning point in Canadian politics. Mulroney's highly successful campaign gave the Progressive Conservative Party their largest majority government (by total number of seats) in Canadian history.³⁰⁹ This was the last time a ruling party won more than fifty percent of the popular vote in Canada. The Liberals suffered their worst defeat (at the time) for a Federal governing party³¹⁰, mainly because they lost their century long stronghold on Québec politics.³¹¹ The Progressive Conservatives landslide, winning 211 seats, left the Liberals with 40 seats, the fewest in the party's history. In particular, the Liberals won only 17 seats in Québec, only four of which were outside Montreal. Eleven members of Turner's Cabinet were defeated.

However, westerners were angry with Mulroney's government mainly because they believed that he favoured Québec, that his government lacked fiscal responsibility, and that he had failed to support institutional reform- specifically their wishes to have an elected Senate. In order to have a voice at the Federal level, Preston Manning joined discontented Western interest groups to create the Reform Party of Canada in May of 1987. Manning was the only leader of the Reform Party during its short existence, 1987-2000.

By 1987, the constitutional battles between Ottawa and Québec has subsided. Mulroney's close relationship with U.S. President Reagan helped draft the Canada-U.S. free-trade agreement (FTA) under which all tariffs between the two countries would be eliminated by 1998. On October 4, 1988, Canada and the United States signed the FTA that was to be ratified by both countries.

The Liberals and the NDP opposed the FTA arguing that the agreement would mean the abandonment of Canada's political sovereignty to the United States and that if implemented would effectively make Canada the "51st state" of the United States. The two parties were also concerned about how Canada's social programs and other trade agreements such as the Auto Pact would be affected by the FTA. The legislation to implement the agreement was delayed in the Senate, which had a Liberal Party majority.

Mulroney called for an election in November 21, 1988, the main issue being the Free trade Agreement. Infighting among the Liberals and vote splitting on the left of the political spectrum between the NDP and Liberals contributed to a second Progressive Conservative government with only 169 seats (and 43 percent of the popular vote), a loss of 42 seats. The Liberals kept their role as the Official Opposition and more than doubled their representation to 83 seats. These results were however a disappointment for Turner, who had expected a majority Liberal government. In June 1990, he officially resigned as leader of the Liberals. Even though the NDP increased its seat share it finished a distant third with only 43 seats.

During his second term, in 1989, Mulroney proposed the implementation of a na-

³⁰⁹The Progressive Conservatives won 211 seats, three more than their previous record of 208 in 1958. They won a majority of seats in every province and territory, emerging as a truly national party for the first time since 1958.

³¹⁰The Liberals vote share fell from 44 percent in 1980 to 28 percent in 1984.

³¹¹From its inception, Québec had been a stronghold of Liberal support for almost a century. In 1984, Québec supported Mulroney as he promised to get a new deal for Québec.

tional sales tax, the Goods and Services Tax (GST), that was to be introduced in 1991. The GST replaced the Manufacturers' Sales Tax (MST). Polls showed that as many as 80% of Canadians opposed the tax.

The 1990 worldwide recession greatly affected the government's finances. Mulroney's tax increases coupled with the budget problems due to the recession alienated his western conservative base. In addition, Mulroney's policies were introduced as the Bank of Canada increased interest rates to stifle inflation. Both of these policies deepened the Canadian recession. Throughout Mulroney's second term, budget deficits increased to record levels, reaching \$42 billion Canadian in his last year of office. The national debt grew to almost 100% of GDP. As the Canadian dollar weakened so did Canada's international credit rating.

At the 1990 Liberal convention, Jean Chrétien won the Liberal leadership on the first-ballot. During 1991 and 1992, Mulroney negotiated the Charlottetown Accord, which proposed extensive changes to the constitution, including recognition of Québec as a distinct society. The agreement was defeated in a national referendum in October 1992. After the failure of Meech Lake Accord, Québec Tories led by Lucien Bouchard severed their connections with the Progressive Conservative Party and in conjunction with some Québec Liberals formed a new party, the *Bloc Québécois*, a pro-sovereignty party focused on independence for Québec.

By early 1993, it was clear that Mulroney had become one of the most unpopular prime ministers in Canadian history. In addition, it was widely believed that the Liberals under Jean Chrétien would win a landslide if Mulroney remained leader of the Tories. By February, his popularity had fallen so much that he saw no other choice than to resign as party leader, being replaced as Prime Minister by Defence Minister Kim Campbell on June 25, 1993. Prime Minister Campbell had less than three months to prepare for the October 25 election.

The uncertainty on the constitutional future of Canada after the failure of the Meech Lake and Charlottetown Accords brought about big changes at the October 25, 1993 election. First, the Liberals gained an overwhelming majority, winning 177 seats. Second, this election marked the beginning of the end of the Progressive Conservatives Party. It not only lost its majority but was almost wiped out, winning only two seats in parliament. Third, two newly formed parties gained representation: the separatist Bloc Québécois became the Official Opposition (with 54 seats) under the leadership of Lucien Bouchard, and the western-based protest Reform Party (with 52 seats). This marked the beginning of a fractured opposition along regional lines. Fourth, the Liberals lost the support of Québec as Chrétien was one of only four Québec Liberals elected outside Montreal. Québécois never forgave Chrétien for refusing to endorse the Meech Lake Accord. Chrétien's popularity in his home province never recovered after the Liberal leadership debate.

Chrétien used his extensive knowledge of the Canadian parliamentary system, to set up a highly centralized government with a priority of dealing with the debt left by the Trudeau and the Mulroney governments. His finance minister, Paul Martin, made deep cuts at the federal level and cut transfers to the provinces. These cuts allowed

the government to eliminate the \$42 billion deficit, to deliver five consecutive budget surpluses, to pay down the \$36 billion in debt, and to deliver \$100 billion in cumulative tax cuts over 5 years. The cuts affected the operations and mandates of most federal departments and forced the provinces to cut service delivery mainly in the health care sector.

The acrimony generated by the debate over Québec's distinct society brought the separatist Parti Québécois back into power in Québec in 1994. During the campaign over the referendum scheduled for October 30, 1995, Chrétien promised to reform the federal system to address Québec's long-standing concerns. A record 94 per cent of registered voters voted in the referendum with the "No" side winning by a very slim margin of 50.56%.

The referendum generated two major controversies. The Sovereignists complained that the Federalists had violated Québec's electoral spending limits. The Federalist accused the Parti Québécois scrutineers of having discarded many 'no' ballots. Later reviews substantiated both allegations, but there were no consequences to those who had taken part.

To recognize Québec's French language, its unique culture and the use of the civil law in the province's legal system, on 8 November 1995, Chrétien tabled a bill in the House of Commons recognizing Québec as a distinct society within Canada. The bill was passed less than a month after the referendum.

The promises made by Chrétien only translated into limited reforms. This included a federal law requiring the approval of certain regions (including Québec) to amend the constitution. Chrétien's efforts concentrated instead on his "Plan B" which consisted on increasing support for federalism in Québec. The idea was to convince separatist Québécois that their sovereignty aspirations would be coupled with both economic and legal consequences.

Chrétien's popularity soared making him the most popular prime minister of the last half-century. To take advantage of his popularity and the continued division of the conservative vote, Chrétien called an early election in the spring of 1997.

However, the Progressive Conservatives had a popular new leader in Jean Charest and the New Democrats' Alexa McDonough led her party to a breakthrough in Atlantic Canada, where the Liberals had won all but one seat in 1993. In 1997, the Liberals lost all but a handful of seats in Atlantic Canada and Western Canada, but managed to retain a bare majority government due to their continued dominance of Ontario.

For the 2000 election, Chrétien ran on his record. He emphasized that his party (1) had not only ended the era of large fiscal deficits, it was now delivering budget surpluses; (2) had substantially reduced federal spending by among other things reducing the size of the civil service as well as privatizing several crown corporations; (3) had passed new environmental regulations; and (4) had increased spending in social programs in 1998.

Chrétien won a third consecutive majority government. Not since Sir Wilfrid Laurier has a Canadian Prime minister won three consecutive majority government. The Liberals won more seats than in the 1997 election obtaining nearly as many as in the 1993 election mostly due to the Liberals' significant gains in Québec. The Liberals won

172 out of 301 seats with 42% of the vote. The Alliance Party became the Official Opposition winning 22% of the seats with 25% of the vote; electing two members from Ontario and the remaining 64 seats from Western Canada. In spite of their poor showing in Ontario, Alliance—relative to its predecessor the Reform Party—increased its seats from 60 in 1997 to 66. The other three parties, the Bloc Québécois, the New Democratic Party and the Progressive Conservatives all lost seats. Relative to the 1997 election, the Bloc lost six seats and the NDP one. The Bloc dropped from 44 seats in 1997 to 38, despite getting a larger vote share than in 1997.³¹² The Bloc managed to win more seats than the Liberals in Québec. The PCs came in third obtaining 12% of the vote, falling from 20 in 1997 to 12 seats, enough to maintain their Official Party Status. Even though PC support came mainly from the Maritime provinces, their leader Joe Clark won one of only three Alberta seats not in the hands of the Alliance Party. The Green Party did not gain representation in the Commons but rose in popularity relative to the 1997 election.

Chrétien's electoral victory brought the Liberals back to their 1993 levels in the Commons. This strengthened Chrétien's political power and he chose to stay on as leader ignoring the rising discontent with his leadership within his party, specially from Finance minister Martin's camp. In the meantime, Martin made greater inroads at taking over the party machinery and became more open in his campaign to replace Chrétien as Liberal leader. This further deteriorated the relationship between Chrétien and Martin.

The election results also showed that the Liberals' attacks on Day greatly affected the fate of the Progressive Conservatives and NDP candidates. The widely held belief was that many PC and NDP supporters fearing Day's extreme policy positions *voted strategically* for the Liberals to prevent an Alliance victory.

In spite of Chrétien's past successes and his electoral popularity, he was replaced by his long time rival, Paul Martin, as party leader at the Liberal convention on November 14, 2003. Martin was sworn as prime minister on December 12, 2003.

This contest within the Liberal Party gave Alliance and Progressive Conservatives hope of winning the next election. After long deliberations, on 15 October 2003, the new PC leader Peter MacKay and Alliance leader Stephen Harper announced their merger agreement. Ratification by the two parties led to the creation of the new *Conservative Party (CP)* on December 7, 2003. Some prominent PC members refused to join the new party. Harper became the new CP leader on March 20, 2004.

On February 10, 2004, the Sponsorship scandal over Québec independence erupted. The Liberals' ratings plummeted, specially in Québec, but were still above those of the new CP. In May 2004, the governing Ontario Liberal party reneged on their campaign promise not to raise taxes. This hurt the Federal Liberals as Ontarians had been their major support base in the 1993, 1997 and 2000 elections. On May 22, Martin was forced to call an election for June 28, 2004, forcing him to face Harper, the new leader of the new Conservative Party.

³¹²This was mainly the result of the Liberals winning in several major Québec cities (Montreal, Quebec City and Hull/Gatineau) where forced mergers had taken place leading to electoral rezoning.

7.2.2 The Election of 2004

During the 2004 electoral campaign, pre-election polls showed the Liberals and Conservatives neck-in-neck. By mid-campaign the CP was slightly ahead of the Liberals. While some argued that the election was too close to call, others thought that a minority CP government was possible. The Conservatives, however, made two major mistakes. They accused Prime Minister Martin of being soft on child pornography. Ralph Kline, the PC premier of Alberta, announced that his government was considering a two-tier health care system. The Liberals and many Canadians reacted strongly against both issues. The Liberals' campaign portrayed Haper as an extreme right-wing Conservative and encouraged NDP-supporters to vote strategically.

The Liberals (LPC) under Martin won a plurality in the 2004 election with 135 (44%) seats out of 308, down 37 from the 2000 election becoming the first minority government since 1979. Martin's government was informally supported by the NDP. Relative to the 2000 election, the Liberals lost votes in Ontario and Québec. They won 75 out of 106 Ontario seats in 2004 (down from 100 out of 103 in 2000) and won 21 out of 75 Québec seats in 2004 (down from 36 out of 75 in 2000). Even though they held onto the 14 seats they had in the Western provinces since 2000, the distribution changed, with a gain in British Columbia and a loss in Manitoba.³¹³

The Conservatives won the second largest number of seats, winning more seats (99) than the combined seats of its two predecessors in 2000 (Alliance 66 and PC 12). Its vote share (29.63%) was, however, lower than that of its predecessors combined (Alliance 25.5% and PC 12.2%). Their support remained concentrated in Western Canada and in spite of making some progress in Ontario, gaining 24 seats, they failed to make inroads in Québec and the Atlantic Provinces. It is clear from Table 7.1 that although Canada has a plurality electoral system, in the sense that the major parties are electorally advantaged, it is not as majoritarian as the United States.

We used a survey obtained by Blais, et al. (2006).³¹⁴ Because the Bloc Québécois (BQ) only contested the election in Quebec, we divided the sample into those who were in Canada outside Quebec, and those in Quebec. Table A7.1a, in Appendix 1 to this chapter, gives the voting data for 2004 in these two regions, while Table A7.1b gives the sample vote shares for the two regions. Tables A7.2a,b, in Appendix 1, give details of the two dimensional factor analysis, giving two policy dimensions, one a socio-economic dimension and one defined by decentralization. We adopted the notion of *partisan constituencies*, as used in Chapter 6, and estimated party positions by taking the average of the positions of those voters who chose each of the five parties in Canada. For the Bloc Québécois we used the average of voter positions in Québec. Figures 7.1 and 7.2 show the electoral distributions in Canada without Québec and in Canada for 2004, together with estimates of the party positions.³¹⁵

³¹³See Table 7.2.

³¹⁴The survey data are available at <http://ces-ec.mcgill.ca/surveys.html>.

³¹⁵The social dimension is represented as the x-axis and the decentralization dimension is represented as the

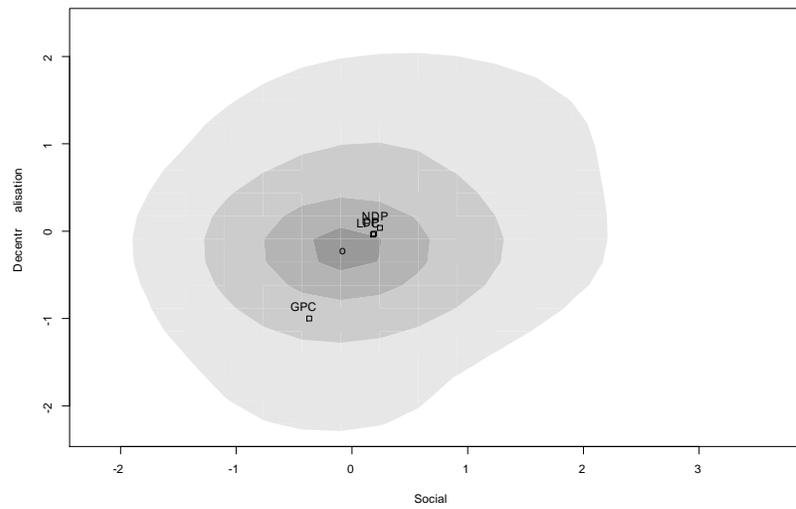


Figure 7.1: The electoral distribution in Canada without Québec in 2004, with party positions estimated by voter means

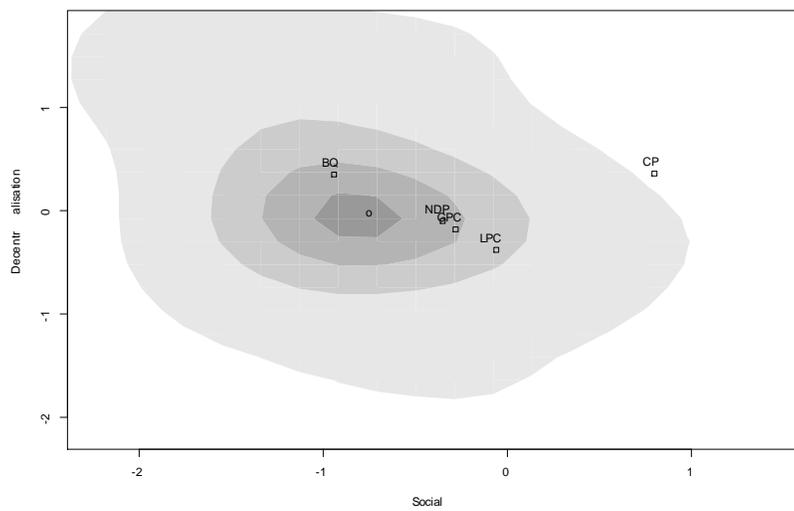


Figure 7.2: The electoral distribution in Québec in 2004, with party positions estimated by voter means

The descriptive statistics for the regions and the parties are given in Tables A7.3, A7.4 and A7.5.

Table A7.6 gives the pure spatial, sociodemographic and joint models outside Quebec, while Table A7.7 gives the three models for Quebec.³¹⁶ Tables A7.8 and A7.9 compare the log likelihoods of the various models.

For 2004 the estimated party positions are given by the vector

$$\mathbf{z}^* = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} & \text{BQ} \\ x\text{-axis} & -0.35 & -0.27 & -0.06 & 0.8 & -0.94 \\ y\text{-axis} & -0.10 & -0.18 & -0.38 & 0.36 & 0.34 \end{bmatrix}.$$

Appendix 2 to this chapter gives the details of the computations of equilibria in the two regions, and shows that the convergence coefficient for the model in Canada without Québec was $c^{C/Q} = 2.55$, with a 95% bounds of [2.01, 3.07]. The theory then implies that the joint mean cannot be an LNE.

By simulation, the equilibrium of the pure spatial model outside Québec was found to be:

$$\mathbf{z}_s^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.50 & -0.36 & 0.24 & 0.23 \\ \text{Decent} & 0.30 & -1.29 & -0.02 & -0.03 \end{bmatrix}$$

However, since this sample mean outside Québec was $\mathbf{z}_0^{C/Q} = (0.264, -0.02)$, after renormalization we obtain

$$\mathbf{z}_{os}^{C/Q} = \begin{bmatrix} \text{Party} & \text{NDP} & \text{GPC} & \text{LPC} & \text{CP} \\ \text{Social} & 0.236 & -0.624 & -0.024 & -0.034 \\ \text{Decent} & 0.32 & -1.27 & 0 & 0.01 \end{bmatrix}$$

These estimated equilibrium positions outside Québec are shown in Figure 7.3. Note that Note that the estimated equilibrium $\mathbf{z}_s^{C/Q}$ and the joint electoral mean, $\mathbf{z}_0^{C/Q}$, are quite different, as shown by the vector $\mathbf{z}_{os}^{C/Q}$.

Notice that the high valence parties, CP and LPC are located close to the electoral mean. Appendix 2 shows that the major eigenvector of the Hessian of the Green party's vote share function at the joint electoral mean was (1.0, 1.22). Theory suggests that the positions of the low valence parties, the GPC and the NDP, given by $\mathbf{z}_{os}^{C/Q}$ will be approximately aligned with this eigenvector. This can be seen to be the case.

Since the electoral model is stochastic it involves a degree of risk. As in Chapter 6, we define the *vote margin* of a party to be the difference between the low vote share (at the 95% level) given by the LNE and the sample vote share. If the vote margins of the low valence parties are positive then this is an indication of their incentive to move their policy positions to the equilibrium. Again, we say a LNE is a *stable attractor* if the vote

y-axis. The electoral distributions in these figures are smoothed. We use CP for the Conservative Party, LPC for the Liberal Party, NDP for the new Democrat Party, GPC for the greens, and BQ for the Bloc Québécois.

³¹⁶In these tables we include the Akaike (AIC) and Bayesian (BIC) Information Criteria. Lower values indicate better model performance.

margins of the small parties are positive. We now show that none of the LNE in these models are stable attractors.

The predicted vote shares at the joint mean, $\mathbf{z}_0^{C/Q}$, are computed in the Appendix and shown to be:

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})^{C/Q} = (0.36, 0.368, 0.23, 0.042)$$

The vote shares of these four parties at the equilibrium $\mathbf{z}_s^{C/Q}$ were determined by simulation to be

$$(\rho_{CP}^*, \rho_{LPC}^*, \rho_{NDP}^*, \rho_{GPC}^*)^{C/Q} = (0.35, 0.36, 0.23, 0.06).$$

These compare with the sample vote shares outside Québec of

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC})^{C/Q} = (0.372, 0.371, 0.216, 0.041),$$

as shown in Table A.71b. The four way actual vote shares outside Québec were

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC})^{C/Q} = (0.373, 0.382, 0.196, 0.049)$$

as shown in Table A7.1a,

The lower 95% bound on $\rho_{GPC}^{*C/Q}$ was estimated to be 0.043, and the lower vote margin was therefore just 0.02. For the NDP, the low estimate of $\rho_{NDP}^{*C/Q} = 0.165$ is below that of its sample vote share of 0.216. We thus infer that the GPC has some incentive to locate at the equilibrium position given by $\mathbf{z}_s^{C/Q}$, but the NDP has no such incentive. By our definition, this LNE is not a stable attractor. .

We also found a second LNE, as shown in Figure 7.4:

$$\mathbf{z}_{os}^{C/Q} = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} \\ \textit{Social} & 0.20 & 1.007 & -0.117 & -0.13 \\ \textit{Decent} & -0.13 & 0.84 & -0.04 & -0.05 \end{bmatrix}.$$

with similar vote shares to the above.

In Québec, the theoretical analysis showed that the convergence coefficient $c^Q = 1.00$, but with 95% bounds on c^Q of [0.45, 1.60], Simulation verified that the equilibrium was one with all parties at the electoral mean, namely $(-0.75, 0.05)$. Using this model the predicted vote shares at the joint mean are:

$$\boldsymbol{\rho}^Q = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})^Q = (0.16, 0.25, 0.08, 0.03, 0.48)$$

The sample vote shares in Québec are

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC}, s_{BQ})^Q = (0.094, 0.244, 0.083, 0.028, 0.55)$$

and the actual vote shares are

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC}, v_{BQ})^Q = (0.088, 0.339, 0.046, 0.032, 0.489)$$

The lower 95% bound on ρ_{GPC} and ρ_{NDP} were found to be 0.01 and 0.05, respectively, both of which are below the sample shares. Since these vote margins are negative, we again find that, according to the pure spatial model, neither the GPC nor the NDP in Québec have any incentive to move from their constituency positions in order to increase vote share. By our definition, this equilibrium is not a stable attractor.

Tables A7.6 and A7.7, model (2), give the pure sociodemographic (SD) model for Canada outside Québec and for Québec. The only sociodemographic characteristic that has any significant effect outside Québec is education. In Québec only age for the BQ and the NDP is significant, and only at the 0.05 level. (The coefficients on age are almost the same for all parties).

The results for the joint model in Tables A7.6 and A7.7 (model 3) show that the β -coefficient is similar to that in the pure spatial model. Age has a similar but weak effect to that in the sociodemographic model. The Bloc's valence is positive in this model and the only one significantly different from zero and thus significantly different from that of the Liberals and the other parties. The log-likelihood tests given in Tables A7.8 and A7.9 show that the joint models improve upon the pure spatial and sociodemographic models both in Canada outside Québec and inside Québec.

Although the *joint* models give better predictions of voter choice, there is almost no impact on the equilibria of the models. To see this, the equilibrium positions outside Québec for the spatial sociodemographic model, as obtained by simulation are:

$$\mathbf{z}_{ss}^{C/Q} = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} \\ \textit{Social} & 0.49 & -0.34 & 0.22 & 0.25 \\ \textit{Decent} & 0.33 & -1.24 & -0.07 & -0.01 \end{bmatrix}$$

while the predicted vote shares of these four parties at the equilibrium are estimated to be

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})_{ss}^{C/Q} = (0.35, 0.37, 0.23, 0.05).$$

Again this LNE cannot be a stable attractor

In Québec the joint equilibrium is only slightly perturbed from the joint mean:

$$\mathbf{z}_{ss}^Q = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{Social} & -0.74 & -0.50 & -0.78 & -0.72 & -0.75 \\ \textit{Decent} & 0.06 & -0.05 & 0.02 & 0.14 & 0.06 \end{bmatrix}.$$

The estimated vote shares are:

$$(\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})_{ss}^Q = (0.17, 0.25, 0.08, 0.03, 0.47).$$

The estimated vote margins again suggest that the leaders of the two low valence parties have no incentive to move to the equilibrium positions.

We can also use the difference between the equilibrium positions and the partisan constituency positions as an estimate of the centrifugal tendency pulling the parties away from the equilibria.

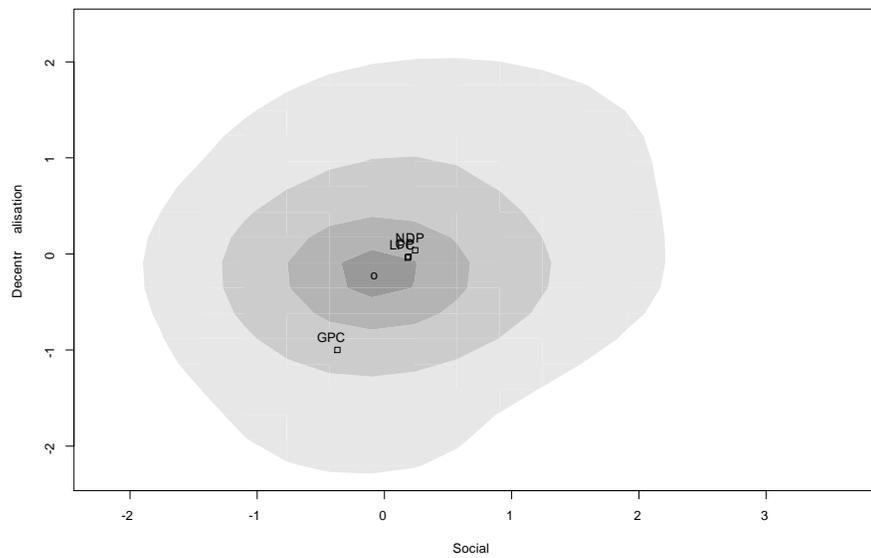


Figure 7.3: A simulated equilibrium in Canada without Québec, starting from the estimated party positions.

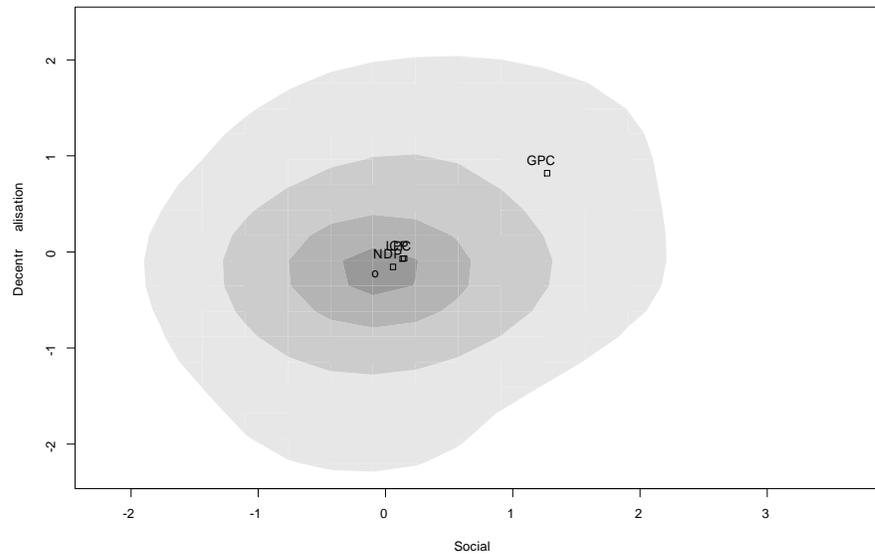


Figure 7.4: A second simulated equilibrium in Canada without Québec, starting from the electoral origin

Comparing the estimated positions with the equilibrium positions (taking the equilibrium position for BQ to be the one in Québec) gives the following:

$$\mathbf{z}^* = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{Social} & -0.35 & -0.27 & -0.06 & 0.8 & -0.94 \\ \textit{Decent} & -0.10 & -0.18 & -0.38 & 0.36 & 0.34 \end{bmatrix}.$$

$$\mathbf{z}_{ss}^C = \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{Social} & 0.49 & -0.34 & 0.22 & 0.25 & -0.75 \\ \textit{Decent} & 0.33 & -1.24 & -0.07 & -0.01 & 0.06 \end{bmatrix}.$$

so

$$[\mathbf{z}^* - \mathbf{z}_{ss}^C] \simeq \begin{bmatrix} \textit{Party} & \textit{NDP} & \textit{GPC} & \textit{LPC} & \textit{CP} & \textit{BQ} \\ \textit{x-axis} & -1.84 & 0.07 & -0.26 & 0.55 & -0.19 \\ \textit{y-axis} & -0.43 & 1.06 & -0.31 & 0.37 & 0.28 \end{bmatrix}.$$

The magnitudes in $\mathbf{z}^* - \mathbf{z}_{ss}^C$ indicate in which directions parties are pulled away from the equilibrium positions towards those favored by the party supporters. The NDP is pulled towards a position involving an increase in social policies and less decentralization (as is expected of a social democratic party). The BQ and the CP are pulled towards more decentralization. This is to expected expected of a separatist party, the BQ. Moreover, the main base of support of the CP is Alberta where it gains over 60% of the vote,³¹⁷ and the voters want more control over their natural resources.

7.2.3 Elections after 2004

In 2004, economic growth was strong, with consumer spending growing at 4.8% and exports at 6.3%,³¹⁸ so economic differences were not profound. Nonetheless, scandals over corruption and sponsorship forced an election on January 23, 2006. The Conservative Party won a plurality of seats (40.5%) or 124 out of 308, with 36.3% of the votes. Stephen Harper of the Conservative Party become the 22nd Prime Minister of Canada, leading a minority government with the (informal) support of the Bloc Québécois. However, this support proved quite unpopular among the BQ activists in Quebec, and the BQ began to oppose the Conservatives on issues such as the environmental and the military role in Afghanistan.

Stéphane Dion had become leader of the Liberals before the election, after a close fought leadership fight. Unwilling to force the country to a new election, he also provided support to the Conservatives in the House of Commons. However, in the election of October, 2008, the Conservatives increased the seats they controlled to 143 (46% of the total) with a slight increase of the vote share to 37.6%, while the Liberals dropped to 77 seats from 103.³¹⁹ This led to a minority Conservative government, and shortly

³¹⁷See Table 7.2.

³¹⁸(<http://www.fin.gc.ca/econbr/ecbr04-07-eng.asp>)

³¹⁹See Blais et al. (2006) for a detailed discussion of the changes in voter perception of Harper and

after, to the resignation of Dion. On December 10, Michael Ignatieff was formally declared the interim leader in a caucus meeting, and his position was ratified at the party's May 2009 convention.

The government changes between 2004 and 2006 can be illustrated by the legislative hearts in Figures 7.5 and 7.6 after these two elections. We can see the nature of bargaining over coalition government by joining the median lines between pairs of parties that pivot between majority coalitions after the election. When these medians do not intersect, then they bound a compact, star shaped set known as the "heart."³²⁰ These medians can be associated with various possible winning coalitions, and Schofield (1999) has suggested that coalition outcomes will lie within the heart.

For example, Figure 7.5 shows the heart after the 2004 election, using the estimates of partisan constituency positions. As the Figure indicates, the LPC formally required the Bloc to secure a majority, while the CP together with the NDP and BQ constituted a majority. The LPC and NDP minority government seemed a reasonable compromise because of the proximity of the two parties. In 2006, as Figure 7.6 indicates, the increase in the number of seats controlled by the CP meant that it could form a government with the support of the Bloc. In 2008 the NDP increased its representation to 37 seats, sufficient to be able to join in a majority coalition with the LPC and BQ.

Notice that regional preferences, over issues such as Québec in Canada, allows small parties, such as the Bloc Québécois, to survive. Plurality rule, of the Westminster variety, means that the New Democratic Party, with 2,500,000 votes (17%) obtained only 9% of the seats, while the Green Party of Canada, with over 660,000 votes (or 4.5%) could gain no seats. This regionalism, or differential valences in different Provinces may be the fundamental reason why no party has been able to obtain a majority in recent past elections. In the surprise election of May 2011 however, the CP won 39.6% of the vote and a majority of 167 seats (54%) out of 308.

Over time we might expect to become more complex, reflecting changes in the political configuration.

In the next two sections we examine the hearts in two much more fragmented polities, the Netherlands and Belgium.

³²⁰More precisely, the heart is the set in the policy space which is bounded by all the median lines through pairs of parties. A median line is a line through the positions, $\{x, y\}$ of two parties such that a majority of the seats are controlled by the coalitions on either side of the line and including the parties at x and y . If all median lines intersect then this intersection defines the core.

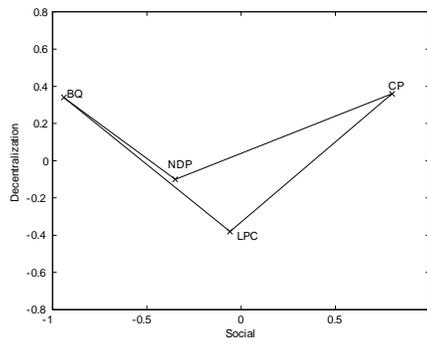


Figure 7.5: The heart in Canada in 2004

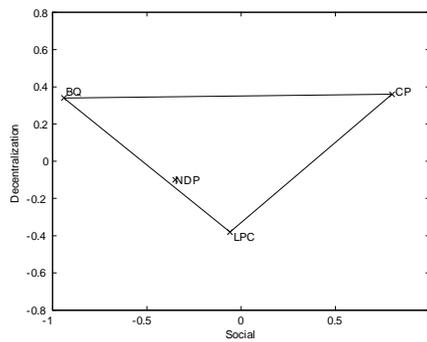


Figure 7.6: The heart in Canada in 2006

7.3 Elections in the Netherlands in 2003 and 2006

We now consider an election in the Dutch Parliament after the elections of 2003 and 2006. Table 7.3 show the vote shares and party strengths in these elections, while Figure 7.7 shows the heart, based on the party strengths and positions in 2006, as estimated by Shikano and Linhart (2007). The coalition government of {CDA, VVD, D'66} had broken up on 29 June, 2006 over the so-called "Ayaan Hirsi Ali affair" when the D'66 pulled out of the coalition, leading to a minority caretaker government of the right wing parties {CDA, VVD} with only 72 seats, out of 150, installed on 7 July.

| Party | 2003 | | | 2006 | | |
|--------------------------|------------|------------|------------|------------|------------|------------|
| | Vote% | Seats | Seat% | Vote% | Seats | Seat% |
| Christian Union (CU) | 2.1 | 3 | 2.0 | 4.0 | 6 | 4.0 |
| Christian Appeal (CDA) | 28.6 | 44 | 29.3 | 26.5 | 41 | 27.3 |
| Green Party (GL) | 5.1 | 8 | 8.7 | 4.6 | 7 | 4.7 |
| Labor (PvdA) | 27.3 | 42 | 28.0 | 21.2 | 33 | 21.3 |
| Labor for Animals (PvdD) | | | | 1.8 | 2 | 1.3 |
| Left Liberals (D'66) | 4.1 | 6 | 4.0 | 2.0 | 3 | 2.0 |
| Liberals (VVD) | 17.9 | 28 | 1 | 14.7 | 22 | 14.7 |
| Lijst Pim Fortuyn | 5.7 | 8 | 5.3 | | | |
| Party for Freedom (PVV) | | | | 5.9 | 9 | 6.0 |
| Protestant Party (SGP) | 1.6 | 2 | 1.3 | | | |
| Reformed Party (SGP) | | | | 1.6 | 2 | 1.3 |
| Socialists (SP) | 6.3 | 9 | 6.0 | 16.6 | 25 | 17.3 |
| Other | 1.0 | | | 1.0 | | |
| Total | 100 | 150 | 100 | 100 | 150 | 100 |

After the election in November 2006, a coalition {CDA, PvdA, CU}, with 80 seats, was formed on 7 February, 2007, under the leadership of Christian Democrat Jan Peter Balkenende. Although this coalition might seem fairly unusual, being a combination of parties with a religious basis and the Labor party, it is compatible with the notion of the heart.

As Shikano and Linhart (2007) note, with 10 parties there are over 500 possible winning coalitions. While the heart does not give a precise prediction of which coalition will form, it provides clues over the complex bargaining calculations that policy-motivated party leaders are faced with when attempting to form majority coalitions in polities based on proportional representation (PR). In particular, because of the conflict that the affair generated between the VVD and D'66, the {CDA, PvdA, CU} coalition is one of the few possible viable coalitions. Even so, it took over six months of negotiation before the coalition parties could agree. The coalition fell apart on February 20th, 2010, after the Labor Party demanded that the government reject NATO's request to extend its military mission in Afghanistan.

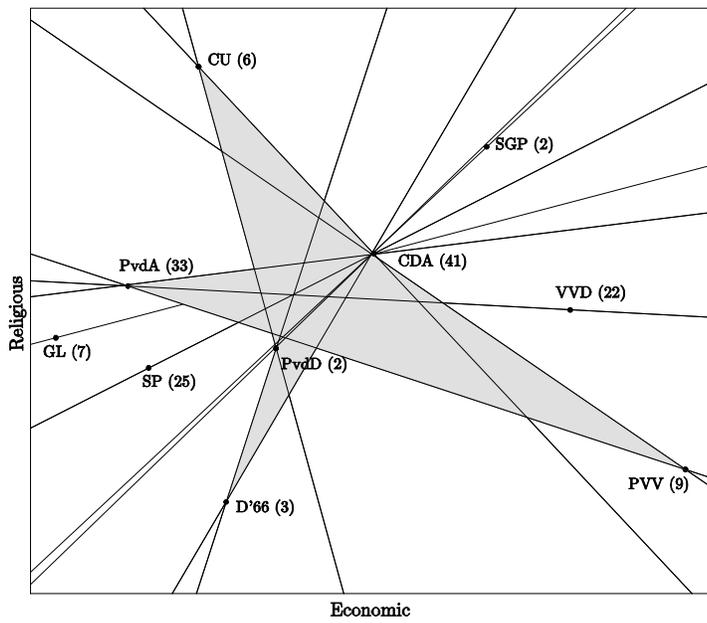


Figure 7.7: Party positions in the Netherlands in 2006

We now discuss a possible reason why there are so many parties in a polity such as the Netherlands, with an electoral system based on proportional representation. First note that the configuration of the four parties {PvdA, D'66, CDA, VVD} is similar in 1977 and 2006. Moreover, the positions of these four parties were estimated for 1977 using means of party activists. We hypothesize that each of the ten parties in Figure 7.7 is located close to the preferred positions of a coalition of party activists. The theoretical question is: why do these activist groups not coalesce into a smaller number of groups, thus reducing the number of parties in the polity. Figure 7.7 suggests why coalescence is irrational. Even a small party like the Christian Union is located on the boundary of the heart. The coalition theory of the heart, proposed by Schofield (1999, 2007b), and defined earlier in this chapter, suggests that this party can therefore assign some probability that it may join the governing coalition, and influence policy to its advantage. Thus the activist group supporting the CU may expect some gain from the political game.

Obviously under a strong majoritarian system, such as the United States, the small parties would gain no representation, unless they were geographically concentrated, and this aspect of the electoral process would force them to coalesce. We now briefly consider the even more fragmented polity of Belgium.

7.4 Elections in Belgium

Belgium is confounded by the split between French and Flemish speaking regions, and by the consequent extreme fragmentation of its polity.

The parties in 2003 included the Christian Democratic and Flemish Party (CD&V) with 21 seats and the Reformist Movement (MR) with 24 seats. The liberal party, the Volksunie, split into a nationalist wing (VLD) and a more federalist component, the Flemish Block (VB). The green parties (including Ecolo) only won four seats. The other small parties were the New Flemish Alliance (N-VA) with 1 seat and the Humanistic Democratic Center (CDH) with 8, and the National Front (FN). The Flemish Socialist Party (SP) formed an alliance with a faction, Spirit (Sp), and together they won 23 seats. Assuming that the Socialist Party (PS) and the alliance, SPSp, were at distinct positions gives the heart for 2003, as shown in Figure 7.8. This illustrates the complex coalition possibilities as a result of the high degree of fragmentation.

Table 7.4 shows the election results in the election of 10 June, 2007. The CD&V, under Yves Leterme, formed an alliance with the N-VA and won 30 seats (out of 150), becoming the largest party in the Parliament. After a month of negotiation, King Albert II asked Yves Leterme, to be *formateur* of a coalition government. Leterme found this impossible, and resigned from the task on 23 August. Belgium was without a government for six months. Eventually, Guy Verhofstadt, of the VLD, was able to put together a transitional government. This was approved by Parliament on 23 December, and lasted until March 20, 2008. Leterme was then sworn in as Prime Minister, leading a coalition of CD&V (with the N-VA), together with the VLD, and the francophone MR,

PS and CDH. A financial scandal forced Leterme, along with his government, to resign on 19 December 2008. Herman Van Rompuy of the CD&V was then appointed as Prime Minister. However, in November 2009, Van Rompuy was selected to become the first President of the European Council, and Leterme once again become Prime Minister. In April, 2010, the VLD left the coalition because of failure to resolve the constitutional crisis involving Dutch-speaking Flanders and francophone Wallonia. The result of the June 2010 election was somewhat similar to the one in 2007, except that the CD&V and N-VA contested the election as separate parties, with the N-VA, under Bart de Wever, winning in Flanders. As of January, 2011, no government has been able to form. The hearts for 2007 and 2010 are similar to that of 2003, and suggest why it is very difficult to form a government coalition.

Table 7.4. Votes and Seats in the Belgium Parliament 2007 and 2010

| Party | 2007 | | | 2010 | | |
|---------------------------------|-------|------------|------------|------------|------------|------------|
| | Vote% | Seats | Seat% | Vote% | Seats | Seat% |
| New Flemish Alliance (N-VA) | 18.5 | 30* | 20 | 17.4 | 27 | 18 |
| Christian Democrat (CD&V) | | | | 10.8 | 17 | 11 |
| Socialist Party (PS) | 10.9 | 20 | 13 | 13.7 | 26 | 17 |
| Socialist Party (Flemish) (SP) | 10.3 | 14 | 9 | 9.2 | 13 | 9 |
| Reformist Movement (MR) | 12.5 | 23 | 15 | 9.3 | 18 | 12 |
| Flemish Liberals and Dem ((VLD) | 11.8 | 18 | 12 | 8.6 | 13 | 9 |
| Flemish Bloc (VB) | 12.0 | 17 | 11 | 7.8 | 12 | 8 |
| Humanist Center (CDH) | 6.1 | 10 | 7 | 5.5 | 9 | 6 |
| Ecolo | 5.1 | 8 | 5 | 4.8 | 8 | 5 |
| Green (G) | 4.0 | 4 | 3 | 4.4 | 5 | 3 |
| List Dedecker (LD) | 4.0 | 5 | 3 | 2.3 | 1 | - |
| Others | 5.0 | 1 | - | 6.0 | 1 | - |
| Total | | 150 | 100 | 100 | 150 | 100 |

*Coalition of CD&V and N-VA

7.5 Concluding Remarks

A standard way of estimating political fragmentation is in terms of the *effective number of party vote strength* (*env*) or *effective number of party seat strength* (*ens*).³²¹ The fragmentation in votes and seats is captured by the fact that in the Netherlands in 1977 both *env* and *ens* were equal to 4.2 but had increased to 8.3 in 2006. In Belgium in 2010 the *env* and *ens* were about 10.0.

For Canada we have computed the convergence coefficient to lie in the range [1.26,

³²¹ As in Chapter 3, fragmentation can be identified with the *effective number* (Laakso and Taagepera, 1979). That is, let H_v (the Herfindahl index) be the sum of the squares of the relative vote shares and $env = H_v^{-1}$ be the *effective number of party vote strength*. In the same way we can define *ens* as the effective number of party seat strength using shares of seats.

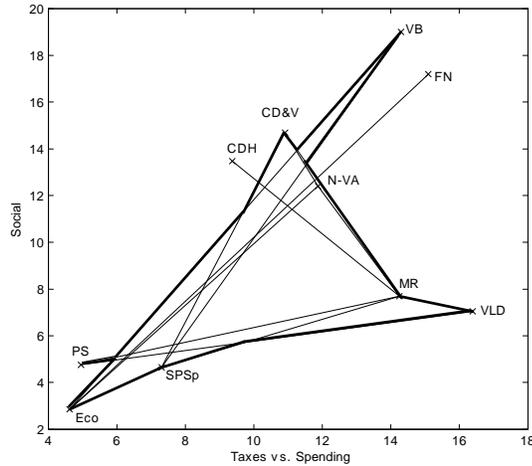


Figure 7.8: The heart in Belgium in 2003

2.04] in 2004. However, the Canadian electoral system benefits the high valence parties, such as the Conservative and Liberal Parties, over smaller parties such as New Democratic Party and Green Party. On the other hand, the pure spatial model indicated that Bloc Québécois had very high valence in Quebec, and this high valence allowed it to obtain a significant share of the seats in that province, gaining a much higher share of the seats than its vote share warranted. Between the elections of 2004 and 2008, the *env* for all of Canada increased from 4.0 to 4.1, while the *ens* increased from about 3.1 in 2004 to 3.4 in 2006 and 3.5 in 2008. Since the *ens* and *env* were much lower in Canada than in the Netherlands and Belgium, we conjecture that the proportional electoral systems of the Netherlands and Belgium facilitates interest group fragmentation.

Even though the valence model indicates that the parties should converge towards the electoral mean in Britain, activists appear to pull the parties apart. We conjecture that the tendency towards activist group coalescence in Canada is weaker than in the strongly majoritarian electoral systems of the United States and the United Kingdom, but stronger than in the proportional electoral systems of the Netherlands and Belgium, and much stronger than in the highly fragmented, proportional polities of Poland, Israel and Turkey, which we examine in Chapters 8 and 10, respectively.

It is possible that the degree of regionalism in the Canadian electoral system could further weaken this coalescence, thus producing an increase in fragmentation. In time, the Canadian polity could come to resemble the Netherlands in the sense that it will become increasingly difficult to form majority government coalitions.

This argument suggests that inferences made by Riker (1980, 1982, 1986) on the degree of political instability depends on the influence that activist groups can exert in polities with different electoral systems. We discuss this further in the concluding remarks to Chapter 10.

7.6 Appendix 1: Tables for Canada

| Party ¹ | Canada | | Canada w/o Québec | | Québec | |
|--------------------|-------------------|---------------|-------------------|---------------|------------------|---------------|
| | Vote | % Vote | Vote | % Vote | Vote | % Vote |
| CP | 4,013,491 | 29.66 | 3,711,952 | 36.78 | 301,539 | 8.77 |
| LPC | 4,967,361 | 36.71 | 3,801,716 | 37.67 | 1,165,645 | 33.90 |
| BQ | 1,680,109 | 12.42 | | | 1,680,109 | 48.87 |
| NDP | 2,117,794 | 15.65 | 1,959,367 | 19.41 | 158,427 | 4.61 |
| GPC | 580,845 | 4.29 | 472,185 | 4.68 | 108,660 | 3.16 |
| All other parties | 171,654 | 1.27 | 147,779 | 1.46 | 23,875 | 0.69 |
| Total | 13,531,254 | 100.00 | 10,092,999 | 100.00 | 3,438,255 | 100.00 |

¹ CP= Conservatives, LP= Liberals, BQ=Bloc Québécois, NDP=New Democratic, GPC= Greens

| Party ¹ | Canada | | Canada w/o Québec | | Québec | |
|--------------------|------------|---------------|-------------------|---------------|------------|---------------|
| | Votes | % | Votes | % | Votes | % |
| CP | 262 | 31.26 | 245 | 37.23 | 17 | 9.44 |
| LPC | 288 | 34.37 | 244 | 37.08 | 44 | 24.44 |
| BQ | 99 | 11.81 | | | 99 | 55.00 |
| NDP | 157 | 18.74 | 142 | 21.58 | 15 | 8.33 |
| GPC | 32 | 3.82 | 27 | 4.10 | 5 | 2.78 |
| Total | 838 | 100.00 | 658 | 100.00 | 180 | 100.00 |

¹ CP= Conservative, LP= Liberal, BQ=Bloc Québécois, NDP=New Democratic Party , GPC= Green Party.

| Components | Social |
|--|--------|
| How much do you think should be done to reduce the gap between the rich and the poor ?(1=much more, 5=much less) | 0.318 |
| How much do you think should be done for women ? (1=much more, 5=much less) | 0.334 |
| how much do you think should be done for quebec? (1=much more, 5=much less) | 0.313 |
| Only the police and the military should be allowed to have guns. (1=strongly agree, 7=strongly disagree) | 0.204 |
| As you may know, canada decided not to participate in the war against iraq. do you think this is a good decision (1=good decision, 5=bad decision) | 0.244 |
| In politics people sometimes talk of left and right. where would you place yours. (0=left, 10=right) | 0.292 |

| Table A7.2b. Weighting Coefficients for Canada | |
|--|-------------------------|
| Components | Decentralization |
| The welfare state makes people less willing to look after themselves. (1=strongly agree, 4=strongly disagree) | -0.063 |
| The government should: 1= see to it that everyone has a decent standard of living, 2=leave people to get ahead on their own | 0.149 |
| If people can't find work in the region where they live, they should move to to where the jobs are ? (1=strongly agree, 7=strongly disagree) | 0.389 |
| How much do you think should be done for quebec ? (1=much more, 5=much less) | 0.050 |
| In general, which government looks after your interests better, the federal government or the provincial government? (1=federal government, 3=provincial government) | 0.882 |

| Table A7.3. Descriptive Statistics by Region | | | | | |
|---|-------------|---------------|-----------|------------|------------|
| Canada (<i>n</i> = 838) | | | | | |
| Variable | Mean | Median | se | Min | Max |
| Social | 0.046 | -0.061 | 1.027 | -2.303 | 3.779 |
| Decentralization | -0.004 | -0.09 | 1.013 | -2.359 | 2.441 |
| Age | 50.187 | 50 | 15.797 | 18 | 89 |
| Female | 0.505 | 1 | 0.500 | 0 | 1 |
| Education | 7.154 | 7 | 2.101 | 1 | 11 |
| Canada outside Québec (<i>n</i> = 658) | | | | | |
| Social | 0.264 | 0.167 | 0.985 | -2.303 | 3.779 |
| Decentralization | -0.020 | -0.214 | 1.036 | -2.359 | 2.441 |
| Age | 50.606 | 50 | 15.505 | 19 | 89 |
| Female | 0.505 | 1 | 0.500 | 0 | 1 |
| Education | 7.128 | 7 | 2.099 | 1 | 11 |
| Québec (<i>n</i> = 180) | | | | | |
| Social | -0.750 | -0.762 | 0.745 | -2.302 | 1.521 |
| Decentralization | 0.052 | 0.014 | 0.927 | -2.220 | 1.845 |
| Age | 48.656 | 48 | 16.779 | 18 | 84 |
| Female | 0.506 | 1 | 0.501 | 0 | 1 |
| Education | 7.250 | 7 | 2.114 | 2 | 11 |

| Table A7.4. Descriptive Statistics by Party | | | | | | | | | | |
|---|--|--------|--------|--------|--------|--|--------|--------|--------|--------|
| Variable | Mean | Median | SD | Min | Max | Mean | Median | SD | Min | Max |
| | Liberals (LPC) | | | | | Conservatives (CP) | | | | |
| | Canada (n = 288) | | | | | Canada (n = 262) | | | | |
| Social | -0.056 | -0.110 | 0.781 | -2.047 | 2.372 | 0.803 | 0.723 | 1.034 | -1.554 | 3.779 |
| Decen | -0.379 | -0.358 | 1.036 | -2.359 | 2.15 | 0.355 | 0.155 | 0.912 | -2.167 | 2.441 |
| Age | 53.146 | 53 | 15.204 | 18 | 86 | 50.401 | 50 | 16.016 | 21 | 89 |
| Female | 0.524 | 1 | 0.5 | 0 | 1 | 0.458 | 0 | 0.499 | 0 | 1 |
| Educ | 7.326 | 8 | 2.116 | 2 | 11 | 6.863 | 7 | 2.078 | 1 | 11 |
| | Canada outside Québec (n = 244) | | | | | Canada outside Québec (n = 245) | | | | |
| Social | 0.007 | -0.006 | 0.772 | -2.047 | 2.372 | 0.883 | 0.829 | 1.000 | -1.555 | 3.779 |
| Decen | -0.344 | -0.358 | 1.067 | -2.359 | 2.150 | 0.385 | 0.176 | 0.925 | -2.167 | 2.441 |
| Age | 52.799 | 53 | 14.483 | 19 | 86 | 50.612 | 50 | 15.856 | 21 | 89 |
| Female | 0.512 | 1 | 0.501 | 0 | 1 | 0.461 | 0 | 0.5 | 0 | 1 |
| Educ | 7.385 | 8 | 2.071 | 3 | 11 | 6.804 | 7 | 2.079 | 1 | 11 |
| | Québec (n = 44) | | | | | Québec (n = 17) | | | | |
| Social | -0.404 | -0.536 | 0.747 | -1.555 | -1.521 | -0.347 | -0.589 | 0.839 | -1.554 | 1.456 |
| Decen | -0.574 | -0.351 | 0.822 | -2.179 | 1.075 | -0.080 | -0.025 | 0.548 | -0.85 | 0.992 |
| Age | 55.068 | 56 | 18.788 | 18 | 84 | 47.353 | 44 | 18.425 | 22 | 78 |
| Female | 0.591 | 1 | 0.497 | 0 | 1 | 0.412 | 0 | 0.507 | 0 | 1 |
| Educ | 7 | 7 | 2.353 | 2 | 11 | 7.706 | 9 | 1.961 | 4 | 11 |
| | New Democratic Party (NDP) | | | | | Greens (GPC) | | | | |
| | Canada (n = 157) | | | | | Canada (n = 32) | | | | |
| Social | -0.345 | -0.374 | 0.756 | -2.303 | 2.396 | -0.274 | -0.323 | 0.786 | -1.747 | 1.398 |
| Decen | -0.102 | -0.114 | 1.005 | -2.236 | 2.232 | -0.176 | -0.276 | 0.789 | -2.220 | 1.769 |
| Age | 47.490 | 46 | 15.804 | 20 | 88 | 44.940 | 43 | 14.203 | 20 | 75 |
| Female | 0.561 | 1 | 0.498 | 0 | 1 | 0.438 | 0 | 0.504 | 0 | 1 |
| Educ | 7.261 | 7 | 2.088 | 2 | 11 | 7.063 | 7 | 2.094 | 4 | 10 |
| | Canada outside Québec (n = 142) | | | | | Canada outside Québec (n = 27) | | | | |
| Social | -0.282 | -0.307 | 0.736 | -2.303 | 2.396 | -0.164 | -0.293 | 0.768 | -1.641 | 1.398 |
| Decen | -0.136 | -0.214 | 0.995 | -2.236 | 2.232 | -0.158 | -0.276 | 0.652 | -2.126 | 1.629 |
| Age | 47.979 | 47.5 | 16.308 | 20 | 88 | 44.556 | 43 | 13.846 | 20 | 75 |
| Female | 0.57 | 1 | 0.497 | 0 | 1 | 0.481 | 0 | 0.509 | 0 | 1 |
| Educ | 7.268 | 7 | 2.127 | 2 | 11 | 7 | 7 | 2.094 | 4 | 10 |
| | Québec (n = 15) | | | | | Québec (n = 5) | | | | |
| Social | -0.940 | -0.718 | 0.706 | -2.303 | -0.037 | -0.865 | -0.462 | 0.664 | -1.747 | -0.294 |
| Decen | 0.229 | 0.135 | 1.074 | -1.846 | 1.728 | -0.273 | -0.365 | 1.429 | -2.220 | 1.769 |
| Age | 42.867 | 43 | 8.911 | 27 | 57 | 47 | 44 | 17.635 | 27 | 74 |
| Female | 0.467 | 0 | 0.516 | 0 | 1 | 0.200 | 0 | 0.447 | 0 | 1 |
| Educ | 7.2 | 7 | 1.74 | 5 | 10 | 7.4 | 8 | 2.302 | 5 | 10 |

Table A7.5: Descriptive Statistics for the Bloc Québécois ($n = 99$)

| | Mean | Median | SD | Min | Max |
|----------|--------|--------|--------|--------|-------|
| Social | -0.938 | -1.056 | 0.664 | -2.133 | 1.284 |
| Decentra | 0.343 | 0.094 | 0.838 | -1.777 | 1.845 |
| Age | 46.99 | 47 | 15.908 | 19 | 82 |
| Female | 0.505 | 1 | 0.503 | 0 | 1 |
| Educ | 7.283 | 7 | 2.095 | 2 | 11 |

Table A7.6: 2004 Canada Outside Québec MNL Models, baseline LPC

| | | Spatial (1) | Socio (2) | Spatial+Socio.(3) |
|-------|-----------------|------------------------------|----------------------|--------------------------------------|
| | | $\mathbb{M}(\lambda, \beta)$ | $\mathbb{M}(\theta)$ | $\mathbb{M}(\lambda, \theta, \beta)$ |
| Party | Var | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) |
| | β | 0.68*** (11.16) | | 0.69*** (11.02) |
| CP | λ_{CP} | -0.04 (0.40) | 2.05*** (3.86) | 1.52** (2.60) |
| | Age | | -0.02* (2.49) | -0.01 (1.73) |
| | Gender(F) | | -0.24 (1.28) | 0.15 (0.71) |
| | Educ | | -0.16*** (3.55) | -0.15** (2.89) |
| NDP | λ_{NDP} | -0.51*** (4.82) | 0.98 (1.58) | 1.21* (1.97) |
| | Age | | -0.02** (3.09) | -0.02** (3.18) |
| | Gender(F) | | 0.19 (0.87) | 0.09 (0.40) |
| | Educ | | -0.07 (1.26) | -0.08 (1.55) |
| GPC | λ_{GPC} | -2.18*** (10.74) | 1.14 (1.00) | 1.19 (1.06) |
| | Age | | -0.04** (2.92) | -0.04** (2.92) |
| | Gender(f) | | -0.20 (0.49) | -0.25 (0.61) |
| | Educ | | -0.17 (1.58) | -0.17 (1.61) |
| n | | 658 | 658 | 658 |
| LL | | -697 | -772 | -684 |
| AIC | | 1403 | 1559 | 1385 |
| BIC | | 1426 | 1590 | 1420 |

Table A7.7 2004 Canada only Québec MNL Models, baseline LPC

| | | Spatial (1) | Socio. (2) | Spatial+Socio (3) |
|-------|-----------------|------------------------------|----------------------|--------------------------------------|
| | | $\mathbb{M}(\lambda, \beta)$ | $\mathbb{M}(\theta)$ | $\mathbb{M}(\lambda, \theta, \beta)$ |
| Party | Var | Est. (t-stat) | Est. (t-stat) | Est. (t-stat) |
| | β | 0.38*** (3.90) | | 0.39*** (3.90) |
| CP | λ_{CP} | -0.45 (1.50) | -0.25 (0.17) | -0.04 (0.02) |
| | Age | | -0.03 (1.48) | -0.03 (1.47) |
| | Gender(F) | | -0.76 (1.30) | -0.45 (0.75) |
| | Educ | | 0.15 (0.99) | 0.16 (1.07) |
| BQ | λ_{BQ} | 0.63*** (3.31) | 2.25* (2.36) | 2.25* (2.33) |
| | Age | | -0.03* (2.54) | -0.03* (2.42) |
| | Gender(F) | | -0.37 (0.98) | -0.59 (1.52) |
| | Educ | | 0.03 (0.39) | 0.02 (0.18) |
| NDP | λ_{NDP} | -1.17*** (3.92) | 1.45 (0.94) | 1.36 (0.89) |
| | Age | | -0.05* (2.36) | -0.04* (2.30) |
| | Gender(f) | | -0.55 (0.89) | -0.62 (1.01) |
| | Educ | | 0.00 (0.00) | -0.01 (0.05) |
| GPC | λ_{GPC} | -2.25*** (4.77) | -0.50 (0.20) | -0.56 (0.23) |
| | Age | | -0.03 (0.98) | -0.03 (0.95) |
| | Gender(f) | | -1.78 (1.53) | -1.83 (1.57) |
| | Educ | | 0.07 (0.31) | 0.06 (0.27) |
| n | | 180 | 180 | 180 |
| LL | | -208 | -209 | -201 |
| AIC | | 428 | 434 | 419 |
| BIC | | 447 | 460 | 448 |

| Table A7.8. Comparison of Log Likelihood for Canada outside Québec 2004 | | M ₂ | | |
|---|--------------------|----------------|--------------------|--------------------|
| | | Spatial | Socio-Demographic. | Joint ^a |
| M ₁ | Spatial | na | 75 | -13 |
| | Socio-Dem. | -75 | na | -88 |
| | Joint ^a | 13 | 88 | na |

^a Joint=spatial model with sociodemographics

| Table A7.9. Comparison of Log Likelihood for Québec 2004 | | M ₂ | | |
|--|--------------------|----------------|-------------------|--------------------|
| | | Spatial | Socio-Demographic | Joint ^a |
| M ₁ | Spatial | na | 1 | -7 |
| | Socio-Dem. | -1 | na | -8 |
| | Joint ^a | 7 | 8 | na |

^a Joint=spatial model with sociodemographics

7.7 Appendix 2: Computations for Canada

Pure Spatial Models For 2004 the electoral covariance matrix for Canada is:

$$\nabla_0^C = \begin{bmatrix} 1.05 & 0.133 \\ 0.133 & 1.02 \end{bmatrix}.$$

The “total” variance is $\sigma^2 \equiv \sigma_1^2 + \sigma_2^2 = 2.07$ with an *electoral standard deviation (esd)* of $\sigma = 1.44$. The *principal electoral component* of ∇_0 is given by the eigenvector (1.0, 0.94) with variance 1.17, while the minor eigenvector is (−0.94, 1.0), with variance 0.90. Because the variances on the two axes were very similar, we did not run the spatial model with separate β - coefficients.

However, the matrices are different in Canada without Québec and in Québec, as in

$$\nabla_0^{C/Q} = \begin{bmatrix} 0.97 & 0.25 \\ 0.25 & 1.07 \end{bmatrix}$$

outside Québec, with $n=658$, and

$$\nabla_0^Q = \begin{bmatrix} 0.56 & -0.26 \\ -0.26 & 0.86 \end{bmatrix}$$

for Québec, with $n=180$.

The “total” variances are $\sigma_{C/Q}^2 \equiv \sigma_1^2 + \sigma_2^2 = 2.04$ with an esd $\sigma_C = 1.42$ and $\sigma_Q^2 = 1.42$ with $\sigma_Q = 1.19$.

The principal electoral component of $\nabla_0^{C/Q}$ is given by the eigenvector (1.0, 1.12), with variance 1.26, while the minor eigenvector is (−1.12, 1.0), with variance 0.78. This is slightly different from ∇_0^C

The different orientations of the electoral distributions can be seen from a comparison of Figures 7.1 and 7.2.

Since these are very different, we expect the convergence coefficients to be different.

Outside Québec Outside Québec the coefficients from the model $\mathbb{M}^{C/Q}(\lambda, \beta)$ are given in Table 7.6 (model (1)) as

$$\begin{aligned}\lambda_{NDP}^{C/Q} &= -0.51, \lambda_{CP}^{C/Q} = -0.04, \lambda_{GPC}^{C/Q} = -2.18, \lambda_{LPC}^{C/Q} \equiv 0.0 \\ \beta^{C/Q} &= 0.68.\end{aligned}$$

Notice that the β -coefficient and the Green party and NDP valences are significantly non zero (at the 0.001 level).³²²The probability, ρ_{GPC} , that a voter chooses the lowest valence party (the Greens), when all parties are at the joint electoral mean, as given by the model $\mathbb{M}^{C/Q}(\lambda, \beta)$ is:

$$\rho_{GPC}^{C/Q} = \frac{\exp[\lambda_{GPC}^{C/Q}]}{\sum_{k=1}^4 \exp[\lambda_j^{C/Q}]} = \frac{e^{-2.18}}{e^{-2.18} + e^{-0.51} + e^{-0.04} + e^0} \simeq 0.042$$

Thus

$$2\beta^{C/Q}(1 - 2\rho_{GPC}^{C/Q}) = 2 \times 0.68 \times 0.92 = 1.25.$$

The Hessian, or characteristic matrix for the GPC, is given by

$$C_{GPC}^{C/Q} = (1.25) \begin{bmatrix} 0.97 & 0.25 \\ 0.25 & 1.07 \end{bmatrix} - I = \begin{bmatrix} 0.21 & 0.31 \\ 0.31 & 0.34 \end{bmatrix}$$

$$\text{and } c^{C/Q} = 1.25 \times 2.04 = 2.55$$

The trace is positive (+0.55) and determinant is negative (-0.015), so we have a saddlepoint. The eigenvector with the positive eigenvalue (+0.59) is (1.0, 1.22), while the negative eigenvalue (-0.04) has eigenvector (1.0, -0.82).

Since the standard error in $\lambda_{GPC}^{C/Q}$ is 0.20, the 95% bounds on $\lambda_{GPC}^{C/Q}$ are [-2.57, -1.79] and the 95% bounds on $\rho_{GPC}^{C/Q}$ are [0.03, 0.06], approximately $\pm 28\%$.

In the same way, the standard error on $\beta^{C/Q}$ is 0.06, the 95% bounds on $\beta^{C/Q}$ are [0.56, 0.80], and we can estimate very conservative 95% bounds on $c^{C/Q}$ as given by

$$\begin{aligned}& \{2 \times 0.56 \times (1 - (2 \times 0.060)), 2 \times 0.80 \times (1 - (2 \times 0.03))\} \times 2.04 \\ &= [0.99, 1.50] \times 2.04 = [2.01, 3.07]\end{aligned}$$

Thus the bounds on $C_{GPC}^{C/Q}$ are

$$\begin{aligned}& \begin{bmatrix} 0.96 & 0.25 \\ 0.25 & 1.06 \end{bmatrix} - I, \begin{bmatrix} 1.46 & 0.38 \\ 0.38 & 1.61 \end{bmatrix} - I \\ \text{or } & \begin{bmatrix} -0.04 & 0.25 \\ 0.25 & 0.06 \end{bmatrix}, \begin{bmatrix} 0.46 & 0.38 \\ 0.38 & 0.61 \end{bmatrix}.\end{aligned}$$

³²²Clarke, Kornberg et al. (2009) obtained comparable AIC values for a sociodemographic model of this election,

Both traces are positive, while the first determinant is negative (-0.06), and the second is positive ($+0.14$), so the low estimate of c still gives a saddle, while the high estimate gives a minimum. We can assert, with probability greater than 95%, that the joint electoral mean is not an equilibrium. The predicted vote shares at the joint mean were:

$$\boldsymbol{\rho}^{C/Q} = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC})^{C/Q} = (0.36, 0.368, 0.23, 0.042)$$

with a low 95% estimate for $\rho_{GPC}^{C/Q}$ of 0.03.

The vote shares of these four parties at the equilibrium $\mathbf{z}_s^{C/Q}$ were determined by simulation to be

$$\boldsymbol{\rho}_s^{*C/Q} = (\rho_{CP}^*, \rho_{LPC}^*, \rho_{NDP}^*, \rho_{GPC}^*)_s^{C/Q} = (0.35, 0.36, 0.23, 0.06).$$

which lies within the 95% error bounds of the predictions. However, because of the stochastic nature of the model, the lower 95% bound on $\rho_{GPC}^{*C/Q}$ was approximately 0.043.

This compares with the sample vote shares, given in Table A7.1b of

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC})^{C/Q} = (0.372, 0.371, 0.216, 0.041)$$

and with the actual vote shares outside Québec of

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC})^{C/Q} = (0.368, 0.377, 0.194, 0.047)$$

Using the central estimate of $\rho_{GPC}^{*C/Q} = 0.06$ for GPC we find that the vote margin for the GPC is

$$\rho_{GPC}^{*C/Q} - s_{GPC}^{C/Q} = 0.06 - 0.041 = 0.019,$$

whereas the low estimate of 0.043 gives a smaller vote margin of 0.002. For the NDP, the low estimate of $\rho_{NDP}^{*C/Q} = 0.165$ is below that of its sample vote share of 0.216. By our definition, this LNE is not a stable attractor. In particular, the NDP has no strong incentive to move to the LNE.

In Québec. In Québec the coefficients from the model $\mathbb{M}^Q(\boldsymbol{\lambda}, \beta)$ are

$$\begin{aligned} \lambda_{BQ}^Q &= 0.63, \lambda_{NDP}^Q = -1.17, \lambda_{CP}^Q = -0.45, \lambda_{GPC}^Q = -2.25, \\ \lambda_{LPC}^Q &\equiv 0, \beta^Q = 0.38. \end{aligned}$$

Again, the β -coefficient and the valence estimates for the BQ and NDP are significantly non zero. The probability, ρ_{GPC}^Q , that a voter chooses the lowest valence party (the Greens, GPC), when all parties are at the joint electoral mean, is given by the model $\mathbb{M}^Q(\boldsymbol{\lambda}, \beta)$ as

$$\rho_{GPC}^Q = \frac{\exp[\lambda_{GPC}^Q]}{\sum_{k=1}^4 \exp[\lambda_j^Q]} = \frac{e^{-2.25}}{e^{-2.25} + e^{-1.17} + e^{-0.45} + e^{0.63} + e^0}$$

$$\simeq 0.03$$

$$\text{Thus } 2\beta^Q(1 - 2\rho_{GPC}^Q) = 2 \times 0.63 \times 0.95 = 0.71,$$

$$C_{GPC}^Q = (0.71) \begin{bmatrix} 0.55 & -0.25 \\ -0.25 & 0.86 \end{bmatrix} - I = \begin{bmatrix} -0.60 & -0.18 \\ -0.18 & -0.38 \end{bmatrix},$$

$$\text{so } c^Q = 0.8 \times 1.42 = 1.00$$

In this case the trace is negative and the determinant is positive (0.20), and we have a local maximum. Both eigenvectors have negative eigenvalues. Using this model we find

$$\rho^Q = (\rho_{CP}, \rho_{LPC}, \rho_{NDP}, \rho_{GPC}, \rho_{BQ})^Q = (0.16, 0.25, 0.08, 0.03, 0.48)$$

Simulation of the model for Québec verified that the equilibrium was one with all parties at the electoral mean, namely $(-0.75, 0.05)$. The vote shares of these five parties at the equilibrium were predicted to be identical to ρ^Q and according to the simulation these were: The sample vote shares in Québec are given in Tble A7.1 and were

$$(s_{CP}, s_{LPC}, s_{NDP}, s_{GPC}, s_{BQ})^Q = (0.094, 0.245, 0.083, 0.028, 0.55)$$

and the actual vote shares were

$$(v_{CP}, v_{LPC}, v_{NDP}, v_{GPC}, v_{BQ})^Q = (0.088, 0.339, 0.046, 0.032, 0.489)$$

The standard error of λ_{GPC}^Q is 0.47, so the 95% bounds on λ_{GPC}^Q are given by

$$-2.25 \pm (1.97) \cdot (0.47) = [-3.18, -1.32].$$

Accordingly, the 95% bounds on ρ_{GPC}^Q are $[0.01, 0.06]$, or $\pm 66\%$.

Since the standard error of β^Q is 0.10, the 95% bounds are $[0.18, 0.58]$. We can estimate very conservative bounds on c^Q to be given by

$$[2 \times 0.18 \times (1 - 2 \cdot 0.06), 2 \times 0.58 \times (1 - 2 \cdot 0.01)] \times 1.41$$

$$= [0.32, 1.14] \times 1.41 = [0.45, 1.60].$$

Thus the bounds on C_{GPC}^Q are

$$\begin{bmatrix} 0.17 & -0.08 \\ -0.08 & 0.27 \end{bmatrix} - I, \quad \begin{bmatrix} 0.63 & -0.29 \\ -0.29 & 0.98 \end{bmatrix} - I$$

$$\text{or } \begin{bmatrix} -0.83 & -0.08 \\ -0.08 & -0.73 \end{bmatrix}, \quad \begin{bmatrix} -0.37 & -0.29 \\ -0.29 & -0.02 \end{bmatrix}$$

. Both traces are negative ($-1.56, -0.39$), while the first determinant is positive (0.60), and the second is negative (-0.08), so the low estimate of c gives a local maximum, while the high estimate gives a saddle point. In the second case, the eigenvector with the positive eigenvalue (0.14) is $(1, -1.78)$, while the negative eigenvalue (-0.53) has eigenvector $(1, 0.56)$.

Letting $\rho_{GPC}^{*Q} = 0.01$ be the lower 95% bound, we see that the vote margin for the GPC in Québec is $\rho_{GPC}^{*Q} - s_{GPC}^Q = 0.01 - 0.028 < 0$. Similarly the lower 95% bound on ρ_{NDP} was approximately $0.05 < s_{NDP}^Q = 0.083$. Again, by our definition, this LNE is not a stable attractor.

This estimation suggests that neither of the small parties have an incentive to move from their partisan constituency positions to the LNE.

Chapter 8

Elections in Poland 1997-2005

8.1 Introduction

Poland held regular elections in 1997, 2001, and 2005. For all of these elections Poland used an open-list proportional representation (OLPR) electoral system with a threshold of 5% nationwide for vote for parties and 8% for electoral coalitions. The rules of the 1997 elections were slightly different from the ones used since 2001: the number of districts was larger (52 compared to 41) and in addition to districts there was a 69-seat national list. In 1997 and since 2005 votes are translated into seats by the D'Hondt method rather than the more proportional modified Saint-Leaguë method used in 2001.³²³

Table 8.1. Seats in Polish Sejm elections

| Party | 1997 (%) | 2001 (%) | 2005 (%) |
|---|------------|--------------|------------|
| Democratic Left Alliance (SLD) | 164 (35.6) | 200* (43.4*) | 55 (12.0) |
| Polish People's Party (PSL) | 27 (5.8) | 42 (9.1) | 25 (5.4) |
| Freedom Union (UW) | 60 (13.0) | 0 | |
| Solidarity Election Action (AWS) | 201 (43.6) | 0 | |
| Labor Party (UP) | 0 | 16* (3.5*) | |
| Union of Political Realism (UPR) | 0 | | |
| Movement for Reconstruction of Poland (ROP) | 6 (1.3) | | |
| Self Defense, Samoobrona (SO) | | 53 (11.5) | 56 (12.1) |
| Law and Justice (PiS) | | 44 (9.5) | 155 (33.7) |
| Civic Platform (PO) | | 65 (14.1) | 133 (29.0) |
| League of Polish Families (LPR) | | 38 (8.2) | 34 (7.4) |
| Democratic Party (DEM) | | | 0 |
| Social Democracy of Poland (SDP) | | | 0 |
| German minority | 2 | 2 (0.4) | 2 (0.4) |
| Total | 460 | 460 | 460 |

* Coalition of SLD with UP

³²³This chapter on Poland is written in collaboration with Margit Tavits.

The party system in Poland is relatively unstable – in each election new parties emerge and some existing ones die, and the vote shares fluctuate considerably for those parties that manage to survive multiple elections. Tables 8.1 and 8.2 list, by election year, the names of the parties, their seat shares and vote shares. Usually about five or six parties win seats in the Sejm (lower house).

The main political parties during the time period under consideration include the following. The left-wing ex-communist Democratic Left Alliance (SLD) and the agrarian Polish Peoples' Party (PSL), both of which have participated in all three elections considered here and been the most frequent governing parties in the post-communist period. In 1997 Solidarity Election Action (AWS) and the Freedom Union (UW) were also important players. Both parties had grown out of the Solidarity movement. AWS combined various mostly right wing and Christian groups under one label, while UW was formed based on the liberal wing of Solidarity. After the 2001 election, Civic Platform (PO), Law and Justice (PiS), League of Polish Families (LPR), and Self-Defense (SO) emerged as significant new parties. The first three parties were formed on the ruins of AWS and UW. PO combines the liberals from both parties, while PiS represents the conservatives. LPR's ideology combines nationalism with Catholic fundamentalism and the party is sometimes considered a far-right entity. SO is a leader-centered agrarian party that is left-wing on economic policy but very right-wing religious on values. Both LPR and SO did not survive as significant political players and are no longer represented in the Polish Sejm.

Table 8.2. Vote shares (%) in elections for the Polish Sejm

| | 1997 | 2001 | 2005 |
|---|------|-------|------|
| Democratic Left Alliance (SLD) | 27.1 | 41.0* | 11.3 |
| Polish People's Party (PSL) | 7.3 | 9.0 | 7.0 |
| Freedom Union (UW) | 13.4 | 3.1 | |
| Solidarity Election Action (AWS) | 33.8 | 5.6 | |
| Labor Party (UP) | 4.7 | | |
| Union of Political Realism (UPR) | 2.0 | | |
| Movement for Reconstruction of Poland (ROP) | 5.6 | | |
| Self Defense (SO) | | 10.2 | 11.4 |
| Law and Justice (PiS) | | 9.5 | 27.0 |
| Civic Platform (PO) | | 12.7 | 24.1 |
| League of Polish Families (LPR) | | 7.9 | 8.0 |
| Democratic Party (DEM) | | | 2.5 |
| Social Democracy of Poland (SDP) | | | 3.9 |

* Coalition of SLD with UP

8.2 The Electoral Model

Existing literature suggests that the two main axis of Polish electoral politics along which both voters and parties align are the economic dimension and social values di-

mension.³²⁴ This has remained true for the entire post-communist era. The first dimension encompasses issues related to economic transition and economic performance such as the speed and nature of privatization, reducing unemployment, and increasing social security. The social values' dimension includes attitudes towards communist past, the role of church in politics, moral issues, and nationalism (Grzymala-Busse 2002; Szerbiak 1998). Over the years, these social issues have gained increasing prominence in political rhetoric and as determinants of vote choice (Markowski and Tucker 2010a,b). The relevance of social issues is further underlined by the significant influence of the Catholic church on Polish party politics (Markowski 2006) and the high salience of the divide between the anti-communists and ex-communists.

We analyzed the three Polish elections based on data from the respective Polish National Election Studies (PNES). These are surveys of the adult population conducted after each national parliamentary election. We were able to use responses from samples of sizes 660, 657 and 1095, respectively for the pure spatial models. The dependent variable in our analysis is the respondent's vote choice. We use the spatial distance between parties and voters, and voters' sociodemographic characteristics to explain this vote choice. See the Appendix to this chapter for the question wordings

The PNES includes a battery of questions asking respondents' position on various issues. We identified issues pertaining to economic policy and social values and performed factor analysis to confirm the existence of the two dimensions in the data and obtain factor scores for each dimension. The following items loaded on the two dimensions (the items used depend on what was available in a given survey).

Economic dimension (all years): privatization vs. state ownership of enterprises, fighting unemployment vs. keeping inflation and government expenditure under control, proportional vs. flat income tax, support vs. opposition to state subsidies to agriculture, state vs. individual social responsibility.

Social values dimension: separation of church and state vs. influence of church over politics (1997, 2001, 2005), complete decommunization vs. equal rights for former nomenclature (1997, 2001), abortion rights regardless of situation vs. no such rights regardless of situation (1997, 2005)³²⁵.

The factor loadings for the two dimensions are given in Tables A8.1a,b,c in the Appendix.

We adopted the notion of *partisan constituencies*, as introduced in Chapter 5, and estimated party positions on these dimensions by taking the average of the positions of the voters for each party. In an alternative analysis, we obtained the information on the placement of political parties from Benoit and Laver (2006), which used expert surveys to place parties on a variety of issues. The results of this alternative analysis were substantively similar to the one presented here. However, the Benoit and Laver

³²⁴See Powers and Cox 1997; Kitschelt et al., 1999; Tucker 2006; Tavits and Letki 2009; Owen and Tucker 2010.

³²⁵Respondent's opinion on each of these issues was recorded on an eleven-point scale with the first option given scored as zero and the second option scored as ten. See section 8.5.2 in the Appendix for the exact question wording.

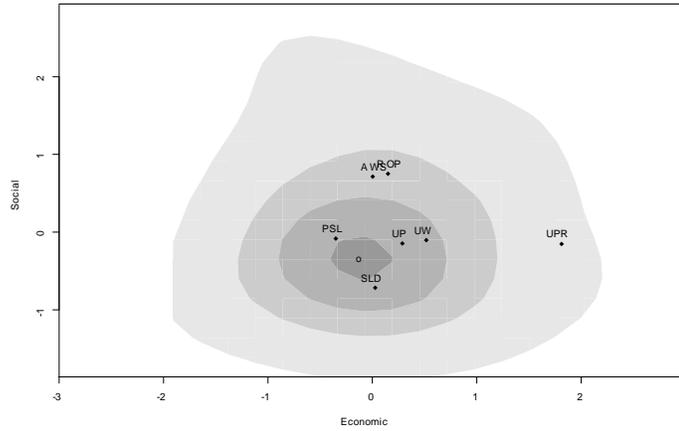


Figure 8.1: Voter distribution and party positions in Poland in 1997

data were collected after the 2001 elections only. Using these placements to identify party positions in 1997 and 2005 may not be accurate because party positions change.

Figures 8.1, 8.3 and 8.5 display the estimate of the density contours of the electoral distribution of voter bliss points for each election year, as well as the estimated party positions.³²⁶ We used the pure spatial model to estimate the equilibrium positions in these years, and these are displayed in Figures 8.2, 8.4 and 8.6.

These party positions are given below.

$$\mathbf{z}_{1997}^* = \begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{UW} & \text{AWS} & \text{UP} & \text{UPR} & \text{ROP} \\ x & 0.03 & -0.35 & 0.52 & 0.005 & 0.29 & 1.81 & 0.15 \\ y & -0.72 & -0.35 & -0.1 & 0.72 & -0.15 & -0.15 & 0.75 \end{bmatrix}$$

In 1997, Solidarity Electoral Action (AWS), with 201 seats and based on the Solidarity trade union, formed a coalition with the Freedom Union (UW), a party on the right, supporting classical liberalism, with 60 seats. Together the coalition controlled 261 seats, out of 460. The election was a major setback for the Democratic Left Alliance (SLD) and the Polish People's Party (PSL) which were forced out of government.

$$\mathbf{z}_{2001}^* = \begin{bmatrix} \text{Party} & \text{SLD} - \text{UP} & \text{PSL} & \text{UW} & \text{AWS} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & -0.12 & -0.29 & 1.16 & 0.66 & 0.03 & 0.11 & 0.57 & 0.14 \\ y & -0.47 & -0.05 & 0.002 & 0.83 & 0.27 & 0.41 & 0.17 & 0.87 \end{bmatrix}$$

³²⁶For 2001, the positions of the LPR, PO, PSL, SLD and UW are almost identical to those estimated by Benoit and Laver (2006), thus providing some justification for our method of estimating party positions.

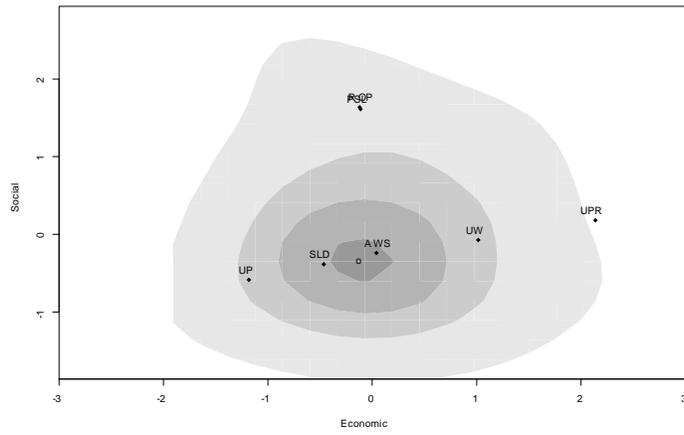


Figure 8.2: Equilibrium positions under the joint model in 1997

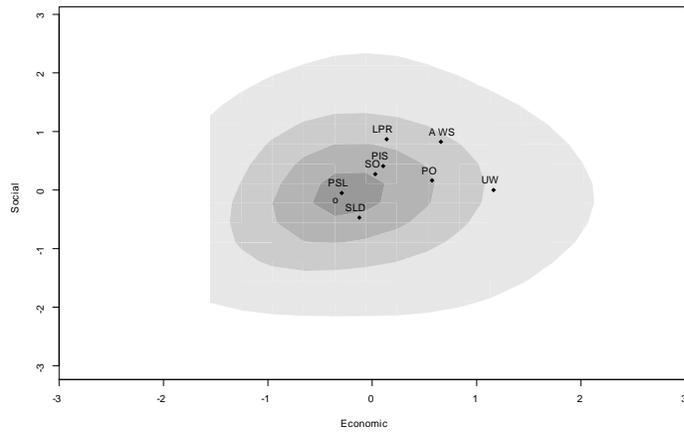


Figure 8.3: Estimated party positions in 2001

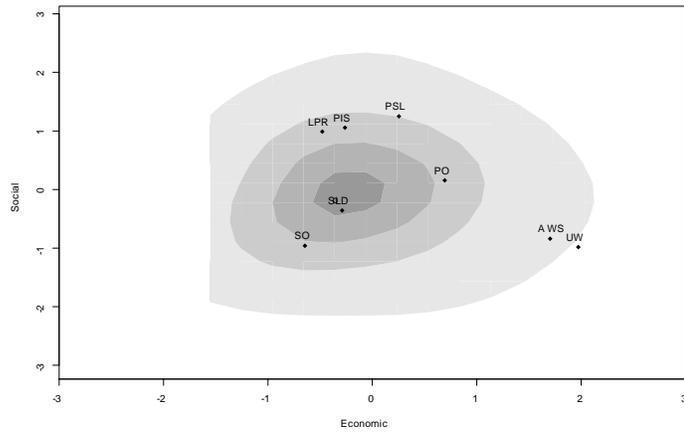


Figure 8.4: Equilibrium positions under the joint model in 2001

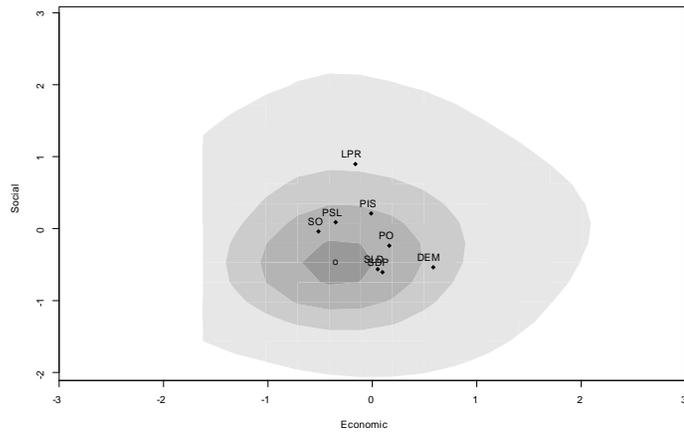


Figure 8.5: Estimated party positions in 2005

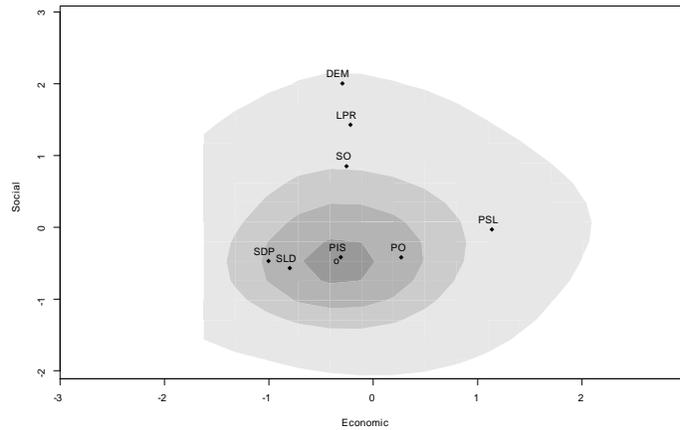


Figure 8.6: Equilibrium positions under the joint model in 2005

In the 2001 election, the coalition of SLD and UP won 216 of the 460 seats, and was able to form a government with the support of the Polish People's Party (PSL), with 42 seats, thus controlling 258 seats in all. The former ruling parties, the Solidarity Electoral Action (AWS) and the the Freedom Union (UW) only gained about 10% of the vote but no its seats. In its place several new parties emerged, including the center right LPR, SO, and PiS, and the further right PO. Figures 8.1 and 8.3 suggest that the AWS fractured into five factions, a small remnant AWS, and these four new parties.

After 2003 a variety of factors combined to bring about a collapse of support for the government of the SLD-UP-PSL coalition. Discontent with high unemployment, government spending cuts (especially on health, education and welfare), affairs related to privatizations was compounded by a series of corruption scandals, leading to the resignation of the Prime Minister Leszek Miller in May 2004, who was succeeded by Marek Belka.

$$\mathbf{z}_{2005}^* = \begin{bmatrix} \text{Party} & \text{SLD} & \text{PSL} & \text{DEM} & \text{SDP} & \text{SO} & \text{PiS} & \text{PO} & \text{LPR} \\ x & 0.05 & -0.35 & 0.58 & 0.10 & -0.52 & -0.01 & 0.16 & -0.16 \\ y & -0.56 & 0.09 & -0.54 & -0.61 & -0.04 & 0.20 & -0.23 & 0.90 \end{bmatrix}$$

The parties running in the 2005 election were similar to those running in 2001, with the addition of SDP (a left wing splinter group from the SLD), and the right wing Democratic Party (DEM). Figure 8.6 suggests that the DEM was formed from the Freedom Union (UW), the moribund Solidarity Electoral Action (AWS) and some right wing SLD dissidents. Both these new parties failed to win seats, though they took about 6%

of the vote..

The two larger center right parties, Law and Justice (PiS) and Civic Platform (PO), did much better in 2005, gaining over 50% of the vote and 288 seats. They had splintered off from the anti-communist Solidarity movement but differed on issues such as the budget and taxation. Law and Justice, with 155 seats, had a policy of tax breaks and state aid for the poor, and pledged to uphold traditional family and Christian values, while being suspicious of economic liberalism. The Civic Platform, with 133 seats, supported free market forces and wanted to introduce a flat 15% rate for income tax, corporation tax and VAT. It promised to move faster on deregulation and privatization, in order to adopt the euro as soon as possible.

Negotiations between PiS and PO about forming the new government collapsed in late October, precipitated by disagreement over who would be speaker of the Sejm. The PiS leader, Jarosław Kaczyński, declined the opportunity to become Prime Minister so as not to prejudice the chances of his twin brother, Lech Kaczyński, in the presidential election.³²⁷ On 1 November, 2005, the PiS announced a minority government, with 155 seats, led by Kazimierz Marcinkiewicz as the Prime Minister.

A major stumbling block against the PiS forming a coalition with the PO was the insistence by the PO that it receive the Interior portfolio, if it were to enter a coalition government with the PiS, to prevent one party from controlling all three of the "power" ministries (Security, Justice and Interior), thus the police and security services. The PO also opposed a "tactical alliance" between the PiS and Samoobrona, who shared eurosceptic and populist sentiments, although differing on economic policy. The election campaign, in which both of these center-right parties had competed mainly against each other rather than parties on the left, accentuated differences and created an antagonistic relationship between the two parties.

The PiS minority government depended on the support of the radical Samoobrona, with 56 seats, and the conservative League of Polish Families (LPR), with 34 seats. On 5 May 2006 PiS formed a coalition government with Samoobrona and LPR, controlling 245 seats. In July 2006, Marcinkiewicz tendered his resignation, because of disagreements with the PiS party leader, Kaczyński. Kaczyński then formed a new minority government and was sworn-in on July 14, finally becoming prime minister. His party was defeated in 2007. Figure 8.5 indicates the policy differences that existed between the PiS and the more left-wing Samoobrona, and the conservative LPR on the one hand, and the more right-wing party, the PO, on the other.

After the death of the President, Lech Kaczyński, in a plane crash in April, 2010, his brother, Jarosław Kaczyński, announced he would stand for president. In the second round of the presidential election on July 4, Bronisław Komorowski, the Speaker of the Polish Sejm, and acting President, won with 53% against Jarosław Kaczyński.

³²⁷ Lech Kaczyński became President after that election, but died in a tragic airplane crash on April 11, 2010, on his way to Russia to commemorate the Katyn massacre of Polish officers in 1940.

8.3 Modelling the Elections

As Tables 8.1 and 8.2 illustrate, the electoral system in Poland is highly proportional, though the SLD gained a higher seat share than vote share in 1997 and 2001.

Tables A8.2a, b, c in Appendix 2 give the valences for three pure spatial mixed logit models (one for each election year) based on the estimated positions of the parties.³²⁸ We also estimated pure sociodemographic models and joint models, based on the spatial model and including sociodemographic variables. For the socio-demographic variables we chose age in years, regular monthly income, former communist party membership, and religiosity (believer vs. atheist or agnostic). This choice follows previous literature that identifies these demographics as important determinants of vote choice and party preference (Markowski 2006; Wade et al. 1995). The results of these hybrid models are not reported here, but can be found at Schofield et al. (2010b).

Table A8.3, also in the Appendix, gives the comparison of the log likelihoods for these models for 1997. Clearly the loglikelihoods for the joint models are superior to the pure spatial and sociodemographic models for all years. However, the AIC is superior for the pure spatial model in 2001. For all spatial models the β -coefficient is highly significant (at the 0.01 level). The high valence values are also significant in the pure spatial and joint models. Only a few of the sociodemographic variables are significant.

Table A8.2a shows that the estimates for the pure spatial model in 1997 were:

$$\begin{aligned} & (\lambda_{UPR}, \lambda_{UP}, \lambda_{ROP}, \lambda_{PSL}, \lambda_{UW}, \lambda_{SLD}, \lambda_{AWS}; \beta) \\ & = (-2.3, -0.56, 0.0, 0.07, 0.73, 1.4, 1.92; 1.74 \end{aligned}$$

The covariance matrix is:

$$\nabla_0 = \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix}.$$

Thus, the probability, ρ_{UPR} , that a voter chooses the lowest valence party, when all parties are at the joint electoral mean, is given by the model $\mathbb{M}(\boldsymbol{\lambda}, \beta)$ as

$$\begin{aligned} \rho_{UPR} & \simeq \frac{1}{1 + e^{1.92+2.3} + e^{1.4+2.3}} \\ & = \frac{1}{1 + 66 + 40} \simeq 0.01 \\ \text{Thus } 2\beta(1 - 2\rho_{UPR}) & = 2 \times 1.74 \times 0.98 = 3.41. \end{aligned}$$

³²⁸As before these tables give the AIC.

$$\begin{aligned}
\text{Thus } C_{UPR} &= (3.41) \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix} - I \\
&= \begin{bmatrix} 2.41 & 0.0 \\ 0.0 & 2.41 \end{bmatrix}, \\
\text{so } c &= 3.41 \times 2 = 6.82.
\end{aligned}$$

Similar results for the elections of 2001 and 2005 show divergence for the pure spatial model.

In 2001, we find $\beta = 1.482$, so $c \simeq 5.92$, and in 2005, $\beta = 1.548$, so $c \simeq 6.192$.

Computation, using the simulation program, showed the vote maximizing local equilibrium for 1997 to be the vector

$$\mathbf{z}_{1997}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & -0.47 & -0.11 & 1.01 & 0.04 & -1.18 & 2.14 & -0.12 \\ y & -0.39 & 1.61 & -0.07 & -0.24 & -0.59 & 0.18 & 1.64 \end{bmatrix},$$

as shown in Figure 8.2. Figures 8.4 and 8.6 give the equilibria in 2001 and 2005.³²⁹

Appendix 3 compares the estimated and equilibrium positions for the three elections. As indicated by the results on the convergence coefficients and the Hessians, all parties, in equilibrium, scatter away from the electoral mean. Note that in 1997, the two high valence parties, the AWS and the SLD, have equilibrium positions very close to the electoral mean. Similarly, in 2001 only the highest valence party, the SLD, and in 2005, only the highest valence party, the PIS, have equilibrium positions that are located at, or very close to, the electoral mean. The significant drop in the valence of the AWS between 1997 and 2001 should have forced it even further from the mean than the position that it did indeed adopt. A robust inference from these figures is that parties do not locate themselves at positions that maximize the vote shares, as estimated by the joint spatial model. We suggest that parties' positions are effectively decided by small activist groups whose preferred positions are adopted by the parties. For example, when the AWS fragmented in 2001, new parties like the PiS, SO,PO and LPR adopted positions in the upper right quadrant of the policy space. When the UW disappeared in 2005, its place was taken by the DEM, whose position was controlled by an activist faction that had controlled the UW. These observations are consistent with the hypothesis that the activist groups supporting the AWS and the UW fragmented in 2001, and this led to the creation of these new parties.

8.4 Concluding Remarks

As in Chapter 7, where we discussed the Canadian and Dutch polities, we can see the

³²⁹Note that a result of Schofield (2005) asserts that LNE generically exist. Because the Hessians have positive eigenvalues, the party preference correspondences are not convex valued, so no general argument can be used to assert existence of pure strategy Nash equilibria (PNE). If a PNE were to exist it would coincide with one of the LNE.

nature of bargaining over coalition governments in these three elections by constructing the “median lines” between pairs of parties that pivot between majority coalitions, as in Figures 8.7, 8.8, and 8.9. These medians bound a star shaped set known as the “heart”, that we have suggested indicates the set of possible coalition outcomes.

For example, note that the coalition government of AWS, and the small party, the UW, in 1997 can be represented by the upper right median in Figure 8.8.

The coalition of the SLD and the small party, the PSL, in 2001, can be represented by the median line on the lower left in Figure 8.9.

Finally, the complex negotiations involving the PiS, the PO, and the small party, the SO, in 2005 all refer to the the triangular heart bounded by these party positions in Figure 8.9. If we are correct in our inference that the break-up of the AWS activist group led to the creation of the smaller SO, PiS and LPR parties, we may infer that the the minority PiS government, supported by the SO and LPR provided policy benefits of some kind for the activist groups supporting these parties.³³⁰ It is interesting to note that according to the spatial model, the PiS could have located itself at the electoral mean, in which case it would have been a core party, in the sense of Laver and Schofield (1990). To do so however, it would have had to change its policy position by moving “south” on the policy axis.

These figures suggest that even small parties can hope to belong to government. It follows that activist groups supporting these parties can aspire to influence government policy. We hypothesize that such activist groups have little incentive to coalesce in a highly proportional electoral system. Indeed, some of these activist groups may have every incentive to fragment. The logic of such maneuvering would seem to involve both analysis of the stochastic model, in order to determine electoral response, coupled with coalition bargaining theory to make sense of the formation of government.

³³⁰We may refer to the logic of these choice as “hunting the heart.”

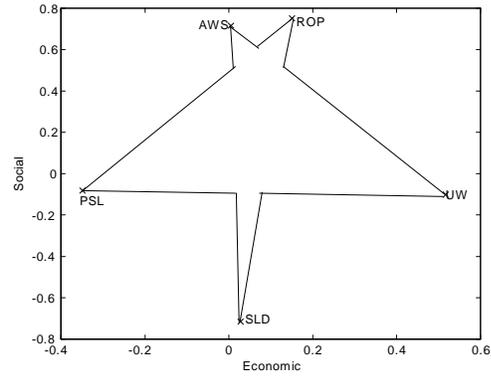


Figure 8.7: Estimate of the heart in 1997

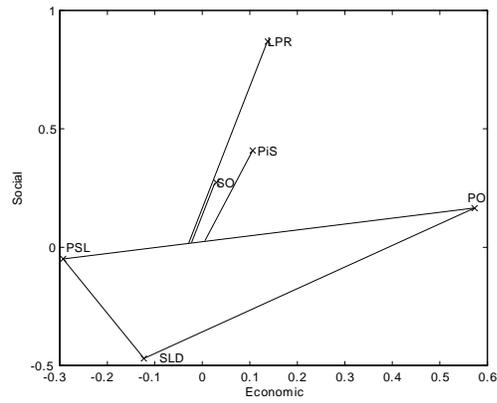


Figure 8.8: Estimate of the heart in 2001

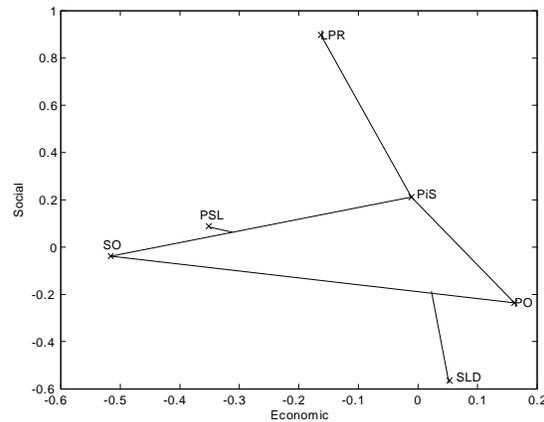


Figure 8.9: Estimate of the heart in 2005

8.5 Appendices

8.5.1 Appendix 1: Question Wording for the Survey and Factor Loadings

These question wordings are based on the 2001 PNES. We have also indicated any noteworthy differences in question wording for the other years.

Vote choice

“For which party or coalition candidate did you vote in the Sejm elections?”

The issue positions of voters

“A variety of solutions and policies aimed at solving the above mentioned issues are conceivable. On subsequent CARDS we present opposite solutions to each issue. Please read them carefully and tell me, where would you place your own opinions and stances. In doing so, please use the 11-point scale, where: 0 – means full acceptance of the statement (solution) proposed on the left side of the CARD, 10 – means full acceptance of the statement (solution) – on the right side, 5 – means that you favor solutions lying in between both opposite ones, and the remaining scale points indicate different levels of acceptance of each of those opposite statements.”

Economic dimension

1) Privatization

00) State owned enterprises should be privatized quickly; the inefficient ones should be liquidated

10) Enterprises should remain state property and their modernization financed from the state budget

2) Unemployment

00) Fighting unemployment should be an absolute policy priority of the government, even if it leads to higher spending and inflation

10) Many other - more important than unemployment - issues should be governmental priority, i.e. balanced budget, fighting inflation, etc.

3) Income tax

00) The higher one's income, the higher the percentage it should be taxed

10) Everyone should be taxed the same percentage of his/her income, irrespectively of the

income level

4) Subsidies to agriculture

00) Agriculture should receive subsidies from the budget, otherwise many farms will go bankrupt

10) Agriculture should not receive subsidies from the budget, because no single social group should live at the expense of society

5) State vs. individual responsibility for social welfare

00) The state should grant its citizens the widest possible social safety net, i.e. health care, social welfare, free education, etc.

10) Citizens should take care and responsibility of their health, self-help, children's education, etc on their own

Social values dimension

6) Church and state

00) The Church should be completely separated from the state and should not interfere with politics

10) The Church should exert influence over politics and state policies

7) Decommunization

00) Individuals occupying high positions under communism ('nomenclatura') should now be forbidden to perform responsible state functions

10) These individuals ('nomenclatura') should have the same rights as all others in competing for public offices and state positions

8) Abortion

00) Women should have abortion right regardless of situation

10) Abortion should not be allowed regardless of situation

We reversed the coding on Privatization and Decommunization so that (00) could be regarded as a more left wing, or pro-communist response.

We used factor analysis to obtain the positions of voters on the economic and social values dimension.

Sociodemographics

For the sociodemographic variables we used the responses to the following questions.

1) Income

“What was your average monthly income last year?”

The measure is recorded in Polish zloty.

2) Age

“Your year of birth. . .”

We subtracted respondent’s year of birth from the year of election to obtain respondent’s age in years.

3) Communist party membership

“Did you ever happen to be a member of PZRP, ZSL, or SD?”

1) yes

2) no

The 2005 survey asked about membership in PZRP only and not in the other two communist regime satellite parties. The 1997 survey asked about membership in each of the ex-communist parties separately. We only used the information about former PZRP membership because this was the main communist party whereas the others were satellites that cooperated with the regime.

4) Religion

“How would you describe your attitude towards religion? Are you:

1) atheist

2) agnostic

3) believer

4) devout believer.”

We collapsed the first two and last two categories to obtain a dichotomous measure of 1=religious, 0=not religious.

8.5.2 Appendix 2: Tables for Pure Spatial Models

Table A8.1a. Factor loadings from the Polish National Election Survey, 1997.

| Question | 1.Economic | 2.Social |
|--------------------|--------------|--------------|
| 1.Privatization | 0.45 | 0.003 |
| 2.Unemployment | 0.701 | -0.074 |
| 3.Income Tax | 0.529 | -0.04 |
| 4. Subsidies | 0.650 | -0.17 |
| 5.Social Welfare | 0.763 | 0.021 |
| 6.Church and State | 0.069 | 0.799 |
| 7.Decommunization | -0.010 | 0.523 |
| 8.Abortion | 0.14 | 0.802 |
| Eigenvalues | 2.00 | 1.59 |

Table A8.1b. Factor loadings from the Polish National Election Survey, 2001.

| Question | 1.Economic | 2.Social |
|--------------------|--------------|--------------|
| 1.Privatization | 0.537 | 0.266 |
| 2.Unemployment | 0.656 | -0.133 |
| 3.Income Tax | 0.555 | -0.225 |
| 4. Subsidies | 0.695 | -0.166 |
| 5.Social Welfare | 0.737 | -0.176 |
| 6.Church and State | 0.31 | 0.538 |
| 7.Decommunization | 0.186 | 0.795 |
| Eigenvalues | 2,185 | 1.119 |

Table A8.1c Factor loadings from the Polish National Election Survey, 2005.

| Question | 1.Economic | 2.Social |
|--------------------|--------------|--------------|
| 1.Privatization | 0.528 | -0.069 |
| 2.Unemployment | 0.691 | 0.032 |
| 3.Income Tax | 0.584 | -0.138 |
| 4. Subsidies | 0.612 | -0.301 |
| 5.Social Welfare | 0.742 | -0.033 |
| 6.Church and State | 0.281 | 0.746 |
| 8.Abortion | 0.117 | 0.801 |
| Eigenvalues | 2.115 | 1.315 |

Table A8.2a. Poland 1997 Pure Spatial Model (Base=ROP)

| Variable | Party | Coefficient | Std.Error | t-value |
|-------------------|---------|-------------|-----------|---------|
| β | | 1.739*** | 0.116 | 15.04 |
| λ valence | UP | -0.558 | 0.262 | 2.13 |
| | UW | 0.731*** | 0.199 | 3.66 |
| | AWS | 1.921*** | 0.174 | 11.046 |
| | SLD | 1.419*** | 0.19 | 7.47 |
| | PSL | 0.073 | 0.222 | 0.328 |
| | UPR | -2.348*** | 0.501 | 4.685 |
| $n = 660$ | LL=-855 | AIC=1725 | | |

Table A8.2b. Poland 2001 Pure Spatial Model (Base=LPR)

| Variable | Party | Coefficient | Std.Error | t-value |
|-------------------|----------|-------------|-----------|---------|
| β | | 1.48*** | 0.118 | 12.61 |
| λ valence | SLD | 1.99*** | 0.174 | 11.41 |
| | AWS | -0.37 | 0.248 | 1.49 |
| | UW | -1.00*** | 0.308 | 3.24 |
| | SO | 0.41* | 0.202 | 2.04 |
| | PIS | 0.43* | 0.200 | 2.16 |
| | PSL | 0.09 | 0.218 | 0.41 |
| | PO | 0.80*** | 0.192 | 4.19 |
| $n = 657$ | LL=-1004 | AIC=2024 | | |

Table A8.2c Poland 2005 Pure Spatial Model (Base=LPR)

| | Party | Coefficient | Std.Error | t-value |
|-------------------|----------|-------------|-----------|---------|
| β | | 1.55*** | 0.115 | 13.41 |
| λ valence | SO | 0.82*** | 0.161 | 5.09 |
| | DEM | -1.04*** | 0.260 | 4.01 |
| | SDP | -0.34 | 0.205 | 1.66 |
| | PIS | 1.95*** | 0.146 | 13.40 |
| | SLD | 0.47** | 0.172 | 2.72 |
| | PO | 1.50*** | 0.152 | 9.88 |
| | PSL | -0.17 | 0.196 | 0.85 |
| $n=1095$ | LL=-1766 | AIC=3549 | | |

Table A8.3. Comparisons of LL for Poland in 1997

| | | M_2 | | |
|-------|------------|-------|---------|------------|
| | | Joint | Spatial | Socio-Dem. |
| M_1 | Joint | na | 34 | 629 |
| | Spatial | -34 | na | 595 |
| | Socio-Dem. | -595 | -629 | na |

8.5.3 Appendix 3: Computation of Equilibria for Poland

Using the balance theorem, we can compare \mathbf{z}^* and \mathbf{z}^{el} for various years as follows.

$$\mathbf{z}_{1997}^* - \mathbf{z}_{1997}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.03 & -0.35 & 0.52 & 0.005 & 0.29 & 1.81 & 0.15 \\ y & -0.72 & -0.35 & -0.1 & 0.72 & -0.15 & -0.15 & 0.75 \end{bmatrix} - \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & -0.47 & -0.11 & 1.01 & 0.04 & -1.18 & 2.14 & -0.12 \\ y & -0.39 & 1.61 & -0.07 & -0.24 & -0.59 & 0.18 & 1.64 \end{bmatrix} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.50 & -0.22 & -0.49 & -0.035 & 1.47 & -0.33 & 0.15 \\ y & -0.33 & -1.96 & -0.03 & 0.48 & 0.44 & -0.33 & -0.89 \end{bmatrix}$$

Now $\sigma = 1.41$, so

$$\frac{1}{2\beta\sigma} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}) = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.35 & -0.16 & -0.34 & -0.02 & 1.04 & -0.23 & 0.10 \\ y & -0.23 & -1.39 & -0.02 & 0.34 & 0.31 & -0.23 & -0.63 \end{bmatrix}$$

is a dimensionless estimate of activist influence. These estimated influences are significant for the PSL and UP, both small parties. The electoral mean in 1997 is (0.09, 0.09) so the closest equilibrium position to this is that of the AWS.

Similarly

$$\mathbf{z}_{2001}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.29 & 0.25 & 1.97 & 1.70 & -0.65 & -0.26 & 0.69 & -0.48 \\ y & -0.36 & 1.25 & -0.98 & -0.84 & -0.96 & 1.055 & 0.15 & 0.99 \end{bmatrix}.$$

In 2001, the electoral mean is (0.08, -0.04) so the SLD equilibrium is close to the mean. We obtain

$$\mathbf{z}_{2001}^* - \mathbf{z}_{2001}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.12 & -0.29 & 1.16 & 0.66 & 0.03 & 0.11 & 0.57 & 0.14 \\ y & -0.47 & -0.05 & 0.002 & 0.83 & 0.27 & 0.41 & 0.17 & 0.87 \end{bmatrix} - \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.29 & 0.25 & 1.97 & 1.70 & -0.65 & -0.26 & 0.69 & -0.48 \\ y & -0.36 & 1.25 & -0.98 & -0.84 & -0.96 & 1.06 & 0.15 & 0.99 \end{bmatrix} = \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.17 & -0.04 & -0.81 & -1.04 & -0.68 & 0.37 & -0.12 & 0.62 \\ y & -0.11 & -1.3 & 0.98 & 1.67 & 1.23 & -0.65 & 0.02 & -0.12 \end{bmatrix}$$

$$\mathbf{z}_{2005}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.80 & 1.13 & -0.30 & -1.00 & -0.26 & -0.31 & 0.27 & -0.22 \\ y & -0.57 & -0.03 & 2.00 & -0.47 & 0.85 & -0.42 & -0.42 & 1.42 \end{bmatrix}.$$

The electoral mean in 2005 is (-0.04,-0.02) so the equilibrium position of the PiS is very close to the mean. We obtain

$$\mathbf{z}_{2005}^* - \mathbf{z}_{2005}^{el} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.05 & -0.35 & 0.58 & 0.10 & -0.52 & -0.01 & 0.16 & -0.16 \\ y & -0.56 & 0.09 & -0.54 & -0.61 & -0.04 & 0.20 & -0.23 & 0.90 \end{bmatrix} - \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.80 & 1.13 & -0.30 & -1.00 & -0.26 & -0.31 & 0.27 & -0.22 \\ y & -0.57 & -0.03 & 2.00 & -0.47 & 0.85 & -0.42 & -0.42 & 1.42 \end{bmatrix} = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.85 & -1.48 & 0.88 & 1.10 & -0.26 & 0.30 & -0.11 & 0.06 \\ y & 0.01 & 0.12 & -2.54 & -0.14 & -0.89 & -0.62 & 0.19 & -0.52 \end{bmatrix}$$

These estimates appear to be particularly significant for the AWS in 2001 and the PSL in 2005, both small, radical right wing parties.

Chapter 9

Elections in Russia and the Caucasus

9.1 The Election of 2007 in Russia

The results of this section on Russia suggest that the influence of activists was relatively insignificant in this election, with electoral perception of Putin the most important component of the election.³³¹

The election results in terms of votes and seats for the December 2007 election are given in Table 9.1. We used a survey conducted by VCIOM (Russian Public Opinion Research Center) in May 2007. Some 1588 adult citizens were interviewed in 46 Russian regions, out of a total of 83. Appendix 1 to this chapter gives the question wordings, while Table 9.2 gives the results of the approval ratings for various political institutions.

Table 9.1 Party Votes and seats

| Party | Votes (1000) | Vote % | Seats | Seat % |
|-----------------------------|--------------|--------|-------|--------|
| United Russia (ER) | 44,714 | 64.3 | 315 | 70 |
| Communist Party (CPRF) | 8,046 | 11.57 | 57 | 12.7 |
| Lib Dem Party Russia (LDPR) | 5,660 | 8.14 | 40 | 8.9 |
| Fair Russia (SR) | 5,383 | 7.74 | 38 | 8.4 |
| Agrarian Party (ARP) | 1,600 | 2.30 | - | - |
| Russian Dem Party (Yabloko) | 1,108 | 1.59 | - | - |
| Civilian Power | 733 | 1.11 | - | - |
| Others | 912 | 2.2 | - | - |

About 64% of the respondents indicated that they would vote for some party if the election were held at the time of the survey. Table 9.3 gives the sample vote and actual vote shares for eleven parties competing in the election. The distribution of vote in the sample is similar to the distribution of actual vote in the December election.

³³¹This section on Russia is written in collaboration with Alexei Zakharov.

We tested a voting model focusing on the vote choice of just four parties. The first party is the pro-Kremlin United Russia party (ER). The party's political platform is vaguely nationalistic; in recent election campaigns, the party mainly took credit for the country's recent economic and political revival. It is commonly believed that the United Russia received unfair advantage due to the lopsided coverage on the state television channels and political pressure. The party also enjoyed an open endorsement by the then President Vladimir Putin, and it is widely believed that some form of election fraud had taken place. The support for the pro-Kremlin United Russia actually declined from 45% in the May sample to 40% in the December election. According to some sources, the decline may have been due to the popular dissatisfaction with the rising food prices in the third and fourth quarters of 2007.

Table 9.2 Approval of Institutions (%)

| | President | Govt | Prime Min. | State Duma | Fed. Coun |
|------------------|-----------|-------|------------|------------|-----------|
| 0 (disapprove) | 12.72 | 42.54 | 29.88 | 54.24 | 39.27 |
| 0.5 (don't know) | 8.55 | 21.66 | 26.48 | 22.49 | 34.83 |
| 1 (approve) | 78.73 | 35.80 | 43.64 | 23.26 | 25.90 |

We tested a voting model focusing on the vote choice of just four parties. The first party is the pro-Kremlin United Russia party (ER). The party's political platform is vaguely nationalistic; in recent election campaigns, the party mainly took credit for the country's recent economic and political revival. It is commonly believed that the United Russia received unfair advantage due to the lopsided coverage on the state television channels and political pressure. The party also enjoyed an open endorsement by the then President Vladimir Putin, and it is widely believed that some form of election fraud had taken place. The support for the pro-Kremlin United Russia actually declined from 45% in the May sample to 40% in the December election. According to some sources, the decline may have been due to the popular dissatisfaction with the rising food prices in the third and fourth quarters of 2007.

Most of the rest of the vote, both in the elections and in the sample, went to the three runner-up parties. Vladimir Zhirinovskiy's Liberal Democratic Party (LDPR) whose rhetoric was aggressive and nationalistic. However, its voting record in the Duma speaks of the party's loyalty toward Russia's presidents (Yeltsin, then Putin).

The key points of the ideology of the Communist Party (CPRF) is Soviet nostalgia and xenophobia. Both the Communist Party and the United Russia sought, and obtained, the support of the Russian Orthodox Church. The Communist Party traditionally targeted elderly (and poor) voters. The Fair Russia (SR) targets the same electorate (and with the same rhetoric) as the CPRF, but is usually seen as more loyal to the Kremlin.

For sociodemographic variables, we chose gender, age, education, income, and size of township. Some 54.7% of the respondents were female, 45.3% male. The age of the respondents varied from 18 to 92 full years, with the mean of 44.7 years. Rural residents composed 26.67% of the sample. The mean self-reported education on 0 to 1 scale was 0.56; for income, the figure was also 0.56.

We assumed that the valence that a voter assigns to a party may depend on the voter's

approval of various federal government institutions — the Presidency, State Duma, Federation Council, the Prime Minister, and the Cabinet. Only a small part of the population (12%) disapproved of the presidency, and an even smaller part (8%) was undecided on the issue. For other institutions, the disapproval rates are much higher. The share of the respondents who answered “don’t know” is also greater, suggesting that the attitudes are weaker.

The respondent’s ideological preferences were measured by two survey questions. In the first question, the respondent was read a list of 40 words. After each item, (s)he was asked to identify whether (s)he felt positive toward the concept it represented. The second question was identical, except that the negative feelings were recorded (see Table A9.1). For each concept, we constructed a variable that took the value of -1 if the respondent’s feeling was negative, +1 if the feeling was positive, and 0 otherwise. We constructed a two-dimensional ideological space and the positions of the respondents.

Table 9.3 Factor averages across the supporters of eleven parties

| Party | Sample % | Vote % | Factor 1 | Factor 2 |
|------------------------------|----------|--------|----------|----------|
| Agrarian Party (AGR) | 0.63 | 1.47 | -0.16 | -0.92 |
| United Russia (ER) | 45.72 | 40.96 | 0.05 | 0.30 |
| Communist Party (CPRF) | 7.12 | 7.37 | -0.76 | -1.59 |
| Liberal Democrats(LDPR) | 4.22 | 5.13 | -0.53 | 0.69 |
| Patriots of Russia | 0.25 | 0.57 | 0.22 | -0.10 |
| Fair Russia (SR) | 6.17 | 4.93 | -0.60 | -0.87 |
| Civilian Power (Free Russia) | 0.69 | 0.67 | -0.43 | 0.31 |
| Union of Right Forces (SPS) | 0.57 | 0.61 | -0.47 | 1.14 |
| Yabloko | 0.76 | 1.01 | -0.56 | 0.20 |
| Russian Republican Party | 0.25 | | -0.16 | 1.36 |
| Democratic Party of Russia | 0.19 | 0.08 | -0.25 | 0.75 |
| “Will not vote” | 17.88 | | 0.23 | -0.06 |
| “Can’t answer” | 14.92 | | 0.43 | -0.04 |
| Did not vote | | 36.3 | | |

Each factor loading is proportional to the correlation between the values of the ideological factor and the feelings toward the concept. To use the terminology of Basinger and Hartman (2006), the concepts with high absolute factor loadings are “ideologically integrated”. (See Table A.9.1 in Appendix 1 to this chapter.)

The first ideological factor (or the position along the first dimension) can be interpreted as the degree of a voter’s general (dis)satisfaction. High values of the first factor correspond to negative feelings toward “justice” and “labor”, and, to a lesser extent, “order”, “state”, “stability” and “equality”. Also, those with high values of the first axis also tend to feel neutral toward “order”, “elite”, “West”, and “non-Russians”. Low val-

³³¹In a similar study of American Presidential voting, Ansolabehere, Snyder, and Rodden (2006) have shown that aggregation of a large number of survey items eliminates measurement error and reveals issue preferences.

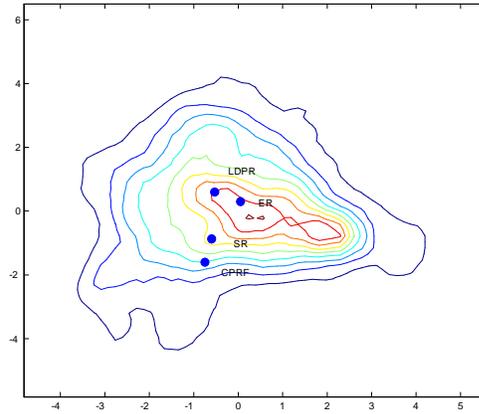


Figure 9.1: Party positions in Russia

ues of the first factor correspond to positive attitudes to “order”, “justice”, “stability” and “equality”, and negative attitudes toward “elite”, “West”, and “non-Russians”.

The second factor can be called the voter’s degree of economic liberalism. High values correspond to positive feelings to “freedom”, “business”, “capitalism”, “well-being”, “success”, and “progress”, and to negative feelings toward “communism”, “socialism”, “USSR”, and related concepts. Figure 9.1 presents the estimated voter distribution and party positions.

The supporters of different parties tend to have different ideological preferences. We took the mean of the positions of supporters of each party as an estimate of the parties position. As figure 1 suggests, the supporters of United Russia (ER) have a centrist position along both dimensions – partly due to the fact that they constitute 45% of the sample, and the sample means are zero for each ideological factor. The supporters of the Communist Party (CPRF) and Fair Russia (SR) tend to have similar ideological profiles, with low values on the second factor. The LDPR supporters tend to have low values along the first ideological factor (suggesting dissatisfaction), but positive values along the second factor (suggesting economic liberalism). The estimated positions of the four major parties were

$$\mathbf{z}^* = \begin{bmatrix} \text{Party} & ER & CPRF & LRPR & SR \\ x & +0.2 & -0.6 & +0.5 & -1.0 \\ y & +0.2 & -1.6 & -0.5 & -0.5 \end{bmatrix}.$$

9.1.1 Equilibrium under the Logit Model

As in previous chapters, we denote by P the set of parties (CPRF (Communist Party), ER (United Russia), SR (Fair Russia), and LDPR (Liberal Democrats)). The set of respondents is denoted by N . Each voter i is characterized by the vector η_i of observable individual-specific nonpolicy factors, and by the observable position $x_i = (x_{i1}, x_{i2})$ on the two ideological dimensions. Each party j is characterized by the ideological position $z_j = (z_{j1}, z_{j2})$.

Suppose that the utility that voter i attributes to party j is given as in the Appendix 4 to Chapter 5, so the estimated probability that i votes for party j at the vector \mathbf{z} of party positions is denoted $\rho_{ij}(\mathbf{z})$. Assuming that voter i chooses party d_i , then the likelihood of the model is

$$LikeL = \sum_{i \in I} \rho_{id_i}(\mathbf{z}). \quad (9.1)$$

The estimation problem is to find the values of the various coefficients that maximize $LikeL$.

Ascertaining the ideological positions of political parties as they are perceived by the voters, is a methodological problem. In this book we have estimated party positions in various ways. Here we adopt the same procedure as in Chapter 6, 7 and 8 and estimate party positions by taking the average positions of respondents. Thus

$$z_{jk} = \sum_{i|d_i=j} x_{ik} \quad (9.2)$$

for $k = 1, 2$.

The findings show overwhelming support for the hypotheses that both policy and valence affects voting. Table A9.2 gives the estimation results for the pure spatial model.

Sociodemographic parameters, approval, and efficacy are also jointly significant. These results are presented in Schofield and Zakharov (2010). The joint model, with sociodemographic variables and voter perceptions, performs significantly better than the pure spatial model. The Bayes factor (the difference in loglikelihoods) is very significant, and equal to of $797 - 694 = +103$.

To determine the theoretical equilibrium for the pure spatial model, we proceed as follows.

The lowest valence party is SR with $\lambda_{SR} = -0.4$. Now $\lambda_{ER} = 0$, $\lambda_{LDPR} = 0.153$, $\lambda_{CPRF} = 1.971$. Following the results of the formal model, given in Appendix 4 of Chapter 5, we find

$$\begin{aligned} \rho_{SR} &= [1 + \sum_{k \neq SR} [\exp(\lambda_k - \lambda_{SR})]]^{-1} \\ &= \frac{1}{1 + e^{0.4} + e^{0.15+0.4} + e^{1.97+0.4}} \\ &\simeq 0.1. \end{aligned}$$

Now the electoral covariance matrix is $\nabla_0 = \begin{bmatrix} 2.95 & 0.13 \\ 0.13 & 2.95 \end{bmatrix}$, so, with $\beta = 0.181$,

we obtain:

$$\begin{aligned}
 C_{SR} &= 2\beta(1 - 2\rho_1)\nabla_0 - I \\
 &= 2 \times 0.181 \times 0.8 \times \begin{bmatrix} 2.95 & 0.13 \\ 0.13 & 2.95 \end{bmatrix} - I \\
 &= \begin{bmatrix} 0.85 & 0.03 \\ 0.03 & 0.85 \end{bmatrix} - I. \\
 c &= 1.70
 \end{aligned}$$

The eigenvalues are both negative, and the joint mean should be a LNE. The coefficient c is less than the crucial value of 2.0. Simulation of this model found that the joint mean was an LNE for this model.

We also simulated a local Nash equilibrium for the joint spatial voting model, as in figure 9.2. This LNE was given by

$$\mathbf{z}^{el} = \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.0 & -0.6 & +0.0 & +0.0 \\ y & +0.0 & -1.0 & +1.0 & -1.0 \end{bmatrix}.$$

The computed equilibrium vector is different both from the joint mean and from the observed positions. Using the balance theorem, we infer that

$$\begin{aligned}
 \mathbf{z}^* - \mathbf{z}^{el} &= \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.2 & -0.6 & +0.5 & -1.0 \\ y & +0.2 & -1.6 & -0.5 & -0.5 \end{bmatrix} \\
 &\quad - \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.0 & -0.6 & +0.0 & +0.0 \\ y & +0.0 & -1.0 & +1.0 & -1.0 \end{bmatrix} \\
 &= \begin{bmatrix} \textit{Party} & \textit{ER} & \textit{CPRF} & \textit{LRPR} & \textit{SR} \\ x & +0.2 & +0.0 & +0.5 & -1.0 \\ y & +0.2 & -0.6 & -1.5 & +0.5 \end{bmatrix} \\
 &= \frac{1}{2\beta} \left[\frac{d\mu_{ER}}{dz_{ER}}, \frac{d\mu_{CPRF}}{dz_{CPRF}}, \frac{d\mu_{LDPR}}{dz_{LDPR}}, \frac{d\mu_{SR}}{dz_{SR}} \right].
 \end{aligned}$$

This last expression is the estimated gradient of activist forces on these four parties.

The approval of the Prime Minister and Cabinet did not have any significant effect on the vote. Approval of the State Duma had a small, negative and marginally significant effect on the LDPR vote; for other parties, that effect was not significant. The term for the approval of the upper house of the Russia parliament, the Federation Council, was significant only for the Fair Russia party. It was also positive, as the party leader, Segei Mironov, is also the head of that legislative body.

The magnitude of the ‘Putin effect’ on the level of support for the United Russia can be estimated by setting the approval scores equal to zero for all respondents, then re-estimating the probabilities of voting according to the four-party model with the full

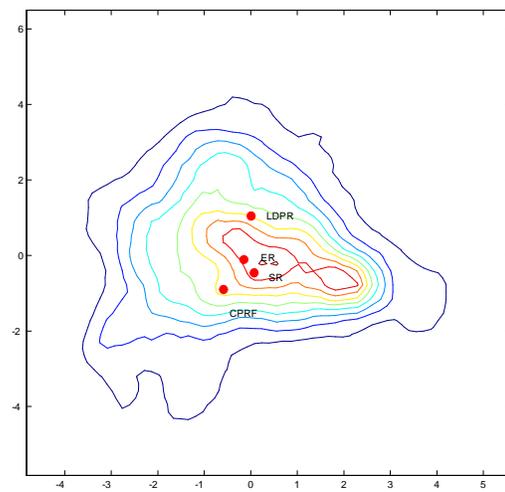


Figure 9.2: Equilibrium Positions in Russia under the joint model

set of explanatory variables. The expected voteshares for each party by can be obtained by averaging the estimated probabilities for each party across all respondents in the four-party sample. (See Table A9.3 in Appendix 1).

One can see that the high approval of President Putin affected the support for the United Russia to a very large extent. In the original four-party subsample, 72% of the votes went to that party. If the approval for Putin uniformly decreased to 0.5 (equivalent to a “don’t know” answer to the question whether the respondent approved of Putin), the support for the United Russia would decline to 61%. If everyone completely disapproved of Putin, United Russia would receive only 43% of the vote that went to the four parties, or only 27% of the popular vote, if we assume that the share of the abstaining or undecided voters, as well as the vote share of the small parties, remained constant. The main beneficiaries of the decrease in approval would be the Communist party and LDPR, with more modest gains by SR.

Thus this work corroborates what has been common knowledge: the popularity of the United Russia was due to the high approval rating of Vladimir Putin, and to the party’s perceived connection to the popular president.

The respondents who supported parties other than the United Russia also had lower internal efficacy scores. One can see that an increase in one’s efficacy score will increase her probability of supporting United Russia, at the expense of all other parties for the four-party model, where all three efficacy terms are negative and significant. For the seven-party model, the efficacy terms for the three small parties are not significant.

Education was found to have no effect on the political preferences of the voters. For all models, the education terms were individually insignificant, with the exception for SPS, where it was significant at 10% level. Education was the only significant individual nonpolicy factor found to affect the voter’s latent utility for SPS. A voter with a higher education is more likely to support SPS, at the expense of all other parties.

The income effect is significant only for the LDPR. A voter with a lower perceived income will be more likely to support LDPR. The effect is quite large in magnitude. An decrease in self-reported income by one level (from “medium” to “high”, for example) will have approximately the same effect on the voter’s likelihood to support LDPR as a change in approval from maximum to minimum.

Gender was the one of the most important factors that affected party preferences. Out of 67 LDPR supporters in the sample, 55 were males. The United Russia had slightly more female supporters (414 out of 726), while the Communist party and the SR has an equal number of male and female supporters. When controlling for all other factors, male voters are more likely to support the Communist Party and especially LDPR at the expense of the SR and the United Russia. For the extended dataset including the supporters of the three small parties, female voters were more likely to support Yabloko and equally likely to support either SPS or the Agrarian party.

Age was also found to have a significant effect for almost all parties. The effect

³³¹ Conveniently, the expected voteshares for the unaltered subsample are equal to the actual voteshares in that subsample. This is a very nice property of Logit models of multinomial choice.

(relative to the United Russia) was largest for the CPRF. Indeed, the average age of CPRF supporters was 59. This finding suggests that the factors that make CPRF more popular among the older population are not captured by either ideological preferences, the approval of government, or internal efficacy. The high age of CPRF supporters also explains the gender bias: in 2006, the average life expectancy of Russian males was only 60.3 years compared for 73.2 years for females. The age effect for the SR was similar (with the average age of the supporters being 54.9 years). For LDPR, the age effect was negative and significant; at the average age of 36.8 the LDPR electorate was the youngest from among the seven parties in the large sample. The age effect for SPS was positive and marginally significant.

The final sociodemographic factor that we studied was whether the respondent lived in a rural or urban area. There were no rural residents among Yabloko supporters and only one among the SPS. The proportion of rural residents among the CPRF, United Russia, SR supporters, and the general population, was almost equal (30%, 28.5%, 29.5%, and 30%, respectively). As a result, rural coefficients for neither CPRF or SR were significant. This corroborates the claim that the Communist Party lost the support of rural voters (Wegren and Konitzer, 2006). The only party to have a significantly smaller proportion of rural voters was the LDPR (23.8%).

Tables A.9.4. and A.9.5. examine the effects of ideology on the voter's probability of supporting each of the four major parties for the four-party model. The analysis suggests that poorly educated, low-income, young females who approve of the federal government and have centrist ideology, are most likely to support United Russia, with probability 96% according to the model. The most likely supporters of LDPR are young urban men with above average income, who disapprove of the government, have low efficacy scores, profess liberal economic ideology and are dissatisfied. The most likely supporters of CPRF and SR are dissatisfied elderly males with below-average income who disapprove of the government, have low efficacy scores, and have anti-market economic views. A voter belonging to this group is expected to support CPRF with a probability of 48% and SR with a probability of 22%.

9.1.2 Discussion

A number of other model specifications were tried. First, we tested the hypothesis that certain factors — such as the willingness to discuss politics, education, or internal efficacy — can affect the importance of ideology in an individual's evaluation of a political party. The importance of ideology was found to be unaffected by any of these variables, in contrast to some previous studies.

Second, we considered the possibility of regional economic conditions affecting the vote. The survey did not contain questions on retrospective self-evaluation of economic

³³¹Mishler and Rose (2007) found that age and generational differences were significant factors that determined an individual's support of the current political regime;

³³¹Zakharov and Fantazzini (2008) found that education significantly increased the weight of ideology for UK and Netherlands. See also the work by Fantazzini and Zakharov (2011).

conditions, either in the short or long term. As a substitute we used two measures of actual economic conditions: the absolute level of mean disposable income, and the percentage change in that level from 2000 to 2006. We found two statistically significant effects. First, the support for the Communist party was higher in the regions with lower economic growth. Second, the support for Fair Russia is higher in the regions with the higher absolute income. However, the magnitude of either effect is small compared to the effects of either approval or internal efficacy.

There were several reasons why we used only the first two ideological factors. First, the eigenvalues for the first two factors were much higher than for the subsequent factors. Second, it was not possible to give a transparent interpretation to the subsequent factors. Finally, the inclusion of additional factors did not improve the fit of the model. The log likelihood was 768.5 for zero factors, 760 for 1 factor, 721 for 2 factors, 714 for three factors, and 712 for four factors.

The work does not control for several other factors that affected voter preferences. Most importantly, the parties' access to local mass media outlets, and the degree to which the law is selectively applied in favor of United Russia, vary across regions; such regional factors are not captured.

Certainly, neither media bias (White, Oates, and MacAllister, 2001) nor vote-rigging (Myagkov, Ordeshook, Shakin, 2005), can be overlooked as factors that contributed to the success of United Russia at the December, 2007 election. However, this consideration does not alter this chapter's key message. The analysis here shows that the principal role was played by the high approval rating of President Putin. Although this work does not examine the origins of Putin's popularity, most accounts, scholarly or otherwise, suggest that the country's economic performance was its primary source.

9.1.3 Concluding Remarks on the Russian Election

This section has attempted to apply a formal model of elections as a contribution to the growing literature on quantitative voter research on newly democratic countries such as Russia.³³² We show here that such empirical models can be interpreted in terms of a formal stochastic model. The analysis shows that any centripetal tendency towards an electoral center is relatively weak. Moreover, perceptions of voters about the quality of institutions and leaders plays a significant role in the electoral outcome. Indeed, the electoral approval of President Putin tended to be the single most important factor affecting the voter's choice in favor of United Russia.³³³

³³²See Fidrmuc (2000, a,b), Hesli and Bashkirova (2001), Mishler and Willerton (2003), Colton and Hale (2008).

³³³Putin's popularity has been sustained for a number of years. See Andrew Harding, "Why is Putin Popular?", BBC News, (8 March, 2000).

<<http://news.bbc.co.uk/1/hi/world/europe/669247.stm>>.

9.2 Georgian Politics and the Presidential Election 2008

The Caucasus is a land of many nationalities, languages and ethnic antagonisms.³³⁴ These deep social divisions shaped the de-facto and de-jure frontiers of the emerging independent states of the region immediately after the dissolution of Soviet Union. The sharpest and the most violent division was the Nagorno-Karabakh separatist war between Armenia and Azerbaijan, which lasted from 1988 to 1994 and cost many hundreds of thousands of casualties. Other violent military conflicts were triggered in Georgia, where Abkhaz and Ossetia separatism conflicted with the Georgian National Independence Movement.

Nation building and territorial conflicts were only part of the complicated political agenda of the region. Liberation from the Soviet rule induced a deep institutional shock that encompassed all spheres of the political system. Countries of the region had to reform almost all aspects of social activity as the Soviet model of social arrangement collapsed. As the crisis was systemic and the new arrangements could not evolve from the old one, it required the creation of a new paradigm. One was provided by the logic of neoliberal globalization and "democratization".

Besides the challenges of nation building, and the transformation of the political and economic systems, the societies of the region experienced a culture shock. All aspects of culture, including knowledge and symbols, patterns and norms of social arrangement, values and perceptions started to change dramatically. A majoritarian democracy, with political competition through free multiparty elections, was considered to be the main institution through which all these controversies could be transformed into governance.

Given the political agenda, elections in Georgia were not simply a matter of elite competition as an instrument of governmental policy change. Instead elections were required to legitimate the shift of power and to stabilize mass beliefs.

From the time of Perestroika to the present, Georgia has experienced three major changes of government, each of which was preceded by mass mobilization and unrest.

The first was the shift of power from the Communist party to the Round Table - Free Georgia block (headed by Gamsakhurdia) in 1990.

The second was the shift of power from Gamsakhurdia to Eduard Shevardnadze, through the interim government in 1992.³³⁵ After the first post-Soviet Georgian constitution established a presidential democratic republic, Shevardnadze was elected as a president in November 1995, with 70% of the vote. He won a second term in April 2000.

In 2003 Shevardnadze resigned under the pressure of mass protests, and in the third shift of the November 2003 "Rose Revolution" Mikheil Saakashvili, leader of the United National Movement Party, took 96% of the vote, becoming president on 25 January 2004.

Each of these transfers of power was radical in a sense that it changed not only the ruling elite, but also the dominant trend of political development.

³³⁴This section on Georgia is written in collaboration with Marina Muskhelishvili and JeeSeong Jeon..

³³⁵Shevardnadze had been baptized into the Georgian orthodox church in 1991.

National liberation stances were dominant after the politics of Glasnost and Perestroika allowed for the political involvement of the population. These stances dominated the Supreme Council elections of 1990, where Gamsakhurdia defeated the Communist Party. In 1991, Gamsakhurdia declared independence for Georgia, but he failed, however, to incorporate the agenda of liberal and democratic transformation and to gain support from the ethnic minorities as well as from the democratic opposition.

As a result, the regime was confronted with a new wave of protests. In January 1992, a coup d'état forced Gamsakhurdia to flee from Georgia, and Shevardnadze was invited back to the country from Moscow, in order to halt the collapse into total civil war. Shevardnadze was appointed acting chairman of the Georgian State Council in March 1992, and was elected as the head of state in the first post-soviet multiparty elections.

By late 1993, struggles over issues of Abkhazian and Ossetian separatism developed into a fully-fledged civil war. In 1993, Georgian troops were defeated in their attempt to restore control over the breakaway regions, "Ethnic cleansing" caused 200,000 Georgians to flee from the Abkhaz and Tskhinvali territories. By 1995 the period of civil war was over.

The constitution of 1995, as well as the basic economic reforms of 1994-1996 (including the introduction of a national currency, privatization, and structural adjustment in line with the Washington consensus) together established the fundamental framework for social, political and economic activities. However, there remained a serious gap between formal arrangements and informal practices.

Despite the declared pro-democratic and pro-western stance of the Shevardnadze regime, this was a hybrid system that existed until the end of his rule in 2003. On the one hand, Shevardnadze did not restrict freedom of society and allowed the emergence of new political and economic relations. On the other hand, he would not accept major changes within the state and government structures. The greater the demand for change, the more conservative he tended to become. As a result, corruption penetrated all spheres of life and distrust deepened against the state institutions.

The almost unanimous discontent with the conservative, weak and corrupt executive power of the regime overshadowed all other possible political divisions, and unified the opposition to Shevardnadze. The agenda of further democratization became dominant, promoted by the oppositional TV Rustavi2, which supported the "reformers" among the ruling elite - Zurab Jvania and Mikheil Saakashvili. The people eventually mobilized against Shevardnadze, and, in the November 2003 bloodless "Rose Revolution," forced him to resign. Saakashvili became the unchallenged leader of the mass protest movement, taking 96% of the vote for president, and becoming president on 25 January 2004.

Welt (2010) comments that

Georgia's Rose Revolution stemmed from Georgians' discontent with an ineffective, criminalized, and corrupt ruling regime. Georgia's ruling party was not only unpopular before the 2003 election, but also weak.

This time the country found new leadership, composed of a young energetic genera-

tion of risk-taking activists who opted for a quick political changes. Slow, piecemeal and negotiations-based decision-making, typical for the democratic process, contradicted their perception of themselves as a vanguard of pro-western development. Rule of law, civil and political rights, together with constitutional checks and balances, were supposed to be the norm, but in fact were subject to manipulation and were sometimes clearly violated.

For the leaders of the revolution, for the National Movement, democracy was important, as much as democracy was the identity marker of becoming part of the West. In this sense, democracy was an external attribute, a self-declared ideology that aligned Georgia with the West, rather than a certain political practice concerning the organization of the political sphere through competitive elections, and other internal attributes of democratic performance. (Cheterian, 2008)

In 2004, Saakashvili established an armed presence in the disputed regions of South Ossetia and Abkhazia.

The change of the constitution in 2004, a decrease in the freedom of the media, as well as cases of the redistribution of property and other violations of the law, marked a growing gap between the pro-western stance of governmental policies and the de facto concentration of power in the hands of a small elite who seemed above the law.

The incompatibility of the pro-western orientation and non-democratic practices split society into two poles. The government promoted its agenda of externally oriented policies, including integration into NATO, arguing that this required strong leadership. The opposition insisted on the agenda of democracy and rule of law, demanding greater equality.

The split of public opinion into two poles could be interpreted as a normal political struggle between those who supported a "western integration" agenda against those who opted for "democracy and rule of law," were it not for the illiberal environment in which the split occurred. Moreover, this split induced a change in attitude towards the U.S.

At one time, pro-American feeling was nearly universal in Georgia. This has begun to somewhat change-as manifested by protests in front of the U.S. Embassy and increasing charges levied by the opposition that the United States has chosen to support Saakashvili rather than democracy. (Mitchell, 2008)

Each of these two poles had the support of different media outlets, particularly TV channels. Saakashvili controlled Rustavi2, formerly for the opposition, but by this time pro-government. The opposition depended on Imedi, owned by Patarkatsishvili.

Television is the main source of political information and opinion formation in Georgia, as almost everywhere. Even in a very liberal and apolitical environment, television, by its very nature, is an agenda-setting institution: it sequences, frames and contextualizes information. When this medium is not free, as in Georgia, then this tool may be used in a very goal-oriented way, creating a biased picture of political reality.

The two opposed TV channels, Rustavi2 and Imedi, now had two very different

views of politics. By the Fall of 2007, the governing elite and the leaders of the opposition appeared on their own channels, and seem to ignore each other. The resulting split within society became extremely polarized.

There are two realities in Georgia today – one seen by Saakashvili supporters and the other by the opposition and more apolitical members of society" (Sumbadze 2009).

This split in society, in which two versions of possible development existed simultaneously but separately, was a novelty for Georgia, and dominated the election of 5 January 2008. A series of anti-government demonstrations had led to clashes between police and demonstrators in the streets of Tbilisi on 7 November, 2007, and a declaration of a state of emergency. The oppositional TV channel Imedi was closed and its equipment partly destroyed by the police. These events led to harsh criticism of the Saakashvili government by the Human Rights Watch for using "excessive" force against protesters. The International Crisis Group warned of growing authoritarianism.

Nonetheless, the presidential election on 5 January 2008 gave Saakashvili 53.5% of the vote, as shown in Table 9.4.

Muskhelishvili et al. (2009) commented that the election result

created suspicion, since cases of stuffing ballots ... were registered in many precincts... Being unable to either change the regime or improve its quality through elections the opposition movement gradually lost momentum. The main opposition parties refused to consider these results legitimate. Because...a large share of society welcomed this refusal by participating in mass post-electoral protest demonstrations, the political crisis of 2007 was not resolved by the [Presidential and Parliamentary] elections of 2008.

In August 2008, a series of clashes between Georgian and South Ossetian forces resulted in Saakashvili ordering an attack on the town of Tskhinvali. In response, the Russian army invaded South Ossetia, followed later by the invasion of other parts of Georgia. Eventually there was a cease fire agreement, and on 26 August the Russian president, Dmitry Medvedev, signed a decree recognizing Abkhazia and South Ossetia as independent states. On August 29, 2008, in response to Russia's recognition of Abkhazia and South Ossetia, Georgia broke off diplomatic relations with Russia.

Opposition against Saakashvili intensified in 2009, when there were mass demonstrations against him. The next presidential election is planned for 2013. In preparation, on October 15, 2010, the Parliament approved, by 112 to 5, a constitutional amendment that increased the power of the prime minister over that of the president. It was thought that this was a device to allow Saakashvili to take on the role of prime minister in 2013, just as Putin had done in Russia.³³⁶

³³⁶See Bunce and Wolchik (2010) for a general discussion of the wave of democratic change that has occurred in the last twenty years in post-Soviet countries, sometimes leading from autocracy to democracy and then back again.

We now use the formal election model in an attempt to understand the nature of politics in Georgia.

Table 9.4. Georgian Presidential Election 2008

| Candidate | Party | voteshare |
|----------------------|--------------------------|-----------|
| Saakashvili | United National Movement | 53.5 |
| Gachechiladze | Opposition coalition | 25.7 |
| Patarkatsishvili | media tycoon | 7.1 |
| Natelashvili | Georgian Labour Party | 6.5 |
| Gamkrelidze | New Right | 4.0 |
| Maisashvili | Party of the Future | 0.7 |
| Sarishvili-Chanturia | Hope party | 0.2 |
| Repeated ballots | | 1.7 |
| Invalid ballots | | 0.6 |
| Total | | 100 |

Table 9.5. Sample Vote Shares among the Four Candidates in Georgia

| Candidate | Vote | % |
|------------------|------|------|
| Saakashvili | 252 | 63.2 |
| Gachechiladze | 85 | 21.3 |
| Patarkatsishvili | 39 | 9.8 |
| Natelashvili | 23 | 5.8 |
| Total | 399 | 100 |

The survey questions are given in Table A9.7 in Appendix 2.³³⁷ Table A9.8 in Appendix 2 gives the factor loadings. The first factor dimension is strongly related with the respondents' attitude toward the US, EU and NATO. Those who have favorable opinion toward the United States, European Union and NATO have smaller values in this dimension. Thus, a larger value in the *West* dimension means stronger anti-western attitude. The other dimension is related with respondents' judgement about current democratic environment in Georgia. Larger values in the *democracy* dimension are associated with negative judgement about the current state of democratic institutions in Georgia, and a demand for a greater democracy.

The covariance matrix is:

$$\nabla_0 = \begin{bmatrix} & Democracy & West \\ Democracy & 0.83 & 0.05 \\ West & 0.05 & 0.87 \end{bmatrix}$$

The voter distribution is displayed in Figure 9.3. The points (S,G,P,N) represents estimated candidate positions, corresponding to Saakashvili (S), Gachechiladze (G), Patarkatsishvili (P), Natelashvili (N). Since there was no other information that can be

³³⁷We thank Merab Pachulia, Director of GORBI, Tbilisi, Georgia for making the data for the 2008 election in Georgia available to us.

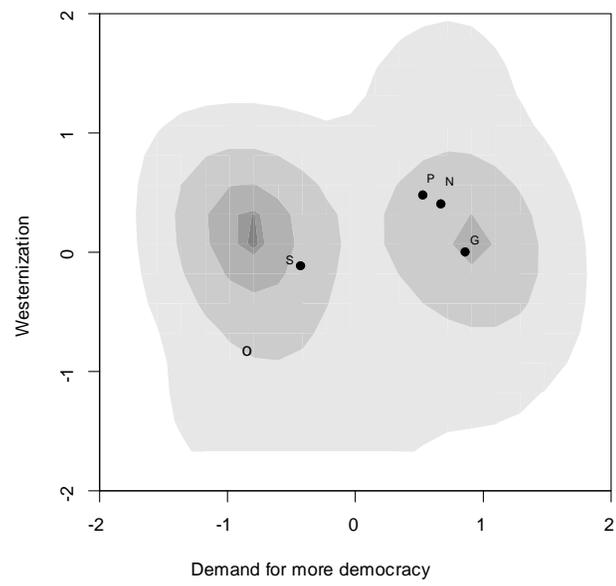


Figure 9.3: Voter distribution and candidate positions in Georgia in 2008

used to estimate party position we used the mean value of the factor scores of those voters who voted for each candidate. The estimated party positions were:

$$\mathbf{z}^* = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix}$$

Since the three opposition candidates are supported by voters who have similar negative judgments about democracy in Georgia, Figure 9.3 takes the democracy axis as the x-axis and attitudes to the west as the y-axis. The pure spatial model gives

Table 9.6. Pure spatial model for Georgia (Natelashvili as baseline)

| | Coef. | Std.Error | t stat |
|----------------|---------|-----------|---------|
| β | 0.78*** | 0.07 | 11.15 |
| λ_S | 2.48*** | 0.24 | 10.41 |
| λ_G | 1.34*** | 0.24 | 5.59 |
| λ_P | 0.51 | 0.26 | 1.94 |
| n | 388 | | |
| Log-likelihood | -305.97 | | |

*** $prob < 0.001$.

Thus

$$\begin{aligned} \lambda_S &= 2.48, \lambda_G = 1.34, \lambda_P = 0.51, \lambda_N \equiv 0.0 \\ \beta &= 0.78. \end{aligned}$$

Given these coefficients, the probability that a typical voter chooses Natelashvili when all parties locate at the mean is:

$$\rho_N = \frac{\exp[\lambda_N]}{\sum_{k=1}^4 \exp[\lambda_j]} = \frac{e^0}{e^0 + e^{0.51} + e^{1.34} + e^{2.48}} \simeq 0.05,$$

$$\text{and } (\rho_S, \rho_G, \rho_P, \rho_N) = (0.65, 0.21, 0.09, 0.05)$$

Thus, since $2\beta(1 - 2\rho_n) = 2 \times 0.78 \times 0.9 = 1.4$, we use the formula to obtain the characteristic matrix of Natelashvili,

$$\begin{aligned} C_N &= (1.4) \begin{bmatrix} 0.83 & 0.05 \\ 0.05 & 0.87 \end{bmatrix} - I = \begin{bmatrix} 1.17 & 0.07 \\ 0.07 & 1.22 \end{bmatrix} - I \\ &= \begin{bmatrix} 0.17 & 0.07 \\ 0.07 & 0.22 \end{bmatrix}. \end{aligned}$$

Both eigenvalues are positive and

$$c \equiv c(\boldsymbol{\lambda}, \beta) = 1.4 \times 1.7 = 2.39.$$

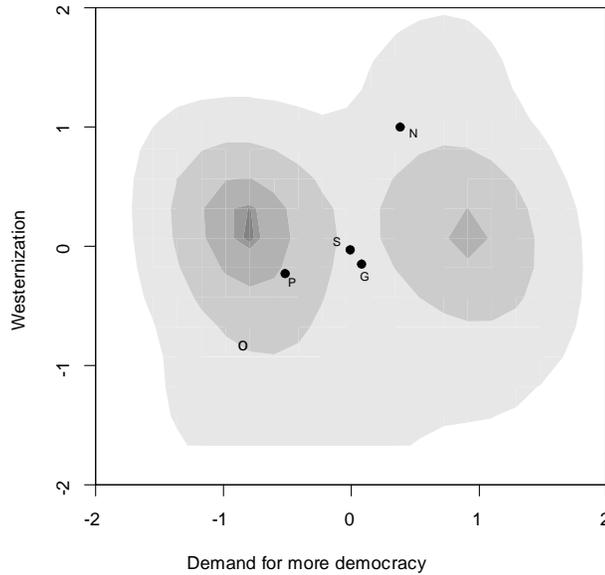


Figure 9.4: Estimated local equilibrium positions

Thus the joint mean gives a minimum for Natelashvili.

Table A9.9 in the Appendix gives the results of the spatial sociodemographic model. Only gender has a statistically significant effect, with women in favor of Saakashvili. Age, education, and financial situation are not significant.

To estimate local Nash equilibrium, we simulated the model by estimating each candidate's best response to the given positions in Figure 9.3, obtaining

$$\begin{bmatrix} & S & G & P & N \\ Democracy & 0.26 & 0.44 & 0.42 & 0.40 \\ West & 0.08 & 0.01 & 0.65 & 1.06 \end{bmatrix}.$$

Reiterating this procedure, starting with Saakashvili, and taking the best response in turn of each candidate until no party can increase vote share further, we end up with the local Nash equilibrium

$$\mathbf{z}^{el} = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.01 & 0.08 & -0.52 & 0.38 \\ West & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix}.$$

Figure 9.4 gives the estimated equilibrium positions. As expected, the high valence candidate, Saakashvili, has an equilibrium position very near the mean, followed by Gachechiladze, followed by Patarkatsishevili, with Natelashvili furthest away. The difference between these two estimates is:

$$\begin{aligned}
 & \mathbf{z}^* - \mathbf{z}^{el} \\
 = & \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix} \\
 & - \begin{bmatrix} & S & G & P & N \\ Democracy & -0.01 & 0.08 & -0.52 & 0.38 \\ West & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix} \\
 = & \frac{1}{2\beta} \frac{d\boldsymbol{\mu}}{d\mathbf{z}}(\mathbf{z}) = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.42 & 0.78 & 1.05 & 0.29 \\ West & -0.8 & -0.05 & 0.71 & -0.59 \end{bmatrix}.
 \end{aligned}$$

We infer that activists pull Saakashvili to the lower left while the other candidates respond to their activists in demanding more democracy.

9.3 The Election in Azerbaijan in 2010

In the 2010 election in Azerbaijan, 2,500 candidates filed application to run in the election, but only 690 were given permission by the electoral commission.³³⁸

The parties that competed in the election were the Yeni Azerbaijan Party (governing party), Civic Solidarity Party, Motherland Party, and Musavat.

Many national and foreign experts expect no major improvement in the conduct of these elections. No elections after 1992 has been fully in accordance with national and international democratic standards. So far Azerbaijan has been convicted twice of election fraud during the 2005 parliamentary elections by the European Court of Human Rights in Strasbourg. More cases are expected to be decided soon. The pre-election atmosphere was tense with the media complaining of pressure and hidden financial transactions by state officials.

The opposition alleged irregularities, and Musavat declared that the election was illegitimate. It also accused the West of not criticizing the regime because of Azerbaijan's geostrategic location. President Aliyev, however, rejected the criticisms claiming the election "conformed to European standards."

President Ilham Aliyev's ruling Yeni Azerbaijan Party got a majority of 72 out of 125 seats. Nominally independent candidates, who were aligned with the government, received 38 seats, and 10 small opposition or quasi-opposition parties got the remaining 13 seats. Civic Solidarity retained its 3 seats, and Ana Vaten kept the 2 seats they had

³³⁸This section on Georgia is written in collaboration with JeeSeong Jeon..

in the previous legislature; the Democratic Reforms party, Great Creation, the Movement for National Rebirth, Umid, Civic Unity, Civic Welfare, Adalet (Justice), and the Popular Front of United Azerbaijan, most of which were represented in the previous parliament, won one seat a piece. For the first time, not a single candidate from the main right-wing opposition Azerbaijan Popular Front (AHCP) or Musavat was elected.

The Central Election Commission said turnout was 50.1 percent, out of a total 4.9 million people eligible to vote. Opposition leaders suggested the low turnout was due to candidate disqualifications by the CEC, and consequent discouragements to vote after their choice of candidate was excluded.

Table 9.7 gives the election results and Table A9.10 in the Appendix gives the survey questions.³³⁹

Table 9.7. Summary of the 7 November 2010 National Assembly of Azerbaijan election results

| Party | Votes | Seats |
|--|-------------------|------------|
| Yeni Azerbaijan Party (YAP) | 1,104,528 (45.8%) | 72 |
| Civic Solidarity Party (VHP) | 37,994(1.6%) | 3 |
| Motherland Party (AVP) | 32,935 (1.4%) | 2 |
| Equality Party (MP) | 42,551 (1.8%) | - |
| Azerbaijani Popular Front Party (AXCP) | 31,068 (1.3%) | - |
| Independents | 1,160,053 (48.2%) | 48 |
| Of which supported government | | (38) |
| Opposition* | | (10) |
| Total turnout (50.1%) | 2,409,129 | 125 |

* Opposition Parties and seats:

1-Democratic Reforms party

1-Great Creation

1-The Movement for National Rebirth

1-Umid

1-Civic Welfare

1-Adalet (Justice)

1-The Popular Front of United Azerbaijan

Other party names: Yeni Azerbaijan Party (Yeni Azərbaycan Partiyası)

Civic Solidarity Party (Vətəndaş Həmrəyliyi Partiyası)

Motherland Party (Ana Vətən Partiyası)

Equality Party (Müsavat Partiyası)

Azerbaijani Popular Front Party (Azərbaycan Xalq Cəbhəsi Partiyası)

Our analysis relies on the pre-election surveys conducted by the International Center for Social Research (ICSR), Baku, Azerbaijan. The survey data include question-

³³⁹We thank Rauf Garagov, Leading Research Fellow, International Center for Social Research (ICSR), Institute of Strategic Studies of the Caucasus, Baku, Azerbaijan. He and his colleagues, Tair Faradov and Rajab Sattarov of ICSR carried out the survey in Azerbaijan.

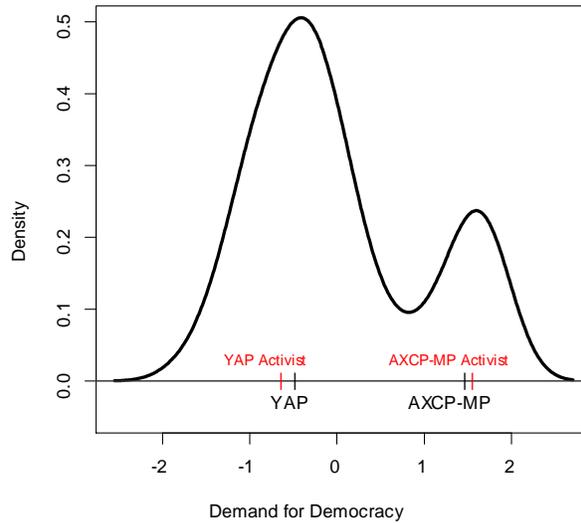


Figure 9.5: Voter distribution and activist positions in Azerbaijan in 2010

naires about respondents' evaluation on the democratic situation, political institutions, and economic situation in Azerbaijan, as well as voting intention. The number of respondents in the original data set is 1002. The final number of observation used in this analysis was 149 for three reasons. First, a large number of respondents (636) are abstainers (those who answered that they would not vote). Thus there is no available information on their party preference. Second, among the remainder are 138 are independent voters (those who answered that they would vote for independent candidates) and 53 who reported that they intend to vote for the parties other than YAP, VHP, AVP, AXCP and MP. Among the remaining 173 cases, only 160 had completed the factor analysis questions. The number of each party's voters are (YAP, VHP, AVP, AXCP-MP)=(113, 7, 4, 36).³⁴⁰ In the cases of VHP and AVP, the estimation of party positions was too sensitive to inclusion or exclusion of one respondent. We used only a small subset of voters (149) who completed the factor analysis questions and intended to vote for YAP or AXCP-MP.

Table A9.11 gives the one-dimensional factor model. Larger values of the resultant

³⁴⁰Because of the survey design, AXCP and MP were not differentiated and are regarded as one party block. See question wording in the Appendix for vote choice.

factor score was associated with negative evaluation of the current democratic state in Azerbaijan. Specifically, the respondents with larger values tended to be dissatisfied with the current Azerbaijan democracy, did not think that free opinion is allowed, had a low degree of trust in key national political institutions, and expected that the 2010 parliamentary election would be undemocratic. This dimension is called “Demand for democracy.” Figure 9.5 displays the distribution of respondents along the dimension (left panel). The electoral variance is 0.93. Figure 9.5 also shows the estimated party positions (where party positions were estimated by the mean of the party voters’ score. The party positions were estimated to be

$$(YAP, AXCP-MP) = (-0.47, 1.48).$$

We considered voters who evaluated themselves as a supporter of a party as activists. The activist means for the two parties are located at (-0.63, 1.57). The number of activists for YAP and AXCP-MP is 48 and 19, respectively. The activist positions are also shown in Figure 9.5.

Table A9.12(i) presents the pure spatial binomial logit model while Table A9.12(ii) gives the spatial sociodemographic model. In the first model, $\beta = 1.34$ and $(\lambda_{YAP}, \lambda_{AXCP-MP}) = (1.30, 0)$. None of the sociodemographic variables are statistically significant.³⁴¹

We can then calculate that $(\rho_{yap}, \rho_{axcp-mp}) = (0.79, 0.21)$ ³⁴² and,

$$\begin{aligned} c &= 2\beta(1 - 2\rho_{axcp-mp}) \cdot \text{variance} - 1 \\ &= 2 \cdot (1.34) \cdot (1 - 2 \cdot 0.21) \cdot 0.93 - 1 \\ &= 0.44. \end{aligned}$$

Since the single eigenvalue is positive, we expect divergence away from the mean by all parties for the pure spatial model. As before, we infer that the activists pull the two parties further away from the mean. This model is only one dimensional, so the result is not quite compatible with the analysis of Georgia. However, if the model were two-dimensional, and symmetric in the sense that voter variance were 0.93 on each axis, then the convergence coefficient would be $c = 2.89$, very similar to the result for Georgia.

We comment on the results in this chapter, in comparison with other polities, in Section 10.3 in Chapter 10.

³⁴¹The variable ‘city’ is a binary variable indicating whether the respondent resides in city area or not. The category 1, 2 and 3 in the question ‘type of location’ are coded as city, and 4 and 5 are coded as non-city residents.

³⁴²Among the two parties, the sample voteshare is (0.76, 0.21).

9.4 Appendices

9.4.1 Appendix 1. Tables for Russia

Question Wording for the Russian Election

Age. What is your age in full years?

Education. “What is your education? 1 — Primary education or below, 2 — Incomplete secondary education, 3 — Secondary education, 4 — Vocational school, 5 — Less than 4 years of higher education, 6 — 4 or more years of higher education.” Those who responded “Don’t know” were assigned the value of 3.5.

The variable `education` was obtained as follows: $(\text{response}-1) \times 0.2$

Income. “To which income group does your family belong? 1 — Cannot afford to buy food, 2 — Can afford food but cannot afford clothing, 3 — Can afford clothing but not durable goods, 4 — Can afford all durable goods but cannot afford real estate, 5 — Can afford real estate.” For the variable `income`, those who responded “Don’t know” were assigned the value of 3.

The variable `income` was obtained as follows: $(\text{response}-1) \times 0.25$

Approval. “Do you approve of A. President, B. Prime Minister, C. Government, D. State Duma, E. Federation council.” Each question was coded as follows: “1 — Yes, 2 — No, 1.5 — Can’t answer.”

Each of the approval variables was obtained as follows: $2 - \text{response}$.

Size of township. “Where do you live? 1 — Moscow or St. Petersburg, 2 — City over 1 mln., 3 — 500 thousand to 1 mln., 5 — 100 thousand to 500 thousand, 6 — 50 thousand to 100 thousand, 7 — urban-type settlement, 8 — village.”

The variable `rural` was generated by assigning the value of 1 for “8 — village” and 0 otherwise.

Ideological attitude. There were two questions: “Please say if you feel positively (negatively) to each of the following concepts.” For each question, a list of 40 words was given (see Table 8.3).

Internal efficacy. “Do you think that the ordinary voters like you have a say in who will be in power in the future, and on the country’s future policies? 1 — Yes, a lot depends on the regular voters, 2 — A few things depend on the voters, 3 — Nothing depends on the voters, all main decisions will be made without their consent”. The “can’t answer” response was coded as 2. The variable `efficacy` was generated as $1.5 - 0.5 \times \text{response}$.

Table A9.1 The Frequency of positive and negative responses and factor loadings in Russia

| | Concept | Percent pos. | Percent neg. | Factor 1 | Factor 2 |
|----|-----------------|---------------------|---------------------|-----------------|-----------------|
| 01 | Nation | 0.21 | 0.08 | 0.11 | -0.08 |
| 02 | Order | 0.57 | 0.01 | -0.18 | 0.01 |
| 03 | Freedom | 0.37 | 0.03 | -0.13 | 0.20 |
| 04 | Market | 0.10 | 0.15 | 0.26 | 0.08 |
| 05 | Russians | 0.34 | 0.02 | -0.15 | 0.03 |
| 06 | West | 0.02 | 0.23 | 0.21 | 0.10 |
| 07 | Socialism | 0.11 | 0.11 | -0.13 | -0.28 |
| 08 | Communism | 0.07 | 0.19 | 0.05 | -0.32 |
| 09 | Democracy | 0.15 | 0.09 | 0.11 | 0.07 |
| 10 | Tradition | 0.29 | 0.01 | -0.06 | -0.04 |
| 11 | Patriotims | 0.34 | 0.01 | -0.14 | -0.15 |
| 12 | State | 0.26 | 0.03 | -0.17 | -0.03 |
| 13 | Competitiveness | 0.05 | 0.07 | 0.07 | 0.12 |
| 14 | Sovereignty | 0.07 | 0.05 | -0.08 | 0.01 |
| 15 | Elite | 0.02 | 0.41 | 0.30 | 0.04 |
| 16 | Party | 0.02 | 0.16 | 0.04 | -0.14 |
| 17 | Power | 0.09 | 0.18 | 0.26 | -0.09 |
| 18 | Justice | 0.49 | 0.02 | -0.30 | 0.02 |
| 19 | Opposition | 0.01 | 0.17 | 0.12 | -0.06 |
| 20 | Business | 0.07 | 0.13 | 0.17 | 0.27 |
| 21 | USSR | 0.12 | 0.08 | -0.01 | -0.34 |
| 22 | Church | 0.21 | 0.02 | -0.13 | -0.01 |
| 23 | Revolution | 0.01 | 0.22 | 0.13 | -0.26 |
| 24 | Property | 0.14 | 0.04 | 0.13 | 0.14 |
| 25 | Success | 0.31 | 0.00 | -0.16 | 0.21 |
| 26 | Liberalism | 0.01 | 0.14 | 0.15 | -0.01 |
| 27 | Reform | 0.06 | 0.14 | 0.23 | -0.02 |
| 28 | Stability | 0.38 | 0.00 | -0.16 | 0.00 |
| 29 | Labor | 0.31 | 0.00 | -0.26 | -0.08 |
| 30 | Individualism | 0.02 | 0.12 | 0.05 | 0.10 |
| 31 | Non-Russians | 0.02 | 0.29 | 0.25 | -0.12 |
| 32 | Equality | 0.18 | 0.02 | -0.18 | -0.06 |
| 33 | Collectivism | 0.06 | 0.09 | 0.02 | -0.22 |
| 34 | Morality | 0.22 | 0.03 | -0.05 | -0.07 |
| 35 | Human rights | 0.32 | 0.02 | -0.15 | 0.12 |
| 36 | Wealth | 0.12 | 0.01 | 0.15 | 0.25 |
| 37 | Russia | 0.28 | 0.00 | -0.03 | 0.07 |
| 38 | Well-being | 0.37 | 0.01 | -0.11 | 0.25 |
| 39 | Progress | 0.21 | 0.01 | -0.03 | 0.27 |
| 40 | Capitalism | 0.15 | 0.02 | -0.09 | 0.22 |

Table A9.2. The four party pure spatial model with base ER

| | Coef. | Coef. | Std. Err. | <i>t</i> | <i>prob</i> > <i>t</i> |
|----------|-------------------|----------|-----------|----------|--------------------------|
| | β | 0.181*** | 0.015 | 12.08 | 0.000 |
| CPRF | valence λ | 1.971*** | 0.110 | 17.79 | 0.000 |
| LDPR | valence λ | 0.153 | 0.141 | 1.09 | 0.277 |
| SR | valence λ | -0.404* | 0.161 | 2.50 | 0.012 |
| <i>n</i> | | 1004 | | | |
| | log likelihood | -797 | | | |

Table A9.3 Predicted voteshares in the four party model, with the altered zero-approval sample.

| | ER | CPRF | LDPR | SR |
|------------------------|-------|-------|-------|-------|
| Original sample | 0.723 | 0.112 | 0.066 | 0.097 |
| Neutral Putin approval | 0.609 | 0.163 | 0.112 | 0.116 |
| Zero Putin approval | 0.430 | 0.253 | 0.194 | 0.121 |

Table A9.4. Predicted probabilities of voting for the parties with variables gender(female), income, education rural, age, efficacy, approve set at mean values.

| Factor 1 | Factor 1 | ER | CPRF | LDPR | SR |
|----------|----------|-------|-------|-------|-------|
| 0 | 0 | 0.861 | 0.042 | 0.019 | 0.076 |
| +3.4 | 0 | 0.924 | 0.020 | 0.011 | 0.043 |
| -3.4 | 0 | 0.758 | 0.082 | 0.030 | 0.128 |
| 0 | +3.4 | 0.936 | 0.006 | 0.031 | 0.025 |
| 0 | -3.4 | 0.609 | 0.202 | 0.009 | 0.178 |

Table A9.5 Predicted probabilities of voting for the parties with variables gender(male), income, education rural, age, efficacy, approve set at mean values.

| Fact1 | Fact2 | ER | CPRF | LDPR | SR |
|-------|-------|-------|-------|-------|-------|
| 0 | 0 | 0.725 | 0.074 | 0.107 | 0.092 |
| +3.4 | 0 | 0.835 | 0.038 | 0.069 | 0.056 |
| -3.4 | 0 | 0.577 | 0.131 | 0.151 | 0.139 |
| 0 | +3.4 | 0.784 | 0.011 | 0.173 | 0.030 |
| 0 | -3.4 | 0.452 | 0.314 | 0.044 | 0.189 |

9.4.2 Appendix 2. Tables for Georgia

Table A9.6.

Data: post-election surveys conducted by GORBI-GALLUP International from March 19 through April 3, 2008. In the original data set $n = 1000$. Among the respondents, 745 answered that they cast a vote on the election day. In the case of listwise deletion of missing data, the number of observation is $n = 399$. Those 399 voters (1) cast a vote; (2) to one of the four candidates who got more than five percent of the vote; and (3) answered all the questions used in the factor analysis.

Question Wording for the Georgian Election

Survey Items

[vote choice]

Please tell me which candidate did you vote for during the presidential elections on the 5th of January 2008? 1 Saakashvili, 2 Gachechiladze, 3 Patarkatsishevili, 4 Natelashvili, NA:NA

³⁴²We thank Merab Pacula, Director of GORBI for making these data available to us.

[Questions used in factor analysis]

(1) In your opinion, are things in Georgia generally going in the right direction or the wrong direction?

1 Right direction; 2 Wrong direction; 9 DK/NA

(2) In general would you say that currently democracy works in Georgia very well, rather well, rather poorly, very poorly? 1 very well, 2 rather well, 3 DK, 4 rather poorly, 5 very poorly, NA.

(3) Tell me your overall opinion of USA. 1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 99 NA

(4) Tell me your overall opinion of EU.

(5) Tell me your overall opinion of NATO.

(6) How much confidence do you have that upcoming parliamentary elections will be transparent and fair? 1 great deal of confidence; 2 fair amount of confidence; 3 no much confidence; 4 no confidence at all; 9 NA

[Sociodemographic variables]

(SD1) gender: male=1, female 2

(SD2) Age: 1 18-24; 2 25-30; 3 31-39; 4 40-50; 5 51-60; 6 60+

(SD3) education: 1 pre-primary; 2 primary; 3 incomplete general secondary, vocational; 4 complete specialized secondary; 5 complete general secondary; 6 incomplete higher; 7 PHD, post graduate courses

(SD4) household income (need to opened again): 1 -20; NA 8888 DK 9999

(SD4) financial situation: 1 no money for food, 2 not for clothing, 3 not for expensive things, 4 expensive things, 5 whatever we want, 9 NA

(SD5) region: 1 Tbilisi; 2 Kakheti; 3 Shida Kartli; 4 Kvemo Kartli; 5 Samtskhe-Javakheti; 6 Adjara; 7 Guria; 8 Samegrelo; 9 Imereti/Racha/Svaneti; 10 Mtskheta-Tianeti

Table A9.7. Factor Loadings for Georgia

| (<i>n</i> =399) | <i>West</i> | <i>Dem</i> |
|---------------------|-------------|------------|
| General direction | 0.12 | 0.77 |
| Democracy | 0.15 | 0.85 |
| Next election fair | 0.20 | 0.66 |
| Opinion USA | 0.63 | 0.26 |
| Opinion EU | 0.78 | |
| Opinion NATO | 0.91 | 0.15 |
| Variance | 0.32 | 0.30 |
| Cumulative variance | 0.32 | 0.62 |

Table A9.8 Spatial Sociodemographic Model for Georgia (Natelashvili as baseline)

| | | Coef | Std. Error | <i>t</i> value |
|-------------------|---------------------|---------|------------|------------------|
| | β | 0.82*** | 0.07 | 11.16 |
| Saakashvili | λ_S | 1.75 | 1.35 | 1.29 |
| | gender (female) | 0.99* | 0.49 | 2.01 |
| | age | 0.16 | 0.16 | 0.95 |
| | education | -0.21 | 0.17 | 1.25 |
| | financial situation | 0.40 | 0.34 | 1.17 |
| Gachechiladze | λ_G | 0.27 | 1.39 | 0.19 |
| | gender (female) | 0.72 | 0.50 | 1.45 |
| | age | 0.06 | 0.17 | 0.35 |
| | education | -0.15 | 0.17 | 0.87 |
| | financial situation | 0.66 | 0.35 | 1.89 |
| Patarkatsishevili | λ_P | 0.94 | 1.49 | 0.63 |
| | gender (female) | 1.04 | 0.55 | 1.88 |
| | age | -0.09 | 0.18 | 0.49 |
| | education | -0.25 | 0.19 | 1.30 |
| | financial situation | 0.36 | 0.38 | 0.94 |
| | <i>n</i> | 399 | | |
| | log likelihood | -299 | | |

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

9.4.3 Appendix 3. Tables for Azerbaijan

Table A9.9.

Survey Items:

[Vote Choice]

[Are you going to vote for the candidate from political party/block or for the independent candidate?

1. Candidate from political party/block; 2. Independent candidate; 77, 88, 99. NA

Here is the list of political parties and blocks, which will run for coming parliamentary elections on 7 November, 2010. Please tell me, which of them you would vote for?

1. Yes, for sure; 2. Very likely; 3. Likely; 4. Indifferent; 5. Not likely; 6. No, for sure; 77. NA; 88. Don't know/hard to say; 99. Refusal

A. Blocks

1. AXCP-MUSAVAT; 2. KARABAKH (UMID, ADP, AYDINLAR); 3. INSAN NAMINA (VIP, ALP); 4. ISLAHAT (BQP, BAXCP, ADALAT); 5. DEMOKRATIYA (VHP, ADIP)

B. Political Parties

1. KXCP; 2. YAP; 3. ALDP; 4. SOCIAL DEMOKRAT; 5. DADP; 6. ANA VATAN; 7. MILLI DEMOKRAT; 8. MMP; 9. AMIP

[Activist]

Some people think of themselves as usually being a supporter of one political party rather than another. Do you usually think of yourself as being a supporter of one particular party or not?

1. Yes (name); 2. No; 3. It is difficult to answer; 4. Refusal

Survey items used for Factor Analysis- demand for democracy

(1). Are you satisfied with the current state of democracy in Azerbaijan?

1. Fully satisfied; 2. Partially satisfied; 3. Neither satisfied nor dissatisfied; 4. Partially dissatisfied; 5. Completely dissatisfied; 88. Don't know/hard to say; 99. Refusal

(2) Would you agree with the following two statements?

[A]. Azerbaijan is more democratic now than it was 10 years ago.

[B]. People in Azerbaijan are free to express their opinions and concerns.

1. Strongly agree; 2. Agree; 3. Disagree; 4. Strongly disagree; 88. Don't know/hard to say; 99. Refusal

(3) What is the degree of your confidence towards the following institutions?

(1) Parliament (Milli Mejlis)

(2) Government (Cabinet of Ministers)

(3) President of the country

(4) Elections on different levels: 1. High; 2. Average; 3. Low; 88. Don't know/hard to say; 99. Refusal

(4) As is known, many people in our country are not politically active. To what extent do you agree or disagree with the following statements about the reason for this?

(1) lack of freedom and Democracy: 1. Fully disagree; 2. To some extent disagree; 3. Neither agree, neither disagree; 4. To some extent agree; 5. Fully agree; 88. Don't know/hard to say; 99. Refusal

(5) Do you believe that forthcoming parliamentary elections in Azerbaijan will be really democratic (free, open, transparent and fair)? 1. Yes; 2. No; 88. Don't know/hard to say; 99. Refusal

Sociodemographics

Type of location: 1. Capital city; 2. Large city; 3. Small city; 4. Village; 5. Camp for IDPs

Gender: 1. male; 2. female

Age group: 1. 18-24; 2. 25-34; 3. 35-44; 4. 45-54; 5. 55-64; 6. 65+

Education: 1. Without any education; 2. Primary school; 3. Incomplete secondary; 4. Complete secondary; 5. Secondary technical; 6. Incomplete higher; 7. Higher

Household economic situation: Pick the phrase which best describes the economic situation in your family

1. There is not enough money even for food, we have to go into debt or get help from relatives or friends

2. There is enough money for food, but we have difficulty buying clothes

3. There is enough money for food and clothes, but expensive durable goods such as TV or refrigerator are a problem for us

4. We can buy durable goods from time to time, but the purchase really expensive things, such as an automobile, home, or a trip abroad, are beyond our means

5. Nowadays we can afford many things - an automobile, home, foreign travel - in a word, we do not deny ourselves anything

88. Don't know/hard to say

99. Refuse

Table A9.10. Factor Loadings for Azerbaijan

| | Demand for Democracy |
|------------------------------|----------------------|
| Q2 Democratic satisfaction | 0.844 |
| Q3A Democratic improvement | 0.771 |
| Q3B Free opinion | 0.761 |
| Q6.1 trust Parliament | 0.717 |
| Q6.2 trust Government | 0.656 |
| Q6.3 trust President | 0.883 |
| Q6.5 trust elections | 0.742 |
| Q10.1 political inactiveness | 0.709 |
| Q29 Free election | 0.774 |
| Variance | 0.584 |
| <i>n</i> | 149 |

Table A9.11. Pure Spatial and Sociodemographic models for Azerbaijan

| | Coef. (t-value) | Coef. (t-value) |
|---------------------|----------------------|----------------------|
| distance β | 1.34 *** (4.62) | 1.65 *** (3.38) |
| λ_{YAP} | 1.30 * (2.14) | -4.57 (0.99) |
| City | | 1.40 (0.94) |
| Gender (F) | | -0.65 (0.4) |
| Age | | -0.14 (0.15) |
| Education | | 0.65 (1.01) |
| Financial situation | | 0.90 (1.08) |
| <i>n</i> | 149 | 149 |
| log likelihood | -11.48 | -10.02 |
| McFadden R^2 | 0.86 | 0.88 |

* $prob < 0.05$, *** $prob < 0.001$

Chapter 10

Elections in Israel and Turkey

10.1 Elections in Israel

10.1.1 Legislative Bargaining

To model coalition behavior after an election, we assume that each party chooses a preferred position (or *ideal point*) in a *policy space* X . As before, the parties are $P = \{1, \dots, j, \dots, p\}$, and the vector of party ideal points is $\mathbf{z} = (z_1, \dots, z_p)$. After the election we denote the number of seats controlled by party, j , by s_j and let $\mathbf{s} = (s_1, \dots, s_p)$ be the vector of parliamentary seats. We shall suppose that any coalition with more than half the seats is winning, and denote the set of winning coalitions by \mathbb{D} . This assumption can be modified without any theoretical difficulty. For each winning coalition M in \mathbb{D} there is a set of points in X such that, for any point outside the set there is some point inside the set that is preferred to the former by all members of the coalition. Furthermore, no point in the set is unanimously preferred by all coalition members to any other point in the set. This set is the Pareto set, $\mathbb{P}(M)$, of the coalition. If the conventional assumption is made that the preferences of the actors can be represented in terms of Euclidean distances, then this Pareto set for a coalition is simply the convex hull of the preferred positions of the member parties. (In two dimensions, we can draw this as the area bounded by straight lines joining the ideal points of the parties and including all coalition members.) Since preferences are described by the vector, \mathbf{z} , we can denote this as $\text{Pareto}(M, \mathbf{z})$. Now consider the intersection of these compromise sets for all winning coalitions. If this intersection is non-empty, then it is a set called the *core* of \mathbb{D} at \mathbf{z} , written $\mathbb{C}(\mathbb{D}, \mathbf{z})$. At a point in $\mathbb{C}(\mathbb{D}, \mathbf{z})$ no coalition can propose an alternative policy point that is unanimously preferred by every member of some winning coalition.

In general, $\mathbb{C}(\mathbb{D}, \mathbf{z})$ will be at the preferred point of one party. The analysis of McKelvey and Schofield (1987) obtained pivotal symmetry conditions that are necessary at a core point. Clearly a necessary and sufficient condition for point x to be in $\mathbb{C}(\mathbb{D}, \mathbf{z})$ is that x is in the Pareto set of every minimal winning coalition. The symme-

try conditions depend on certain subgroups called pivot groups. Alternatively, we can determine all median lines given by the pair (\mathbb{D}, \mathbf{z}) .

As discussed in Chapters 7 and 8, for a spatial voting game in a legislature, if the median lines do not intersect then the core is empty. However, in this case, the set bounded by these median lines is called the “heart”, and denoted $\mathbb{H}(\mathbb{D}, \mathbf{z})$. By definition. Even though the core may be empty, the heart is always non empty. Moreover, when the core is non-empty, then the core and the heart coincide.

To illustrate these conditions, consider the configuration of party strengths after the election of 1992 in Israel. (The election results in Israel for the period 1988 to 2009 are given in Table 10.1). The estimates of party positions in Figure 10.1 were obtained from a survey of the electorate carried out by Arian and Shamir (1995), complemented by an analysis of the party manifestos (details can be found in Schofield, Sened and Nixon, 1998; Schofield and Sened, 2006). First we define a median line in the figure to be a line that goes through the positions of two parties, such that the two parties pivot. That is, the group of parties on either side of the line has a majority when complemented by the two parties.

Table 10.1. Seats in the Knesset

| Party | 1988 | 1992 | 1996 | 1999 | 2003 | 2006 | 2009 |
|---------------------------------|------|------|------|------|------|------|------|
| Left (ADL, Arab, Hadash) | 14 | 5 | 9 | 10 | 9 | 10 | 11 |
| Meretz | | 12 | 9 | 10 | 6 | 5 | 3 |
| Labor (LAB) | 39 | 44 | 34 | 28 | 21 | 19 | 13 |
| Center (Olim, Geshet, Shinui) | 2 | 8 | 11 | 18 | 15 | 7 | - |
| Center (Kadima) | | | | | | 29 | 28 |
| Likud | 40 | 32 | 30 | 19 | 40 | 12 | 27 |
| SHAS, Yahadut | 15 | 10 | 14 | 22 | 16 | 12+6 | 11+5 |
| NRP, Mafdal | 5 | 6 | 9 | 5 | 6 | 9 | 4+3 |
| Moledet (MO), Techiya (TY), etc | 5 | 3 | 2 | 8 | 7 | 11 | 15 |
| Total | 120 | 120 | 120 | 120 | 120 | 120 | 120 |

As Figure 10.1 indicates, all median lines go through the Labor party position (LAB), so given the configuration of seats and positions, we can say Labor is the *core party* in 1992. Another way to see that the Labor position, $LAB = z_{lab}$, is at the core is to note that the set of parties above the median line through the Labor-Tsomet positions (but excluding Labor) only control 59 seats out of 120. When the party positions are such that the core does indeed exist, then any government coalition must contain the core party. When the core party is actually at a core position then it is able to influence coalition bargaining in order to control the policy position of the government. Indeed, if we assume that parties are only concerned to control policy, then the party at the core position would be indifferent to the particular coalition that formed. The ability of the core party to control policy implies a tendency for core parties to form minority governments, since they need no other parties in order to fulfill their policy objectives. In fact, in 1992, Rabin first created a coalition government with Shas, and then formed a minority government without Shas.

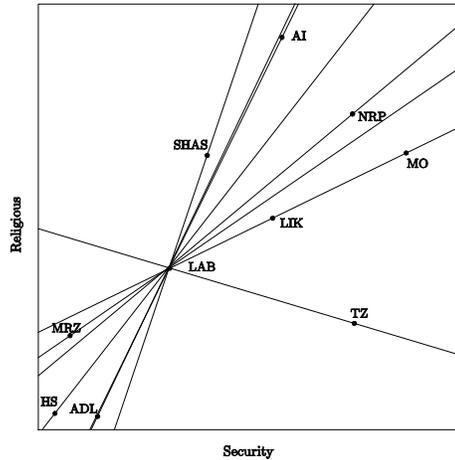


Figure 10.1: The core at the Labor position in the Knesset in 1992

We emphasize that in two dimensions the core can be empty. To see the consequences of this, consider the configuration of party positions in Israel after the election of 1988, as presented in Figure 10.2, again using the seat allocations from Table 10.1. In this case there is a median line through the Tzomet (TZ), Likud (LIK) positions, so the coalition of parties above this line is winning. It is evident that the Labor does not belong to the Pareto set of the coalition including Likud, Tzomet and the religious parties. Indeed, it can be shown that the symmetry conditions necessary for the existence of a core are nowhere satisfied. In this case, there are cycles of different coalitions. No matter what policy is proposed, it can always be defeated by another proposal, preferred by a majority of the legislature, thus sustaining the legislative cycle. The heart in Figure 10.2, given the seat strengths and party positions, is the non-convex, star-shaped figure, bounded by the five median lines, with vertices SHAS, LIK, TY, and S.

It is reasonable to conclude, in the absence of a core party, that coalition government will be based on a small number of minimal winning coalitions, and heart is offered as a graphical way of presenting the possible policy choices of such coalition government. When there is a core, then we can regard the core and the heart as identical, and infer that the core party will with certainty, belong to the government. The core party may even form a non winning government, as did Labor under Rabin in 1992.

10.1.2 The Election of 1996

Figure 10.3 shows the positions of the parties after the election of 1996, together with an estimate of the electoral distribution, based on the survey data obtained by Arian and

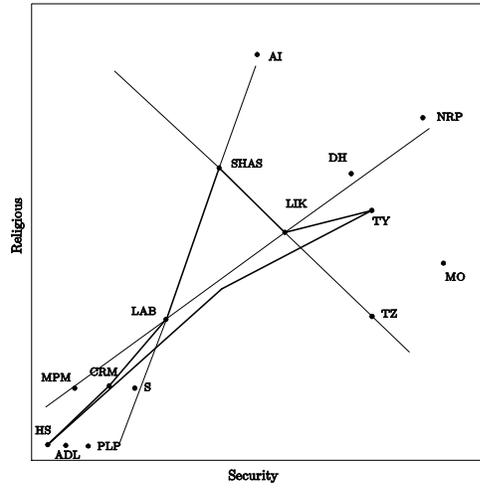


Figure 10.2: The heart in the Knesset in 1988

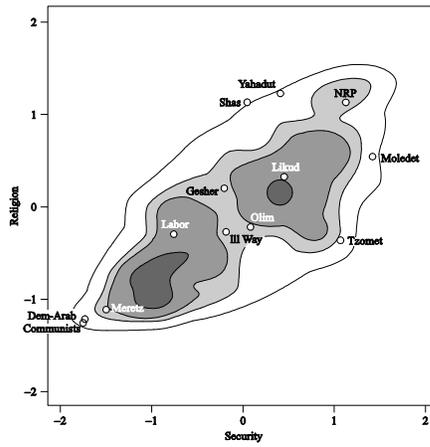


Figure 10.3: Party Positions in Israel In 1996, with the estimated voter distribution

Shamir (1999). Table 10.2 gives the result of the pure spatial model for 1996.

Table 10.2. Pure Spatial Model of the Israel election 1996, baseline Meretz

| Variable | Party | Estimate ^b | Lower 95% bound | Upper 95% bound |
|--------------------------|-----------|-----------------------|-----------------|-----------------|
| β spatial | | 1.207*** | 1.076 | 1.338 |
| λ _valence | Likud | 0.777*** | 0.400 | 1.154 |
| | Labor | 0.990*** | 0.663 | 1.316 |
| | NRP | -0.626*** | -1.121 | -0.132 |
| | Moledet | -1.259*** | -1.858 | -0.660 |
| | Third Way | -2.291*** | -2.841 | -1.741 |
| | Shas | -2.023*** | -2.655 | -1.392 |
| convergence c | | 3.98 | 3.70 | 4.26 |
| LML ^a =-777.0 | $n = 922$ | | | |

^a LML=Log marginal likelihood

^b *** $_{prob} < 0.001$

Using the formal analysis presented in Chapter 5, we can readily show that the *convergence coefficient* of the pure spatial model, $M(\lambda, \beta)$ for 1996 greatly exceeds 2 (the dimension of the policy space). Indeed, one of the eigenvalues of the Hessian of the one of the low valence parties, Shas, can be shown to be positive. The principal electoral axis (or principal component of the electoral distribution) can be seen to be aligned at approximately 45 degrees to the security axis. As we now show, this axis is the eigenspace of the positive eigenvalue. It follows from the computation of eigenvalues that low valence parties should position themselves close to this principal axis.

The MNL estimation given in Table 10.2 presents the relative valences in the pure spatial model with respect to Meretz. The table shows that in 1996 Shas had a relative valence of $\lambda_{shas} = -2.02$, while Labor had the highest relative valence of 0.99, with Likud having a valence of 0.78. The spatial coefficient was $\beta = 1.21$, so to use the convergence theorem, we note that the valence difference between Shas and Labor was $0.99 - (-2.02) = 3.01$, while the difference between Shas and Likud was $0.78 - (-2.02) = 2.8$. The electoral covariance matrix is

$$\nabla_0 = \begin{bmatrix} 1.0 & 0.591 \\ 0.591 & 0.732 \end{bmatrix}$$

with trace $\sigma^2 = 1.732$. The principal component of this electoral distribution is given by the vector (1.0, 0.80) with variance 1.47, while the minor component is given by (1.0, -1.25) with variance 0.26. We can compute the characteristic matrix of Shas at the mean and the convergence coefficient as follows:

$$\begin{aligned} \rho_{Shas} &\simeq \frac{1}{1 + e^3 + e^{2.8} + e^{1.4} + e^{0.8}} \\ &\simeq 0.023. \\ 2\beta(1 - 2\rho_{Shas}) &= 2 \times 1.21 \times 0.95 = 2.30 \end{aligned}$$

$$\begin{aligned} \text{so } C_{Shas} &= (2.3)\nabla_0 - I \\ &= \begin{bmatrix} 1.3 & 1.36 \\ 1.36 & 0.69 \end{bmatrix}. \\ \text{and } c &= 2.3 \times 1.732 = 3.98. \end{aligned}$$

From the estimate of C_{Shas} it follows that the two eigenvalues are 2.39 and -0.39 , giving a *saddlepoint*, and a value of 3.98 for the convergence coefficient. This exceeds the necessary upper bound of 2. The estimate for the standard error on ρ_{Shas} is 0.008, so the 95% confidence interval is $[0.007, 0.02]$. Note that this interval includes the actual sample vote share of 2% for Shas. The standard error on β is 0.065 so the standard error on c is of order 0.14, and we can infer that, with high probability, the convergence coefficient exceeds the critical value of 2.0.

Using the above estimate for the major eigenvalue, we find that the major eigenvector for Shas is $(1.0, 0.79)$, and along this axis the Shas vote-share function increases as the party moves away from the mean. The minor, perpendicular axis associated with the negative eigenvalue is given by the vector $(1, -1.26)$. Any LNE for the model $\mathbb{M}(\lambda, \beta)$ will be one where all parties are located on the major eigenvector.

We also constructed a joint MNL model, $\mathbb{M}(\lambda, \theta, \beta)$, and a pure sociodemographic model of the election, $\mathbb{M}(\lambda, \theta)$, details of which can be found in Schofield and Sened (2006). Table 10.3 reports the differences in the log marginal likelihoods of the various models.

Table 10.3. Comparison of LML for Israel models for 1996

| | | \mathbb{M}_2 | | |
|----------------|-----------|--------------------|---------|------------|
| | | Joint ^a | Spatial | Socio-Dem. |
| \mathbb{M}_1 | Joint | na | 82 | 249 |
| | Spatial | -82 | na | 167 |
| | Socio-Dem | -249 | -167 | na |

^a Joint=spatial model with sociodemographics

Figure 10.4 gives one of the local Nash equilibrium, obtained by simulation of the model. Since this model does not involve activist terms, we can infer that this equilibrium gives an estimate of the weighted electoral means, \mathbf{z}^{el} , for the parties. This vector, \mathbf{z}^{el} , is given by:

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -1.1 & 1.0 & 1.0 & 0.0 & 0.2 & 0.9 & 1.0 \\ y & -0.8 & 0.8 & 0.8 & -0.2 & 0.0 & 0.6 & 1.0 \end{bmatrix}$$

All these equilibrium positions lie very close to an eigenvector $(1.0, 0.85)$. It thus appears that the only effect of the inclusion of the sociodemographic variables is to slightly rotate the principal eigenvector in an anticlockwise direction. In all, five different LNE

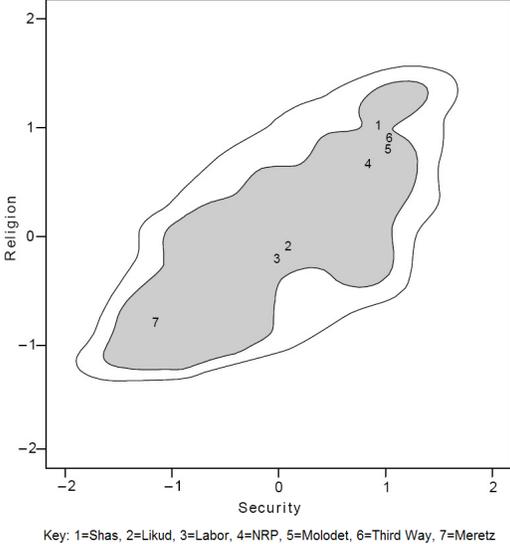


Figure 10.4: Estimated local equilibrium positions in the Knesset in 1996

were located. However, in every equilibrium, the two high valence parties, Labor and Likud, were located close to the simulated equilibrium positions shown in Figure 10.4. The only difference between the various equilibria were slight differences in the positions of Shas, NRP and Moledet.

It is evident that if the high valence party occupies the electoral mean, then each party with lower valence can compute that its vote-share will increase by moving up or down the principal electoral axis. In seeking local maxima of the vote shares all parties other than the highest valence party should vacate the electoral center. Then, however, the first-order condition for the high valence party to occupy the electoral center would not be satisfied. Even though this party's vote-share will be little affected by the other parties, it too should move from the center. The simulation for 1996 is compatible with the formal analysis: low valence parties, such as the NRP and Shas, in order to maximize vote-shares must move far from the electoral center. As with the pure spatial model, their optimal positions will lie either in the "north-east" quadrant or the "south-west" quadrant. The vote-maximizing model, without any additional information, cannot determine which way the low valence parties should move.

The equilibrium position of Shas, by the joint model, will give greater weight to those voters who are observant. As Figure 10.4 makes clear, Shas, Moledet and NRP are located in the upper quadrant of the policy space. On the other hand, since the valence difference between Labor and Likud was relatively low, their local equilibrium positions will be close to, but not identical to, the electoral mean. Intuitively it is clear that once the low valence parties vacate the mean, then high valence parties, like Likud and Labor, should position themselves almost symmetrically about the mean, and close to the principal axis.

We now compare the LNE obtained from the joint model with the vector, \mathbf{z}^* , of estimated positions given in Figure 10.4:

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -1.5 & 1.4 & -0.2 & -0.8 & 0.6 & 1.0 & 0.0 \\ y & -1.0 & 0.5 & -0.4 & -0.2 & 0.2 & 1.1 & 1.1 \end{bmatrix}.$$

We hypothesize that \mathbf{z}^* is a local equilibrium of the full activist model: The difference, $\mathbf{z}^* - \mathbf{z}^{el}$, between the vector of positions and the equilibrium of Figure 10.4 is of order

$$\begin{bmatrix} \text{Party} & \text{Meretz} & \text{Moledat} & \text{IIIWay} & \text{Labor} & \text{Likud} & \text{NRP} & \text{Shas} \\ x & -0.4 & 0.4 & -1.2 & -0.8 & 0.4 & 0.1 & -1.0 \\ y & -0.2 & -0.3 & -1.2 & 0.0 & 0.2 & 0.5 & 0.1 \end{bmatrix}.$$

From the balance theorem, an estimate of the influence of activist groups on the parties is given by:

$$\mathbf{z}^* - \mathbf{z}^{el} = \frac{1}{2\beta} \left[\frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right].$$

Schofield and Sened estimate $\beta = 1.117$ for the joint model, so we obtain

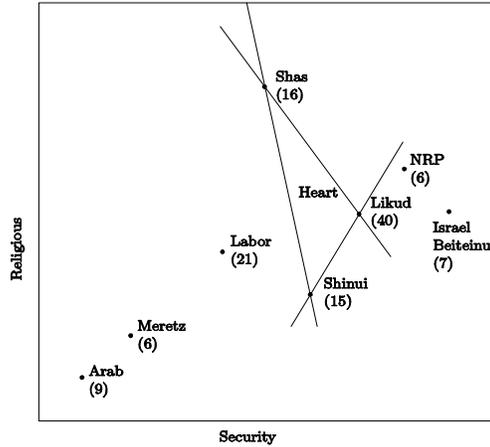


Figure 10.5: The configuration of the Knesset after the election of 2003

$$\left[\frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right] = 2\beta(\mathbf{z}^* - \mathbf{z}^{el}) =$$

| | | | | | | | |
|--------------|---------------|----------------|---------------|--------------|--------------|------------|-------------|
| <i>Party</i> | <i>Meretz</i> | <i>Moledat</i> | <i>IIIWay</i> | <i>Labor</i> | <i>Likud</i> | <i>NRP</i> | <i>Shas</i> |
| <i>x</i> | -0.9 | 0.9 | -2.7 | -1.78 | 0.9 | 0.22 | -2.2 |
| <i>y</i> | -0.45 | -0.67 | -2.68 | 0.0 | 0.45 | 1.12 | 0.22 |

Although we have not performed the empirical analysis for the elections of 2003 and 2006, we can expect a similar result to hold. The analysis given in Schofield and Sened (2006) for the elections of 1992 and 1988 shows that in 1988 the two eigenvalues for Shas were +2.0 and -0.83, while in 1992 the eigenvalues for this party were +2.12 and -0.52. Just as in 1996, the theoretical model of vote maximization implies that all parties should be located on a principal electoral axis. The positioning of Shas off the principal electoral axis enables it to pivot between the two major parties, in the sense that it tended to be crucial for the formation of winning coalitions.

10.1.3 Elections in 2003, 2006 and 2009

As Table 10.1 shows, after the elections of 1996, 1999 and 2003 any winning coalition based on either Labor or Likud needed additional support of Shas. In 1996, Netanyahu of Likud formed a government with Shas, but after Likud lost seats in 1999, it was the turn of Barak of Labor to form a government, again with Shas, followed in 2001 by Likud, led by Sharon, with Shas. In consequence, even though Shas controlled few

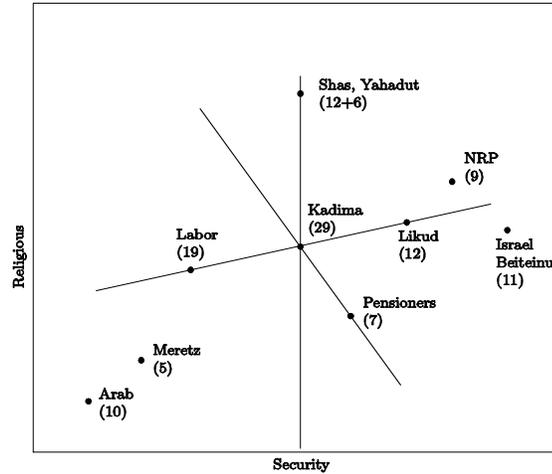


Figure 10.6: The configuration of the Knesset after the election of March 2006

seats in this period, it had significant bargaining power. Figure 10.5 illustrates this for 2003.

This pattern of coalition government was transformed, to some degree, when Amir Peretz stood against Shimon Peres and won the election for leadership of Labor in November, 2005.

Sharon then left the Likud Party and allied with Peres and other senior Labor Party members, to form the new party, *Kadima* (“Forward”). We can infer that the coalition of Sharon and Peres positioned Kadima at the center of the policy space. Because of Sharon’s stroke in January, 2006, Ehud Olmert took over as leader of Kadima, and in the election of March 2006, the new party was able to take 29 seats, while Likud only took 19 seats. One surprise of the election was the appearance of a Pensioners’ party with 7 seats. A possible coalition of Likud and the religious parties, opposed to Kadima, did not have the required 61 seats for a majority (even with the Pensioners’ Party). Schofield (2007b) discussed this election and argued that Kadima was at the core position, since no majority coalition could agree to overturn the Kadima position. However, this “core property” was unstable, in the sense that it could be destroyed by small changes in positions or strengths of the parties. See Figure 10.6.

As a result, Olmert needed the support of Labor to be able to deal with the complex issue of fixing a permanent border for Israel. The debacle in Lebanon severely weakened Olmert’s popularity, and the 61 members of the Kadima-Labor coalition voted to bring Israel Beiteinu into the coalition. The report, in April 2007, on the failure of the government during the war with Lebanon in Summer 2006 seemed to threaten the

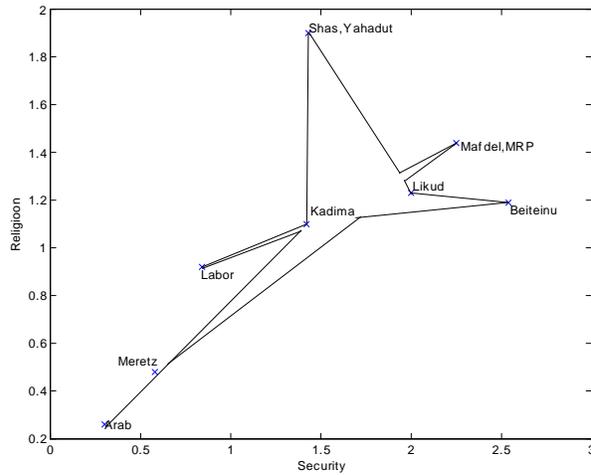


Figure 10.7: The heart in Israel in 2009

Kadima-Labor- Israel Beiteinu coalition by bringing about a change in the Labor party leadership. Barak then won the election for the Labor Party leadership on 12 June, 2007, and became Minister of Defense in the government on 18 June, while Shimon Peres became President. In November, 2007, Olmert proposed a land-for-peace proposal, possibly involving the separation of Jerusalem, and on January 15, 2008, Avigdor Lieberman, chairman of Israel Beiteinu announced that the party would quit the government because of disagreement over issues such as Jerusalem and negotiations with Hamas.

On February 3, 2008, Barak agreed to remain in the coalition, thus helping to sustain Kadima in power. However, in August 2008, Olmert faced charges of corruption, and formally resigned as leader of Kadima on September 21. He immediately gave an interview (Olmert, 2008) in which he asserted that Israel would have to lose sovereignty over Jerusalem, and would have to come to an agreement with Syria by giving up the Golan Heights in return for Syrian forswearing their connections with Iran, Hezbollah and Hamas.

The new leader of Kadima, and Prime Minister designate, Tzipi Livni, then had to face a revolt by Shas, over these security issues. On October 26, 2008, she announced that she had failed to form a viable coalition, and an election would occur in February, 2009. Even though the Kadima government was weakened, it responded to rocket attacks by Hamas from Gaza, and launched a three week attack on Gaza at the end of

December, 2008.

In the election of 2009, as Table 10.1 shows, the Pensioners' Party disappeared, and both Likud and Israel Beiteinu gained seats. Labor lost significantly, presumably because of the loss of valence by its leader, Ehud Barak. Figure 10.7 shows an estimate of the heart, based on the party positions after this election. The figure suggests that the core was destroyed. It was unclear therefore what government would form. Both Livni and Benjamin Netanyahu, of Likud, claimed the electoral mandate. However, on February 20, Avigdor Lieberman took the role of *formateur* of the coalition game, and offered his support to Netanyahu. On March 24, a majority of the Labor Party central committee voted to support Netanyahu, in return for four cabinet positions, and the retention of the defense portfolio by Barak. Tzipi Livni refused the offer to join this unity coalition government of Likud, Labor, Shas and Israel Beiteinu, and will be in opposition. As prime minister designate, Netanyahu declared on March 26 that he would negotiate with the Palestinian Authority for peace. Five days later he was sworn in as Prime Minister, after a vote of 69 to 45, with the abstention of 5 Labor members (one Arab member of the Knesset was absent). Avigdor Lieberman became foreign minister. Although Netanyahu has tended to avoid mention of a sovereign Palestinian state, he declared in December 2009 that in order to proceed with this policy, he was willing to consider inviting Livni to join in a grand coalition.

In March, 2010, during Vice President Biden's visit to Israel it was announced that Israel would add 1,600 housing units in eastern Jerusalem. Although the Obama administration was angered by the timing of the announcement, Netanyahu insisted that Israel would go ahead with the construction. However, President Shimon Peres said: "We cannot afford to unravel the delicate fabric of friendship with the United States. Today we are also at a decisive moment and we must decide without the determination of external parties."

In September, 2010, negotiations started in Washington, involving Netanyahu, Mahmoud Abbas (the President of the Palestinian Authority), King Abdullah II of Jordan and President Hosni Mubarak of Egypt. As we discuss in Chapter 11, the unrest in N.Africa and the Middle East has changed the geopolitical situation in the region.

10.1.4 Concluding Remarks about the Israel Elections.

We can see the nature of bargaining over the coalition government of 2009 by considering the heart as presented in Figure 10.7. The complex nature of this set suggests that there are many possible majority coalitions. In particular, small parties such as Shas, Yahadut and Israel Beiteinu may join in government and may thus influence the outcome of coalition government. We have argued that the positions adopted by the parties are the result of activist choices to support particular parties. Thus activist groups for these small parties may reason that the party they support has a good chance of taking part in government, thus bringing about policy changes that favor the activists. Consequently, there is little motivation for such activist groups to coalesce. As long as the logic of vote maximization maintains this policy divergence between the parties, then

so will activist groups continue to provide support for these small parties. Thus political fragmentation is preserved. Indeed, the disintegration of the Labor Party on January 17, 2011, when Barak and four other labor members of the Knesset formed a splinter party, Independence, showed this process of fragmentation in action.

These remarks about recent events in the Knesset are presented to illustrate the great difficulty of maintaining a stable government coalition, even when there is a large, centrally located party, such as Kadima. Such a party should, in principle, be able to dominate bargaining. However, it is only when the center party's leader has high valence is the party able to avoid threats to the government. Without such valence predominance, small parties, and their activist supporters have an incentive to act to maintain political fragmentation.

10.2 Elections in Turkey 1999-2007

In this section we apply the valence model by considering in some detail a sequence of elections in Turkey from 1999 to 2007. The election results are given in Tables 10.4, 10.5 and 10.6, which also provide the acronyms for the various parties.

Table 10.4 Turkish election results 1999

| Party Name | | % Vote | Seats | % Seats |
|---------------------------|-------|--------|-------|---------|
| Democratic Left Party | DSP | 22.19 | 136 | 25 |
| Nationalist Action Party | MHP | 17.98 | 129 | 23 |
| Virtue Party | FP | 15.41 | 111 | 20 |
| Motherland Party | ANAP | 13.22 | 86 | 16 |
| True Path Party | DYP | 12.01 | 85 | 15 |
| Republican People's Party | CHP | 8.71 | | |
| People's Democracy Party | HADEP | 4.75 | | |
| Others | | 4.86 | | |
| Independents | | 0.87 | 3 | 1 |
| Total | | | 550 | |

Table 10.5 Turkish election results 2002

| Party Name | | % Vote | Seats | % Seats |
|-------------------------------|-------|--------|-------|---------|
| Justice and Development Party | AKP | 34.28 | 363 | 66 |
| Republican People's Party | CHP | 19.39 | 178 | 32 |
| True Path Party | DYP | 9.54 | | |
| Nationalist Action Party | MHP | 8.36 | | |
| Young Party | GP | 7.25 | | |
| People's Democracy Party | HADEP | 6.22 | | |
| Motherland Party | ANAP | 5.13 | | |
| Felicity Party | SP | 2.49 | | |
| Democratic Left Party | DSP | 1.22 | | |
| Others and Independents | - | 6.12 | 9 | 2 |
| Total | | | 550 | |

Table 10.6 Turkish election results 2007

| Party Name | | % Vote | Seats | % Seats |
|-------------------------------|-----|--------|-----------------|---------|
| Justice and Development Party | AKP | 46.6 | 340 | 61.8 |
| Republican People's Party | CHP | 20.9 | 112 | 20.3 |
| Nationalist Movement Party | MHP | 14.3 | 71 | 12.9 |
| Democrat Party ^a | DP | 5.4 | | |
| Young Party | GP | 3.0 | | |
| Felicity Party | SP | 2.3 | | |
| Independents | | 5.2 | 27 ^b | 4.9 |
| Others | | 2.3 | | |
| Total | | 100 | 550 | 100 |

^a The DP is also known as the BDP, for Baris ve Demokrasi Partisi or Peace and Democracy Party.

^b Twenty-four of these "independents" were in fact members of the DTP—the Kurdish Freedom and Solidarity Party.

As in other work in this book, the empirical models were based on factor analysis of voter surveys.³⁴³ Figures 10.8 and 10.9 show the electoral distributions (based on sample surveys of sizes 635 and 483 respectively) and estimates of party positions for 1999 and 2002.³⁴⁴

The two dimensions in both years were a "left-right" religion axis and a "north-south" Nationalism axis, with secularism or "Kemalism" on the left and Turkish nationalism to the north. (See also Carkoğlu and Hinich (2006) for a spatial model of the 1999 election).

Minor differences between these two figures include the disappearance of the Virtue Party (FP) which was banned by the Constitutional Court in 2001, and the change of the name of the pro-Kurdish party from HADEP to DEHAP.³⁴⁵ The most important change

³⁴³The estimations presented below are based on factor analysis of sample surveys conducted by Veri Arastirma for TUSES.

³⁴⁴The party positions were estimated using expert analysis, in the same way as the work by Benoit and Laver (2006).

³⁴⁵For simplicity, the pro-Kurdish party is denoted HADEP in the various Figures and Tables. Notice that

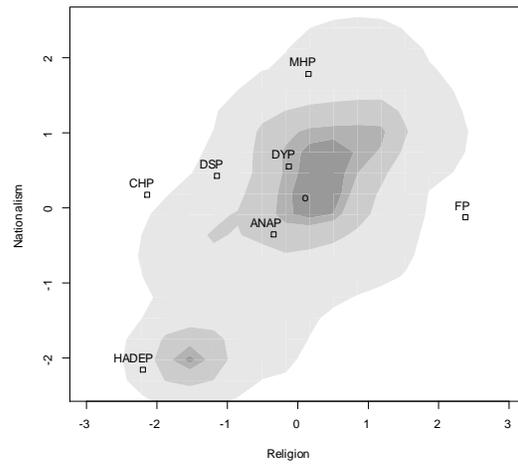


Figure 10.8: Party positions and voter distribution in Turkey in 1999

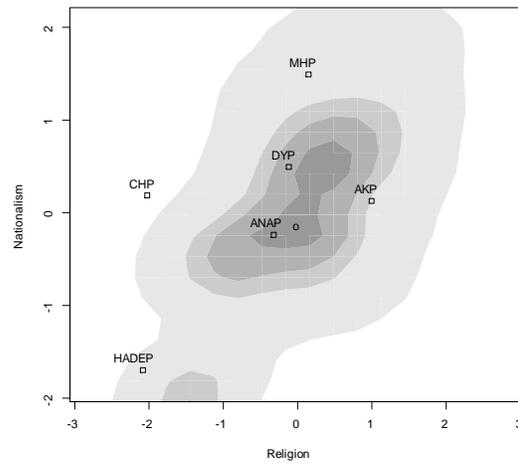


Figure 10.9: Party positions and voter distribution in Turkey in 2002.

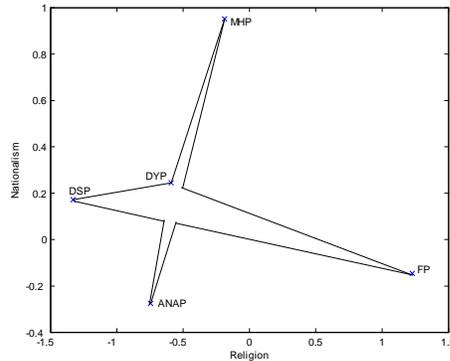


Figure 10.10: The Heart in 1999 in Turkey

is the appearance of the new Justice and Development Party (AKP) in 2002, essentially substituting for the outlawed Virtue Party.

In 1999, a DSP minority government formed, supported by ANAP and DYP. This only lasted about 4 months, and was replaced by a DSP-ANAP-MHP coalition, indicating the difficulty of negotiating a coalition compromise across the disparate policy positions of the coalition members. Figure 10.10 shows the heart in 1999.

During the period 1999–2002, Turkey experienced two severe economic crises. As Tables 10.4 and 10.5 show, the vote shares of the parties in the governing coalition went from about 53 percent in 1999 to less than 15 percent in 2002. In 2002, a 10% cut-off rule was instituted. As Table 10.6 makes clear, seven parties obtained less than 10% of the vote in 2002, and won no seats. The AKP won 34% of the vote, but because of the cut-off rule, it obtained a majority of the seats (363 out of 550). In 2007, the AKP did even better, taking about 46% of the vote, against 21% for the CHP. The Kurdish Freedom and Solidarity Party avoided the 10% cut-off rule, by contesting the elections as independent non-party candidates, winning 24 seats with less than 5% of the vote.

The point of this example is that a comparison of Figures 10.8 and 10.9 suggest that there was very little change in policy positions of the parties between 1999 and 2002. The basis of support for the AKP may be regarded as a similar to that of the banned FP, which suggests that the leader of this party changed the party's policy position on the religion axis, adopting a much less radical position.

In sum, the standard spatial model is unable to explain the change in the electoral outcome, taken together with the relative unchanged positioning of the parties between

the HADEP position in Figures 1 and 2 is interpreted as secular and non-nationalistic.

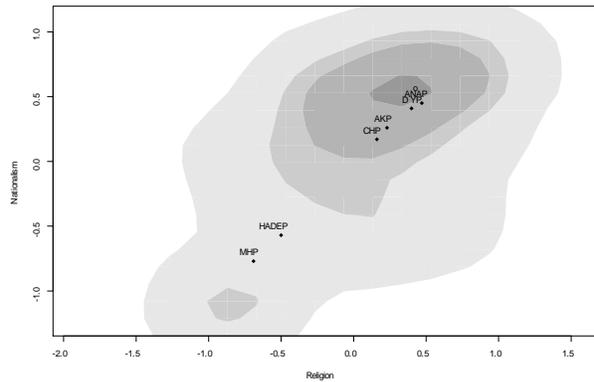


Figure 10.11: A Local Nash Equilibrium for the pure spatial model in 2002

1999 and 2002.

The next section of this chapter considers the details of the multinomial logit (MNL) model for Turkey for 1999 and 2002. In particular, this section shows that the pure spatial model with exogenous valence predicts that the parties diverge away from the mean. To illustrate, Table A10.2 shows that the lowest valence party in 2002 was the Motherland Party (ANAP) while the Republican People's Party (CHP) had the highest valence. The convergence coefficient was computed to be 5.94, far greater than the upper bound of 2. Figure 10.11 presents an estimate of one of the LNE obtained from simulation of vote maximizing behavior of the parties, under the assumption of the pure spatial model with exogenous valence. As expected from the theoretical result, the LNE is non centrist. Note however, the LNE positions for the pure spatial model given in Figure 10.11 are quite different from the estimated positions in Figure 10.9.

To improve the prediction of the model, we incorporated the sociodemographic variables. Estimating the LNE for this sociodemographic model gave a better prediction. To explain the difference between the estimated positions of the parties, and the LNE from the sociodemographic model, we then added the influence of party activists to the model. Since sociodemographic variables can be interpreted as specific valences associated with different subgroups of the electorate, we can use these sociodemographic valences to estimate the influence of group-specific activists on party positions.

The theorem presented in Chapter 5 gives the first order *balance* condition for local equilibrium in the stochastic electoral model involving sociodemographic valences and activists. The condition requires the balancing of a *centrifugal marginal activist pull* (or *gradient*) against a *marginal electoral pull*. In general, if the exogenous valence of

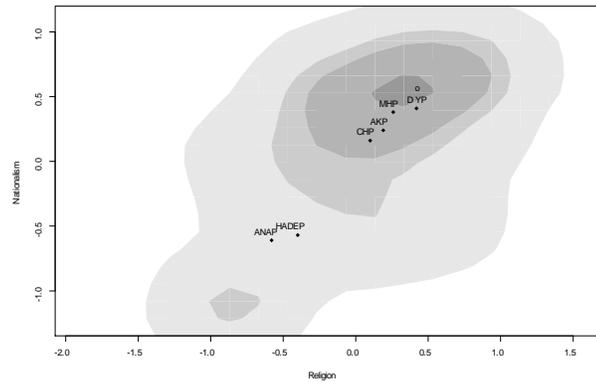


Figure 10.12: A local Nash Equilibrium for the joint model in 2002

a party leader falls, then the marginal electoral pull also falls, so balance requires that the leader adopt a position closer to the preferred position of the party activists.

The pure spatial model, with exogenous valences, and a joint model, with sociodemographic valences, but without activists, are compared using simulation to determine the LNE in these models. This allows us to determine which model better explains the party positions. For example, Figure 10.12 shows the LNE based on a joint sociodemographic model for 2002. In this figure, the LNE position for the Kurdish party, HADEP, is a consequence of the high electoral pull by Kurdish voters located in the lower left of the figure. Similarly, the position of the CHP on the left of the figure is estimated to be due to the electoral pull by Alevi voters who are Shia, rather than Sunni and can be regarded as supporters of the secular state. Although Figure 10.12 gives a superior prediction of the party positions than Figure 10.11, there is still a discrepancy between the estimated positions of Figure 10.9 and the LNE in Figure 10.12. As in earlier chapters, we argue that the difference between these two vectors of party positions, as presented in Figures 10.9 and 10.12, can be used to provide an estimation of the marginal activist pulls influencing the parties.

More generally, we suggest that the combined model, with sociodemographic variables and activists, can be used as a tool with which to study the political configuration of such a complex society. In the conclusion we suggest that the full model involving activists may be applicable to the study of what Epstein et al (2006) call “partial democracies”, where a political leader must maintain popular support, not just by winning elections, but by maintaining the allegiance of powerful activist groups in the society.

10.2.1 The Spatial Model for Turkey 1999-2002

We use the formal model, denoted $\mathbb{M}(\lambda, \theta, \beta)$ which utilizes socio-demographic variables, denoted θ .

Tables A10.1 and A10.2, in the Appendix to this chapter, give the details of the pure spatial MNL models for the elections of 1999 and 2002 in Turkey, while Tables A10.3 and A10.4 give the details of the joint MNL models. The differences in log marginal likelihoods for the three different models then gives the log Bayes' factor for the pairwise comparisons.³⁴⁶ The log Bayes' factors show that the joint and pure spatial MNL models were clearly superior to the SD models. In addition the joint models were superior to the pure spatial models.³⁴⁷ We can infer that, though the sociodemographic variables are useful, by themselves they do not give an accurate model of voter choice.³⁴⁸ It is necessary to combine the pure spatial model, including the valence terms, with the sociodemographic valences to obtain a superior estimation of voter choice.

Comparing Tables A10.1 and A10.2, it is clear that the relative valences of the ANAP and MHP, under the pure spatial model, dropped between 1999 and 2002. In 1999, the estimated λ_{ANAP} was +0.336, while the confidence interval on λ_{ANAP} for 1999 in Table A10.1 shows that the hypothesis that $\lambda_{ANAP} = 0$ should be rejected. In contrast the estimated value of λ_{ANAP} for 2002 was -0.31, and the confidence interval on λ_{ANAP} does not allow us to reject the hypothesis that $\lambda_{ANAP} = 0$.³⁴⁹ Similarly λ_{MHP} fell from a significant value of +0.666 in 1999 to -0.12 in 2002. The estimated relative valence, λ_{AKP} , of the new Justice and Development Party (AKP) in 2002 was +0.78, in comparison to the valence of the FP of -0.159 in 1999. Since the AKP can be regarded as a transformed FP, under the leadership of Recep Tayyip Erdogan, we can infer from the confidence intervals on these two relative valences that this was a significant change due to Erdogan's leadership.³⁵⁰

It should be noted that the β coefficients for the pure spatial models were 0.375 in 1999, and 1.52 in 2002. Both of these are estimated to be non-zero at the 0.001 level. Indeed, they are significantly different from each other,³⁵¹ suggesting that electoral preferences over policy had become more intense.

We first use the results of the formal pure spatial model to compute estimates of the convergence coefficients. These computations suggest that convergence to an electoral center is not to be expected in these elections. We then use simulation to determine the

³⁴⁶Since the Bayes' factor (Kass and Raftery, 1995) for a comparison of two models is simply the ratio of marginal likelihoods, the log Bayes' factor is the difference in log likelihoods.

³⁴⁷The log Bayes factors for the joint models over the sociodemographic models were highly significant at +31 in 1999 and +58 in 2002. The Bayes' factors for the joint over the spatial models were also significant, and estimated to be +6 and +5 in 1999 and 2002, respectively.

³⁴⁸Sociodemographic models are standard in the empirical voting literature.

³⁴⁹These tables show the standard errors of the coefficients, as well as the *t-values*, the ratios of the estimated coefficient to the standard error.

³⁵⁰Although Erdogan was the party leader, Abdullah Gul became Prime Minister after the November 2002 election because Erdogan was banned from holding office. Erdogan took over as Prime Minister after winning a by-election in March 2003.

³⁵¹The 95% confidence interval for β_{1999} is [0.2,0.55] and for β_{2002} it is [1.28,1.76]

LNE of the empirical joint models, again showing non-convergence. This allows us to obtain information about activist support for the parties.

The 2002 Election Figure 10.9 gave the smoothed estimate of the voter ideal points in 2002. This distribution gives the 2 by 2 voter covariance matrix, with an electoral variance on the first axis (religion) estimated to be 1.18 while the electoral variance on the second axis (nationalism) was 1.15. The total electoral variance was $\sigma^2 = 2.33$, with an electoral standard deviation of $\sigma = 1.52$. The covariance between the two axes was equal to 0.74.

Thus the voter covariance matrix is

$$\nabla_0 = \begin{bmatrix} 1.18 & 0.74 \\ 0.74 & 1.15 \end{bmatrix}$$

with $\text{trace}(\nabla_0) = 2.33$.

The eigenvalues of this matrix are 1.9, with major eigenvector $(+1.0, +0.97)$ and 0.43, with minor eigenvector $(-0.97, +1.0)$. The major eigenvector corresponds to the *principal electoral axis*, aligned at approximately 45 degrees to the religion axis.

For the pure spatial model $\mathbb{M}(\lambda, \beta)$, the β coefficient was 1.52, The valence terms are estimated in contrast with the valence of the DYP, and the the party with the lowest relative valence is ANAP with $\lambda_{ANAP} = -0.31$. By definition, $\lambda_{DYP} = 0$. The vector of relative valences is then

$$\begin{aligned} & (\lambda_{ANAP}, \lambda_{MHP}, \lambda_{DYP}, \lambda_{HADEP}, \lambda_{AKP}, \lambda_{CHP}) \\ & = (-0.31, -0.12, 0.0, 0.43, 0.78, 1.33). \end{aligned}$$

When all parties are at the mean, the probability, ρ_{ANAP} , that a voter chooses ANAP, in the model $\mathbb{M}(\lambda, \beta)$, is independent of the voter. This is given by the expression

$$\begin{aligned} & \frac{\exp(-0.31)}{\exp(-0.31) + \exp(-0.12) + \exp(0.0) + \exp(0.43) + \exp(0.78) + \exp(1.33)} \\ & = [1 + \exp(0.19) + \exp(0.31) + \exp(0.74) + \exp(1.09) + \exp(1.164)]^{-1} \\ & = [1 + 1.2 + 1.36 + 2.09 + 2.97 + 3.2]^{-1} \\ & = 0.08. \end{aligned}$$

Below, we show that the 95% confidence interval on ρ_{ANAP} is $[0, 05, 0.11]$, which includes the actual vote share (5.13%) in 2002.

The Hessian of the vote share function of ANAP, when all parties are at the mean, is given by the characteristic matrix of ANAP:

$$\begin{aligned} C_{ANAP} & = 2\beta(1 - 2\rho_{ANAP})\nabla_0 - I \\ & = 2 \times (1.52) \times [(1 - (2 \times 0.08)]\nabla_0 - I \\ & = (2.55) \begin{bmatrix} 1.18 & 0.74 \\ 0.74 & 1.15 \end{bmatrix} - I \\ & = \begin{bmatrix} 2.01 & 1.88 \\ 1.88 & 1.93 \end{bmatrix}. \end{aligned}$$

Moreover, the convergence coefficient,

$$c = 2\beta(1 - 2\rho_{ANAP})\text{trace}(\nabla_0) = 2.55 \times 2.33 = 5.94.$$

This greatly exceeds the upper bound of +2.0 for convergence to the electoral mean. The major eigenvalue for the ANAP characteristic matrix is +3.85, with eigenvector (+1.0, +0.98), while the minor eigenvalue is +0.09, with orthogonal, minor eigenvector (-0.98, +1.0). The eigenvectors of this Hessian are almost perfectly aligned with the principal and minor components, or axes, of the electoral distribution.

Although the electoral mean satisfies the first order condition for local equilibrium, it follows from a standard result that the electoral mean is a *minimum* of the vote share function of ANAP, when the other parties are at the same position. On both principal and minor axes, the vote share of ANAP increases as it moves away from the electoral mean, but because the major eigenvalue is much larger than the minor one, we can expect that the AKP (as well the other parties) in equilibrium to adopt positions along a single eigenvector. We obtained two similar LNE from simulation of the pure spatial model:

$$\mathbf{z}_1 = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & 0.16 & -0.69 & 0.40 & -0.50 & 0.47 & 0.23 \\ y : \text{nat} & 0.17 & -0.77 & 0.41 & -0.57 & 0.45 & 0.26 \end{bmatrix}.$$

$$\mathbf{z}_2 = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & 0.17 & 0.43 & -0.65 & -0.51 & 0.47 & 0.22 \\ y : \text{nat} & 0.18 & 0.43 & -0.72 & -0.56 & 0.45 & 0.25 \end{bmatrix}.$$

Note that all the positions in these two LNE lie close to the principal axis given by the eigenvector (1.0, 1.0). The higher valence parties, the AKP and CHP lie closer to the mean, while the lower valence parties tend to be further from the mean.

In contrast, the estimated positions of the parties for 2002 in Figure 10.9 are:

$$\mathbf{z}^* = \begin{bmatrix} \text{Party} & \text{CHP} & \text{MHP} & \text{DYP} & \text{HADEP} & \text{ANAP} & \text{AKP} \\ x : \text{rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ y : \text{nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix}.$$

The equilibrium positions of the CHP and MHP, particularly, are very far from their estimated positions.

Errors in the models The standard error on λ_{ANAP} is $h = 0.19$, so

$$\begin{aligned} \rho_{ANAP}(\lambda_{ANAP} + h) &= \rho_{ANAP}(\lambda_{ANAP}) + h \frac{d\rho_{ANAP}}{d\lambda} \\ &= \rho_{ANAP}(\lambda_{ANAP}) + h\rho_{ANAP}(1 - \rho_{ANAP}). \end{aligned}$$

This gives a standard error of 0.014 and a 95% confidence interval on ρ_{ANAP} of [0.05, 0.11]. Since the standard error on β is 0.12, giving a confidence interval on β

of approximately $[1.28, 1.76]$, the standard error on c is 0.27. Using the lower bound on β and upper bound on ρ_{ANAP} gives an estimate for the 95% confidence interval on c of $[4.65, 7.38]$, so we can assert that, with very high probability, the convergence coefficient exceeds 4.0. Another way of interpreting this observation is that even if we use the upper estimate of the relative valence for ANAP, and the lower bound on β , then the joint electoral mean will still give a minimum of the vote share function for ANAP.

We now repeat the analysis for the election of 1999.

The 1999 Election The empirical model presented in Table A10.1 estimated the electoral variance on the first axis (religion) to be 1.20 while on the second axis (nationalism) the electoral variance, σ^2 , was 1.14, giving a total electoral variance, σ^2 , of 2.34, with the covariance between the two axes equal to +0.78.

The electoral covariance matrix is the 2 by 2 matrix

$$\nabla_0 = \begin{bmatrix} 1.20 & 0.78 \\ 0.78 & 1.14 \end{bmatrix}.$$

For the model, the β coefficient was 0.375, while the party with the lowest valence was FP with $\Lambda_{FP} = -0.16$. The vector of valences is:

$$\begin{aligned} & (\lambda_{FP}, \lambda_{MHP}, \lambda_{DYP}, \lambda_{HADEP}, \lambda_{ANAP}, \lambda_{CHP}, \lambda_{DSP}) \\ &= (-0.16, +0.66, 0.0, -0.071, +0.34, +0.73, +0.72). \end{aligned}$$

When all parties are located at the mean, the probability, ρ_{FP} , that a voter chooses FP under $\mathbb{M}(\lambda, \beta)$ is equal to

$$\begin{aligned} & \frac{1}{[1 + \exp(0.82) + \exp(0.16) + \exp(0.09) + \exp(0.5) + \exp(0.89) + \exp(0.88)]} \\ &= [11.27]^{-1} = 0.08. \end{aligned}$$

The standard error on λ_{FP} is 0.175, so the 95% confidence interval can be estimated to be $[[0.01, 0.15]$. The FP vote share in 1999 was 15.41%, suggesting that the pure spatial model should be extended to include sociodemographic valences.

Now $2\beta(1 - 2\rho_{FP}) = 2\beta \times (1 - 2 \times (0.08)) = 2 \times 0.38 \times 0.84 = 0.64$, so the characteristic matrix of the FP is

$$\begin{aligned} C_{FP} &= (0.64) \begin{bmatrix} 1.20 & 0.78 \\ 0.78 & 1.14 \end{bmatrix} - I \\ &= \begin{bmatrix} -0.24 & 0.448 \\ 0.448 & -0.27 \end{bmatrix}. \\ \text{and } c &= 0.64 \times 2.34 = 1.49. \end{aligned}$$

Although $c < 2.0$, we can compute the eigenvalues of C_{FP} to be -0.74 with minor eigenvector $(+1, -1.116)$ and $+0.23$, with major eigenvector $(+1, +0.896)$, giving a saddlepoint for the FP Hessian at the joint mean. As with the 2002 election, on the basis of the pure spatial model, we again expect all parties to align along the major

eigenvector, at approximately 45 degrees to the religion axis. Note, however, that the standard error on c is of order 0.22, so unlike the result for the election of 2002, we cannot assert that there is a high probability that the convergence coefficient exceeds 2. However, there is a probability exceeding 0.95 that one of the eigenvalues is positive.

In comparing the pure spatial models of the elections of 1999 and 2002, we note there is very little difference between the model predictions.

10.2.2 Extension of the model for Turkey

We now use the empirical joint model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$, in order to better model party positioning. We use this model in order to estimate the influence of party activists in a more general activist model, denoted $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\mu}, \beta)$. As before, the activist functions $\boldsymbol{\mu} = \{\mu_j : j \in P\}$ are presumed to be functions of party position, rather than exogenous constants. We assume that the activist contribution to party j is a differentiable function of the party's position, and positively affects the parties valence.

Chapter 5 shows that the first order condition for a local equilibrium, $\mathbf{z}^* = (z_1^*, \dots, z_p^*)$, in the activist model is given by the set of *gradient balance conditions*:

$$\frac{d\mathcal{E}_j^*}{dz_j}(z_j^*) + \frac{1}{2\beta} \frac{d\mu_j}{dz_j}(z_j^*) = 0. \quad (10.1)$$

Each term, $\frac{d\mu_j}{dz_j}(z_j)$ is the *the marginal activist pull (or gradient) at z_j* , giving the marginal activist effects on party j , while the gradient term $\frac{d\mathcal{E}_j^*}{dz_j}(z_j) = [z_j^{el} - z_j]$ is the *gradient electoral pull on the party*, at z_j , pointing towards its weighted electoral mean, z_j^{el} , as defined for party j by:

$$z_j^{el} \equiv \sum_{i=1}^n \varpi_{ij} x_i, \text{ where } [\varpi_{ij}] = \left[\frac{[\rho_{ij} - \rho_{ij}^2]}{\sum_{k \in N} [\rho_{kj} - \rho_{kj}^2]} \right]. \quad (10.2)$$

The weighted electoral mean essentially weights voter policy preferences by the degree to which the sociodemographic valences influence the choice of the voter.

Note in particular that (2) gives the first order condition for any of the various models considered here. In particular, if the sociodemographic and activist terms are zero, then (2) reduces to $[\alpha_{ij}] = \frac{1}{n}$, and, by the obvious coordinate transformation, we obtain $z_j = 0$, for all j , as the first order condition.

The joint model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$, allows us to draw some inferences about equilibrium positions. First we note that in the joint model, the sociodemographic valences are substitutes for the relative valences. Table 10.2 shows that the only valence that is significantly non zero in 2002 is λ_{AKP} . A number of the sociodemographic valences are, however, very significant.³⁵²

³⁵²The Bayes factors, or differences between the log marginal likelihoods of the joint models over the pure spatial models were +5 in both years.

Figure 10.12 gives an LNE, \mathbf{z}_3 , obtained by simulation of the joint model, $\mathbb{M}(\boldsymbol{\lambda}, \boldsymbol{\theta}, \beta)$:

$$\mathbf{z}_3 = \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ \textit{x : rel} & 0.12 & 0.26 & 0.40 & -0.50 & -0.58 & 0.19 \\ \textit{y : nat} & 0.16 & 0.38 & 0.41 & -0.51 & -0.61 & 0.24 \end{bmatrix}.$$

Again the estimated positions are:

$$\mathbf{z}^* = \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ \textit{x : rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ \textit{y : nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix}.$$

Comparing the joint model with the pure spatial model, we see that the equilibrium positions are slightly better predictors for HADEP, MHP and ANAP

For this joint model, Tables A.10.3 and A.10.4 show that the sociodemographic valences for HADEP (or DEHAP) by Kurdish voters were very high:

$$\begin{aligned} (\theta_{HADEP} \cdot \eta_{Kurd}) &= 5.9 \text{ in 1999} \\ (\theta_{HADEP} \cdot \eta_{Kurd}) &= 6.0 \text{ in 2002.} \end{aligned}$$

Keeping the other variables at their means in 2002, then changing η_{Kurd} from non-Kurd to Kurd increases the probability of voting for HADEP from 0.013 to 0.45. The high significance level of the sociodemographic variables indicates that the joint electoral model would predict that HADEP would move close to Kurdish voters who tend to be located on the left of the religion axis, and are also anti-nationalistic. The position marked HADEP in Figure 10.12 is consistent with this inference.

The joint model also shows that Alevi voters have very high sociodemographic valences for the CHP, with

$$\begin{aligned} (\theta_{CHP} \cdot \eta_{Alevi}) &= 3.1 \text{ in 1999} \\ (\theta_{CHP} \cdot \eta_{Alevi}) &= 2.6 \text{ in 2002.} \end{aligned}$$

The Alevis are a non-Sunni religious community, who are adherents of Shia Islam rather than Sunni, and may be viewed as supporters of “Kemalism” or the secular state. Again, with other variables at their means, changing η_{Alevi} from non-Alevi to Alevi increases the probability of voting for CHP in 2002 from 0.16 to 0.63. Thus the joint model indicates that the CHP will move to a vote maximizing position, on the left of the religious axis, again as indicated in Figure 10.9.

Conversely, for Alevi voters $\theta_{AKP} \cdot \eta_{Alevi} = -0.25$ in 2002, and we can infer that the AKP may have moved to the right to attract Sunni voters.

From the balance theorem we infer that

$$\begin{aligned}
 \mathbf{z}^* - \mathbf{z}_3 &= \frac{1}{2\beta} \left[\frac{d\mu_1}{dz_1}, \dots, \frac{d\mu_p}{dz_p} \right] \\
 &= \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ x : \textit{rel} & -2.0 & 0.0 & 0.0 & -2.0 & -0.2 & 1.0 \\ y : \textit{nat} & +0.1 & 1.5 & 0.5 & -1.5 & -0.1 & 0.1 \end{bmatrix} \\
 &\quad - \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ x : \textit{rel} & 0.12 & 0.26 & 0.40 & -0.50 & -0.58 & 0.19 \\ y : \textit{nat} & 0.16 & 0.38 & 0.41 & -0.51 & -0.61 & 0.24 \end{bmatrix} \\
 &= \begin{bmatrix} \textit{Party} & \textit{CHP} & \textit{MHP} & \textit{DYP} & \textit{HADEP} & \textit{ANAP} & \textit{AKP} \\ x : \textit{rel} & -3.2 & -0.26 & -0.40 & -1.50 & +0.38 & 0.81 \\ y : \textit{nat} & -0.15 & +1.12 & 0.09 & -0.99 & +0.51 & -0.14 \end{bmatrix}
 \end{aligned}$$

The estimated activist pull on HADEP is very high, pulling the party to the left on the religion axis, and in an anti-nationalist direction on the y axis. Similarly, the estimated activist pull on the CHP is even higher on the religious axis, pulling the party in a secular direction, and we can infer that this is due to the influence of Alevi voters.

As a consequence, this asymmetry will cause Alevi activists to provide further differential support for the CHP. It is thus plausible that secular voters (on the left of the religious axis in Figures 10.8 and 10.9) would offer further support to the CHP, located close to them. This would affect the party's marginal activist pull, and induce the CHP leader to move even further left, towards its inferred equilibrium position in the full activist model.

We suggest that activist support for the AKP would move it slightly to the right on the religion axis, as well as in an anti-nationalism direction. This would result in its estimated position as in Figure 10.9.

In contrast, we might conjecture that the military provides activist support for the MHP on the nationalism axis, and this will move the party to the left in a secular direction, and north on the nationalism axis, resulting in its position in Figure 10.9.

Overall, we note that we can expect activist valence to strongly influence party positioning, and we can proxy this support to some degree using the sociodemographic variables. Notice that the sociodemographic variables are estimated at the vector \mathbf{z}^* , so the estimated sociodemographic valences have been influenced by activist support. The LNE obtained from the joint model is a hypothetical solution to the vote maximizing game involving the parties, based on some empirical assumptions about the underlying nature of the important sociodemographic groups in the polity.

10.2.3 General Remarks on Turkish elections

Although we have not performed a MNL analysis of the 2007 election, it seems obvious that some of the changes in the nature of party strategies were due to changes in the electoral laws. The election results of 1999 were based on an electoral system that was

quite proportional, whereas in 2002 and 2007, the electoral system was highly majoritarian. In 2002, for example, the AKP gained 66% of the seats with only 34% of the vote, while in 2007 it took 46.6% of the vote and 340 seats (or 61.8%), reflecting the continuing high valence of Erdogan. Similarly, the CHP went from about 9% of the vote in 1999 (and no seats) to 19% of the vote in 2002, and 32% of the seats. This is mirrored by the increase in the valence estimates of the joint model from $\lambda_{CHP} = -0.673$ in 1999 to $\lambda_{CHP} = 1.103$, in 2002. In contrast the MHP went from 18% of the vote in 1999 to 8% in 2002, while λ_{MHP} for the joint model fell from 2.5 to 1.7. The turn around in the vote share of the MHP between 2002 and 2007 could be a result of increasing support for this party from nationalist activist groups in an attempt to offset the high valence and electoral support for the AKP in 2002. Indeed, the increased concentration of the vote share between 1999 and 2007 may be a consequence of the greater significance of activist influence as the electoral system became more majoritarian due to the nature of the electoral cut-off rule.³⁵³

In such a non-proportional electoral system there are incentives for members of different sociodemographic groups to engage in strategic voting. There is some indication from the formal model that the intensity of the political contest between secularist, nationalistic and religious activist groups had increased prior to 2007, and recent events suggest that this is continuing.

After the 2007 election, Abdullah Gul, Erdogan's ally in the AKP was elected as the country's 11th president, despite strong opposition from the army and many secular interests. In late February, 2008, the Turkish military invaded the Kurdish controlled territory in north west Iraq in an attempt to destroy the bases of the P.K.K. (the Kurdistan Workers' Party). The secular Constitutional Court has also considered banning many members of the AKP. In September 2008, Turkey formed a Caucasus Stability and Cooperation Platform with five neighboring countries, in response to Russian aggression in Georgia, and President Gul visited Armenia, one of the countries in the Platform. On January 30, 2009, Erdogan returned home from the World Economic Forum in Davos after walking out of a televised debate with Shimon Peres, the Israeli president, over Israel's war on the Gaza Strip. The moderator had refused to allow Erdogan to rebut Peres's justification of the war. Erdogan was welcomed back in Turkey as a hero.

However, more secular voters have begun to worry that Erdogan had become more autocratic, and in the municipal elections in March, 2009, the vote for the AKP dropped from 47% to 39%. It appears that the Turkish electorate had divided geographically into four different political regions: a liberal, secular litoral, a conservative interior, with a nationalistic center, and a Kurdish nationalistic southeast.³⁵⁴ The conflicts between the secular military and the non-secular government have come to a head over the Ergenekon affair, which has involved the prosecution of more than 200 people, allegedly involved in plotting against the state. In February, 2010, the government arrested a further 40 people, including three high ranking ex military officers, and in March the

³⁵³The Herfindahl concentration measure of the vote shares went from 0.11 in 1999 to 0.16 in 2002 to 0.27 in 2007.

³⁵⁴Asli Aydintasbas in the *New York Times*, April 7, 2009.

government proposed constitutional changes that would limit the power of the Constitutional Court, making it more difficult for the Court to ban parties, as it has in the past. The changes would also make it more difficult to restrict membership of the forces to those who had no allegiance to religious groups, and would also permit trials in civilian rather than military courts for officers who were accused of plotting against the government. Both opposition parties, the Nationalist Movement Party (MHP) and Republican's Peoples Party (CHP) oppose these changes in the constitution. The changes require a supra majority of 367 Parliamentary votes, the AKP only had 340..

In his visit to Turkey in April 2009, Barack Obama made it clear that in his view, Turkey should become a member of the European Union. At the same time, he urged Turkey to undertake more democratic reforms. Although Turkey has many of the characteristics of a full democracy, there does appear to be severe conflict between the government and secular activist groups such as the military and judiciary.

In the election of June 12, 2011, the AKP vote share increased slightly to 49% while it won 326 seats in total in the Parliament, the Majlis. The CHP gained slightly, taking 135 seats while the MHP lost somewhat, taking 53 seats. There were also 36 independents elected, all pro-Kurdish members of the DTP. One of these, Sebahat Tuncel, recently wrote that the government has refused to meet the demands of the Kurdish people, threatening a confrontation.

10.2.4 Concluding Remarks on Turkish elections

Although many business interests favor membership of the European Union, the opposition to this by President Sarkozy of France and Chancellor Merkel of Germany may cause Turkey to turn east. In October, 2009, Erdogan visited Tehran and met with President Ahmadinejad of Iran, while Turkey and Russia are also discussing the possibility of having Russian gas supplies transit through Turkey.

On May 31, there was an attack by Israeli commandos against a boat traveling in international waters and carrying humanitarian supplies for Gaza. Nine people in the convey were killed. The convoy was partly organized by a Turkish organization, In-sani Yardim Vakfi. The repercussions for Turkish-Israel relations are likely to be extreme. On June 8, 2010, Erdogan met with President Ahmadinejad and Prime Minister Vladimir Putin of Russia at a regional security summit in Istanbul. Turkey may be shifting from its pro-western stance and seeking to be an independent power in the region. The "revolutions" currently sweeping the Middle East will obviously affect Turkey and Israel in many unforeseen ways. As of late June 2011 Erdogan has to deal with the wave of refugees fleeing the brutality of the regime in Syria. Both Israel and Turkey seem to be readjusting to the new uncertain geopolitics of the region.

The analysis of Israel and Turkey in this chapter indicates that both religion and nationalism define the political space.³⁵⁵ The military in Turkey can be represented by a

³⁵⁵Notice that the electoral model for Israel, presented in Section 10.1 is very similar to that of Turkey, with two electoral axes, religion and security. In Chapter 9 we found "nationalism" to be one of the principal axes in Russia. However, the second axis for the Russian model was defined by attitudes to capitalism/ communism.

pro-nationalist, pro-secular position, far from the AKP, and it is this phenomenon which means that Turkish politics cannot be understood in terms of a median voter. Modelling democracies like Israel and Turkey would seem to require a very explicit analysis of the power of activist groups. The “revolutions” currently sweeping the Middle East will obviously affect Turkey and Israel in many unforeseen ways.

10.3 Convergence and Fragmentation

We now conclude this Chapter with some brief comments based on the empirical chapters so far in this volume.

Chapter 5 has shown that the convergence coefficients for various presidential elections in the United States lay in the range [0.45, 1.0].

On the other hand, this chapter, together with Chapter 8, has shown that the convergence coefficients were 6.82 for the 1997 election in Poland, in comparison to 5.94 for the 2002 election in Turkey and 3.98 for the 1996 election in Israel. These three polities all have highly fragmented party systems, with coefficients that are order 4.0 and above. According to the formal model, parties should diverge from the electoral mean in these polities. Simulation of the models, including the sociodemographic valences, gives a reasonable estimate of party position at these elections.

As we have seen in Chapter 7 for the case of the Netherlands, small parties can be located on the boundary of the heart. This means that such parties can aspire to belong to majority coalitions. Their supporting activist groups can therefore attach some probability to achieving their policy objectives. Although the centripetal force on parties is significant, multiple activist groups will pull even large parties away from the center. We may interpret Duverger (1954) and Riker (1953) by noting that under proportional electoral methods, there is very little motivation for interest groups to coalesce, and it is this phenomenon that maintains the fragmentation of the party system.

As stated in Chapter 3, a standard way of estimating political fragmentation is in terms of the *effective number of party vote strength* (*emv*) or *effective number of party seat strength* (*ens*).³⁵⁶ As we saw in chapter 7, the fragmentation in votes and seats in the Netherlands in 1981 is captured by the fact that both *emv* and *ens* were equal to 5.0.

For Canada in Chapter 7, we have computed the convergence coefficient to lie in the range [1.00, 2.55] in 2004. However, the Canadian electoral system benefits the high valence parties, such as the Conservative and Liberal Parties, over smaller parties such as New Democratic Party and Green Party. On the other hand, the pure spatial model indicated that Bloc Québécois had very high valence in Quebec, and this high valence allowed it to obtain a significant share of the seats in that province, gaining a

Perhaps this axis for Russia is analogous to the axes involving religion in Israel and Turkey.

³⁵⁶As in Chapter 3, fragmentation can be identified with the *effective number* (Laakso and Taagepera, 1979). That is, let H_v (the Herfindahl index) be the sum of the squares of the relative vote shares and $emv = H_v^{-1}$ be the *effective number of party vote strength*. In the same way we can define *ens* as the effective number of party seat strength using shares of seats.

much higher share of the seats than its vote share warranted. Between the elections of 2004 and 2008, the *env* for all of Canada increased from 4.0 to 4.1, while the *ens* increased from about 3.1 in 2004 to 3.4 in 2006 and 3.5 in 2008. In the Netherlands, the *env* increased significantly from 4.2 in 1977 to 8.3 in 2006. Since the *ens* and *env* were much lower in Canada, we conjecture that the proportional electoral system of the Netherlands facilitates interest group fragmentation.

We have found the convergence coefficient in the United Kingdom increased from 0.84 in 2005 to 0.98 in 2010, lower than the value for Canada of 2.55. Moreover, the *env* for the 2005 election was 2.7, while the *ens* was about 2.5. The hung Parliament after the election of 2010 meant that the *env* increased to 3.8 while the *ens* also increased to 3.3. These figures indicate that the electoral system in the United Kingdom is more majoritarian than in Canada.³⁵⁷ Even though there are regional parties in the United Kingdom (the Scottish National Party and Plaid Cymru in Wales, as well as a number of very small parties in Northern Ireland), electoral competition still generates less of a centrifugal tendency than in Canada.

For the very fragmented polities with high convergence coefficients the both *env* and *ens* were also very high. For example in Poland the *env* increased from about 5.5 in 1997 to 7.7 in 2005, while the *ens* increased from 3.1 to 5.0. In Israel in 1996 the *env* and *ens* were both about 6.5 but increased to about 10.0 in 2009. In Turkey in 1999 and 2002, the *env* was about 7.7, while the *ens* fell from 5.0 to 2.3 in 2007 as the result of a high cut-off for Parliamentary representation.

There is a very large literature on the category of “partial democracies” or “anocracies”³⁵⁸ on which we comment below in Chapter 11. These polities exhibit mixed characteristics of both democratic and autocratic regimes. For example, as we saw in Chapter 9, the Russian polity in 2007 had a single dominant party, United Russia, with 64% of the vote and 70% of the seats, and two smaller parties with representation in the Duma. There were also a number of parties with very small vote share and no seats. The degree of majoritarianism can be inferred from the *env* of 2.3 and *ens* of 2.0. The convergence coefficient for that election was estimated to be 1.7 in Chapter 9.

The empirical analysis of the 2008 election in Georgia that we have presented in Chapter 9 found a convergence coefficient of about 2.4. Georgia is similar to Russia in the sense that the party supporting the president is dominant, with 53.5% of the vote, while the opposition parties are fragmented, giving an *env* of 2.94.

Azerbaijan is an even more extreme case. The electoral system is very majoritarian, and the dominant party controls almost all resources, taking about 46% of the vote and 58% of the seats, or 88% when its support coalition is included. It is difficult to give meaningful estimates of the *env* and *ens* for Azerbaijan, because of the support given to

³⁵⁷Schofield and Sened (2006) modeled the elections in the United Kingdom for 1992 and 1997 and found convergence coefficients in the range [1.0,2.0]. The *env* for these elections increased slightly from 3.1 in 1992 to 3.2 in 1997, while the *ens* decreased slightly from 2.3 to 2.2, reflecting the size of the Labor victory in 1997.

³⁵⁸See Gandhi and Vreeland (2004), Epstein et al. (2006), Vreeland (2008), Fjelde (2010) and Regan and Bell (2010).

the dominant party, but Table 10.3 presents values of 2.27 for the *env* and 1.3 for the *ens*. The analogue of the convergence coefficient we have taken to be about 2.8.

In these “anocratic” Presidential systems, such as Russia, Georgia and Azerbaijan, that we have considered here, small opposition parties can exist but their supporting activist groups will find it difficult to coalesce because they cannot obtain support through the media. In contrast, if the president has control over much of the media and can offer political bribes to his supporters, then activist groups will coalesce in support, and his valence will remain high. The value of the convergence coefficient can then be computed from the spatial coefficient and the electoral variance. We have seen in this essay how even when democratic elections are in place, political leaders can gain overwhelming power by the control of the media, and through the resources provided by pro-regime activists. Oppositional groups as a result have little opportunity to gain sufficient valence, or electoral esteem to offer attractive alternatives to political leaders.

Table 10.7 presents the results on the convergence coefficients and effective numbers for the three plurality polities of the US, Britain and Canada, compared to the three anocratic presidential systems and the three proportional polities of Poland, Turkey and Israel. The plurality polities have convergence coefficients of order $\simeq 2.0$, while the proportional polities all with convergence coefficients in the range [3, 7].

The three presidential anocracies of Russia, Georgia and Azerbaijan have coefficients that lie in the middle range. This Table suggests that the convergence coefficient in various polities does indeed provide a method of classifying the nature of political competition.

Table 10.7 Convergence coefficients and Fragmentation

| Variable | Country | | |
|-------------------------|--|---|--|
| | US | Britain | Canada |
| Conv. Coef. | [0.40,1.1] (2000-08) | [0.84,0.98] (2005-2010) | 2.55 (2004) |
| Political system | Pres. ¹ PL. ² | Parl. ¹ PL. ² | Parl. ¹ PL. ² |
| env | 2.0 | 2.7 (2005) | 4.0 (2004) |
| env | | 3.8 (2010) | 4.1 (2008) |
| ens | 1.0 | 2.5 (2005) | 3.1 (2004) |
| ens | | 3.3 (2010) | 3.5 (2008) |
| | Russia | Georgia | Azerbaijan |
| Conv. Coef. | 1.7 (2007) | 2.4 (2008) | 2.89 ³ (2010) |
| Political system | Anoc Pres. ⁴ PL. ² | Anoc Pres. ⁴ PL. ² | Anoc Pres. ⁴ PL. ² |
| env | 2.3 | 2.9 (2008) | 2.27 |
| ens | 2.0 | 1.0 (2008) | 1.3 |
| | Israel | Turkey | Poland |
| Conv. Coef. | 3.98 (1996) | 5.94 (2002) | 6.82 (1997) |
| Political system | Frag. ⁵ PR ² | Frag. ⁵ ,PR ² , cut off | Frag. ⁵ PR ² |
| env | 6.5 (1996) | 7.7 (1999) | 5.5 (1997) |
| env | 10.0 (2009) | 4.0 (2007) | 7.7 (2005) |
| ens | 6.5 (1996) | 5.0 (1999) | 3.1 (1997) |
| ens | 10.0 (2009) | 2.3 (2007) | 5.0 (2005) |

¹ Parl= parliamentary; Pres.= presidential.² PL=plurality; PR= proportional representation.³ Convergence coefficient modified for two dim⁴ Anoc.Pres=Anocratic presidential.⁵ Frag. = fragmented

We hypothesize that the difference between these polities can be summed up as follows:

Under *democratic proportional electoral methods*, the convergence coefficient will tend to be large (>2.0). Bargaining to create winning coalitions occurs *after* the election, and there need be no strong tendency forcing activist groups to coalesce, in order to concentrate their influence. Indeed, there can exist incentives for activist groups to fragment. If activist groups respond to this impulse, then activist fragmentation will result in party fragmentation. Parties can be scattered throughout the policy space. Activist groups, linked to small parties, may aspire to affect policy outcomes, by gaining access to the governing coalition. This is indicated by the observation that the bargaining domain in the legislature (the heart) will depend on the location of small parties. Party strengths will fluctuate in response to exogenous shocks, and the structure of the heart will be affected by these changes. We conjecture that activist groups will attempt to maneuver the party, partly with a view to gaining votes, but more importantly, to be positioned in the heart.

Under the strong version of plurality rule, as in the United States, the convergence coefficient will be low (in the range 0.4 to 1.0). If interest groups do not form a coalition *before* the election, then they will have little impact on political outcomes. Con-

sequently, small, third parties cannot obtain representation. Unlike the situation in a polity based on proportional rule, an activist group linked to a small party in a plurality polity has little expectation of influencing government policy. Thus activist groups face “increasing returns to size.” In the United States, presidential candidates must balance the centripetal electoral effect against the centrifugal activist effect, and plurality rule induces what is essentially a two party system, through this effect on activist groups. Although the two party configuration may be in equilibrium at any time, the tension within the activist coalitions can induce a slow transformation of party positions, and thus political realignment, as suggested by Miller and Schofield (2003).

In Parliamentary systems based on plurality rule, such as the United Kingdom and Canada the convergence coefficient will tend to take intermediate values (between 0.8 and 2.5). Large and small parties can co-exist, since small parties can depend on regional support. The influence of activist groups will depend on the degree of regional orientation of the parties.

In “anocratic” or partial democratic Presidential systems, such as Russia, Georgia and Azerbaijan, small opposition parties can exist but their supporting activist groups will find it difficult to coalesce because they cannot obtain support through the media. In contrast, since the president has control over much of the media and can offer political bribes to his supporters, the pro-regime activist groups will coalesce in support, and the presidents valence will remain high. In such anocracies the low valence opposition parties will adopt divergent positions, but will have little opportunity to gain sufficient valence, or electoral esteem to in order to offer attractive alternatives to the political leader.

10.4 Appendix: Tables for Turkey

Table A10.1. Pure Spatial Model of the Turkish election 1999.

| Party Name | . | λ_k | Std.error | t-value |
|----------------------------------|-------|-------------|-----------|---------|
| Democratic Left Party | DSP | 0.724*** | 0.153 | 4.73 |
| Nationalist Action Party | MHP | 0.666*** | 0.147 | 4.53 |
| Virtue Party | FP | -0.159 | 0.175 | 0.9 |
| Motherland Party | ANAP | 0.336 | 0.153 | 2.19 |
| True Path Party | DYP | - | - | - |
| Republican People's Party | CHP | 0.734*** | 0.178 | 4.12 |
| People's Democracy Party | HADEP | -0.071 | 0.232 | 0.3 |
| (Normalized with respect to DYP) | | | | |
| spatial coefficient β | | 0.375*** | 0.088 | 4.26 |
| convergence coefficient c | | 1.49*** | 0.22 | 6.77 |
| $n = 635$ | | | | |
| Log likelihood (LL) = -1183 | | | | |

***=Significant with probability < 0.001.

Table A10.2. Pure Spatial Model of the Turkish election 2002

| Party Name | | λ_k | Std. error. | t - stat |
|--------------------------------------|-------|-------------|-------------|----------|
| Justice and Development Party | AKP | 0.78*** | 0.15 | 5.2 |
| Republican People's Party | CHP | 1.33*** | 0.18 | 7.4 |
| True Path Party | DYP | - | - | - |
| Nationalist Action Party | MHP | -0.12 | 0.18 | 0.66 |
| Young Party | GP | - | - | - |
| People's Democracy Party | HADEP | 0.43 | 0.21 | 2.0 |
| Motherland Party | ANAP | -0.31 | 0.19 | 1.63 |
| (Normalized with respect to DYP) | | | | |
| spatial coefficient β | | 1.52*** | 0.12 | 12.66 |
| convergence coefficient c | | 5.94*** | 0.27 | 22.0 |
| $n = 483$ | | | | |
| Log marginal likelihood (LML) = -737 | | | | |

***=Significant with probability < 0.001.

Table A10.3 Joint Model of the 1999 Election in Turkey,
(normalized with respect to DYP)

| Variable | Party | Est | Std Err | 95% Confidence Interval | |
|------------------------------|-------|---------------------------------|---------|-------------------------|-------------|
| | | | | Lower Bound | Upper Bound |
| Spatial Coeff. β | | 0.456*** | 0.104 | 0.243 | 0.648 |
| Relative Valence λ_k | ANAP | -0.114 | 0.727 | -1.513 | 1.227 |
| | CHP | -0.673 | 0.770 | -2.166 | 0.786 |
| | DSP | 0.463 | 0.720 | -0.930 | 1.825 |
| | FP | 1.015 | 0.878 | -0.709 | 2.755 |
| | HADEP | -0.610 | 1.230 | -3.004 | 1.803 |
| | MHP | 2.447*** | 0.669 | 1.167 | 3.664 |
| Age | ANAP | 0.001 | 0.012 | -0.021 | 0.023 |
| | CHP | -0.009 | 0.013 | -0.033 | 0.016 |
| | DSP | -0.008 | 0.012 | -0.031 | 0.014 |
| | FP | -0.023 | 0.014 | -0.050 | 0.003 |
| | HADEP | -0.053*** | 0.023 | -0.103 | -0.014 |
| | MHP | -0.044*** | 0.012 | -0.067 | -0.022 |
| Education | ANAP | 0.006 | 0.065 | -0.115 | 0.130 |
| | CHP | 0.106 | 0.063 | -0.012 | 0.232 |
| | DSP | 0.077 | 0.058 | -0.024 | 0.197 |
| | FP | -0.129 | 0.081 | -0.285 | 0.018 |
| | HADEP | 0.144 | 0.097 | -0.038 | 0.335 |
| | MHP | -0.060 | 0.061 | -0.175 | 0.070 |
| Urban | ANAP | 0.531 | 0.367 | -0.156 | 1.279 |
| | CHP | 0.354 | 0.395 | -0.374 | 1.078 |
| | DSP | 0.582 | 0.359 | -0.147 | 1.271 |
| | FP | 0.417 | 0.416 | -0.418 | 1.183 |
| | HADEP | 0.264 | 0.634 | -0.918 | 1.497 |
| | MHP | -0.201 | 0.378 | -0.922 | 0.593 |
| Kurd | ANAP | 1.132 | 0.924 | -0.410 | 3.138 |
| | CHP | 1.715*** | 0.911 | 0.194 | 3.637 |
| | DSP | -0.102 | 1.083 | -2.650 | 2.098 |
| | FP | 1.116 | 0.972 | -0.733 | 3.024 |
| | HADEP | 5.898* | 0.926 | 4.290 | 7.904 |
| | MHP | 0.063 | 0.933 | -1.751 | 2.148 |
| Soc. Econ. Status | ANAP | 0.080 | 0.165 | -0.302 | 0.394 |
| | CHP | 0.163 | 0.176 | -0.195 | 0.499 |
| | DSP | -0.010 | 0.158 | -0.322 | 0.333 |
| | FP | 0.120 | 0.179 | -0.230 | 0.458 |
| | HADEP | -0.119 | 0.264 | -0.598 | 0.384 |
| | MHP | 0.168 | 0.159 | -0.147 | 0.469 |
| Alevi | ANAP | -0.697 | 0.972 | -2.687 | 1.168 |
| | CHP | 3.089 | 0.693 | 1.965 | 4.715 |
| | DSP | 0.934 | 0.729 | -0.383 | 2.423 |
| | FP | 0.346 | 0.939 | -1.374 | 2.007 |
| | HADEP | 1.355 | 0.972 | -0.332 | 3.605 |
| | MHP | -0.873 | 0.925 | -3.225 | 0.676 |
| $n=635$ | | Log marginal likelihood = -1178 | | | |

Table A10.4. Joint Model of the 2002 Election in Turkey
(normalized with respect to DYP)

| Variable | Party | Est | Std Dev | 95% Confidence Interval | |
|-----------------------|-------|----------|---------|-------------------------|-------------|
| | | | | Lower Bound | Upper Bound |
| Spatial Coeff β | | 1.445*** | 0.143 | 1.180 | 1.723 |
| Valence λ_k | AKP | 1.968*** | 0.667 | 0.708 | 3.432 |
| | CHP | 1.103 | 0.797 | -0.579 | 2.615 |
| | HADEP | 2.596 | 1.246 | -0.254 | 5.049 |
| | MHP | 1.714 | 0.889 | -0.021 | 3.426 |
| | ANAP | -0.567 | 0.880 | -2.487 | 1.133 |
| Age | AKP | -0.031 | 0.011 | -0.052 | -0.010 |
| | CHP | -0.019 | 0.013 | -0.045 | 0.005 |
| | HADEP | -0.060 | 0.024 | -0.110 | -0.014 |
| | MHP | -0.067 | 0.017 | -0.103 | -0.034 |
| | ANAP | -0.004 | 0.014 | -0.031 | 0.022 |
| Education | AKP | -0.070 | 0.062 | -0.185 | 0.045 |
| | CHP | -0.007 | 0.068 | -0.136 | 0.115 |
| | HADEP | -0.142 | 0.108 | -0.365 | 0.079 |
| | MHP | -0.048 | 0.079 | -0.202 | 0.106 |
| | ANAP | -0.078 | 0.076 | -0.237 | 0.064 |
| Urban | DYP | 0.050 | 0.406 | -0.770 | 0.844 |
| | CHP | 0.121 | 0.443 | -0.744 | 1.001 |
| | HADEP | -1.138 | 0.688 | -2.426 | 0.236 |
| | MHP | -0.570 | 0.536 | -1.649 | 0.504 |
| | ANAP | 0.661 | 0.479 | -0.228 | 1.628 |
| Kurd | AKP | 2.086 | 1.105 | 0.203 | 4.596 |
| | CHP | 1.251 | 1.171 | -0.891 | 3.839 |
| | HADEP | 5.996*** | 1.208 | 3.960 | 8.945 |
| | MHP | 1.595 | 1.312 | -0.960 | 4.258 |
| | ANAP | 1.603 | 1.199 | -0.535 | 4.358 |
| Soc. Econ. Status | AKP | 0.142 | 0.160 | -0.160 | 0.457 |
| | CHP | 0.198 | 0.191 | -0.196 | 0.560 |
| | DEHAP | -0.217 | 0.281 | -0.755 | 0.301 |
| | MHP | 0.317 | 0.204 | -0.083 | 0.703 |
| | ANAP | 0.214 | 0.209 | -0.182 | 0.613 |
| Alevi | AKP | -0.249 | 0.983 | -2.125 | 1.743 |
| | CHP | 2.567*** | 0.817 | 1.111 | 4.489 |
| | DEHAP | 0.377 | 1.045 | -1.519 | 2.540 |
| | MHP | -0.529 | 1.410 | -3.565 | 2.292 |
| | ANAP | 1.392 | 0.931 | -0.323 | 3.560 |

$n=483$

Log marginal likelihood = -732

***=Significant with probability < 0.001 .

Chapter 11

Institutions and Development

11.1 Institutions and Democratization

Much discussion in recent years has focused on why North America was able to follow Britain in a path of economic development, but Latin America and the Caribbean islands, though generally far richer initially, fell behind in the nineteenth century. In their discussion of Latin American economic development, Sokoloff and Engerman (2000) have emphasized the different factor endowments of North and South America.³⁵⁹ In addition they have suggested that slavery in the New World resulted in institutions that were not conducive to economic growth.³⁶⁰

In contrast, Przeworski and Curvale (2006) argue that while economic inequality tended to persist and has been related to the degree of political inequality, many aspects of the developmental path appear highly contingent. Indeed, whether Latin American economies grew, and the extent to which they protected the factors of capital, land and labor, seems to be dependent on shifting balances of power between differing activist groups. Acemoglu (2008), for example, provides a model that contrasts oligarchic polities like the plantation economies of the eighteenth century Caribbean with more democratic polities such as the United States. The oligarchic polity may be richer initially, but the ability of their elite to protect their own agrarian interests by oppressing labor leads to growing inefficiency. This will be exacerbated if there are conflicts between elements of the elite over who is to rule. In a democratic polity, with more equal economic power initially, if the franchise is extended and the power of the landed or capital elite curtailed, then the economy will become increasingly open, resulting eventually in greater entrepreneurial and technological advances. These inferences match the earlier discussion in Chapter 1, of industrial development in Britain in the eighteenth and early nineteenth centuries, and in the U.S. in the late nineteenth and early twentieth centuries.

³⁵⁹Easterly (2007) sets up a formal model to analyze productivity and factor models. See also Comin et al (2010) which examines the "wealth of nations" over the last 3000 years.

³⁶⁰See also Nunn (2008) who explores the causal relationship between those parts of Africa from where slaves were taken, and the subsequent degree of economic development.

Works by Przeworski et al. (2000), Boix (2003), Acemoglu and Robinson (2006a), North et al. (2009) and Schofield (2009a) have explored the transition between autocratic or oligarchic regimes and democracy. There has also been much debate over the “modernization hypothesis” that the level of economic development drives the “level and consolidation of democracy.”³⁶¹ An alternative hypothesis is that of “critical junctures,” as for example illustrated by the contingency of the Glorious Revolution in 1688, the repeal of the Corn Laws in 1846, or the Reform Act of 1867 in Britain. The historical analysis of Acemoglu et al. (2000, 2001, 2005, 2008, 2009) lend support to the critical junctures hypothesis. Acemoglu and Robinson (2006b) also argue that agrarian elites hold back the process of industrial development because they fear the loss of rents from their control of land. As we have discussed in Chapter 1, the agrarian elite in Great Britain was co-opted in the sense that they were protected until the repeal of the Corn Laws.³⁶² In the Austrian-Hungarian and Russian empires, and even in Germany until the late nineteenth century, the agrarian elites maintained a veto against industrialization.

Acemoglu and Robinson (2001, 2008), Acemoglu, Johnson and Robinson (2004) and Hall and Jones (1999) examine the role of institutions in facilitating economic development, while Acemoglu, Ticchi and Vondigni (2010a) focus on the role of the military. There is also a growing literature on how autocrats can retain power (Bunce, 2000; Gandhi and Przeworski, 2007; Magaloni, 2008) or can lose it through coup d'état (Collier and Hoeffler, 2005; Collier, 2009).

One recent attempt to understand the process of democratization is given by Epstein et al. (2006) which emphasizes the category of “partial democracies” or “anocracies” These exhibit mixed characteristics of both democratic and autocratic regimes. In Latin America and many of the polities of the old Soviet Union, for example, there have been moves towards partial democracy and then reversion to military or autocratic rule. As we noted in Chapter 9, the popular move in the Caucasus to democracy was followed by civil war and then democratic consolidation, but there now appears to be a move to greater autocracy.³⁶³

Levitsky and Way (2002) have noted that the post-Cold War world has been marked by the proliferation of hybrid [or partial] political regimes:

In different ways, and to varying degrees, polities across much of Africa (Ghana, Kenya, Mozambique, Zambia, Zimbabwe), post-communist Eurasia (Albania, Croatia, Russia, Serbia, Ukraine), Asia (Malaysia, Taiwan), and Latin America (Haiti, Mexico, Paraguay, Peru) have combined democratic rules with authoritarian governance during the 1990s. Scholars often treated these regimes as incomplete or transitional forms of democracy. Yet in many cases these ex-

³⁶¹Acemoglu et al (2009).

³⁶²Maybe we should see the Civil War as a conflict to overcome the Southern agrarian veto against industrialization. See Egnal (2009).

³⁶³See Broers (2005), Cheterian (2008), Muskhelishvili et al. (2009), and Carothers (2002) on such partial transitions to democracy.

pectations (or hopes) proved overly optimistic.

The general idea of much of this work just cited follows on from the seminal arguments of North³⁶⁴ that “good” institutions facilitate economic growth, where by “good” is meant the combination of secure property rights and open access. Many of the impediments to growth discussed in this literature focus on the ability of oligarchic elites to maintain institutions that give them de facto power.³⁶⁵ The case of Great Britain illustrates a very long and slow process of “democratization”³⁶⁶, followed by the wresting of power from the monarch in 1688,³⁶⁷ and the move over the next two hundred years to open access. But the critical junctures hypothesis suggests there is nothing automatic about these transitions. Moreover, it is possible that the political and economic institutions that eventually arise are incompatible with each other. As discussed in Chapter 3, markets may be efficient in some domains, but may need regulating in situations of risk. It seems that we need a theory of institutions that builds on, or incorporates, the general equilibrium model of economics

However, the political economic models that are available tend to consider a single economic axis, and to utilize the notion of a median citizen as the unique pivotal player. While these models have been illuminating, they do not easily provide the formal tools to express the power by political or economic elites. One way to do this is to utilize a higher dimensional policy space, where one set of axes refers to the economic factor space, and the second set of axes refer to the political realm.

One other aspect of the economic models that have been used is that they often do not deal with trade, with the way a country is embedded in the global economy.

Finally, since the political realm will involve voting, we should utilize a stochastic model so as to emphasize the intrinsic aspect of uncertainty that is associated with any electoral or political process. Obviously, we are far from being able to set out such an integrated model. However, this chapter offers variations on the stochastic electoral model, presented in the earlier chapters of this volume. Our intention is to model de facto power of elite groups, characterized by their control of different economic factors, and to elucidate the conflicts that exist between these activist groups.

In the next section, we first use the model in an attempt to understand the relationship between an autocrat and his supporters, followed by discussion of recent events in a number of partial democracies and autocracies. In Section 11.3 we apply the model to consider bargaining between the leader of a small open economy, such as Argentina, and the various activist groups in the polity. We cite work by Galiani, Schofield and Torrens (2011) who argue that Latin American economies, like Argentina, are *diversified natural resource-rich economies*. These tend to have an important domestic industry that competes with imports. In such a political economy, the activist groups favor opposed policies, but trade policy is likely to be more protectionist and unstable. In essence dif-

³⁶⁴North (1981, 1990, 1993, 1994, 2005) and North et al. (2009).

³⁶⁵For example, Acemoglu (2006) presents a model where the elite pursue inefficient policies in order to extract rent.

³⁶⁶See Maddicott (2010) for the beginnings of Parliament in the Anglo-Saxon period in England.

³⁶⁷See also Pincus (2009), for example, on the Glorious Revolution.

ferent elite groups compete with each other, in order to gain rents, and induce economic inefficiencies. As a result, uncertainty in policy has been one cause of the slower development of these economies. Section 11.4 discusses the particular example of Argentina and an exchange rate policy intended initially to defeat hyperinflation, but which advantaged important interest groups at great cost to labor.

11.2 Oligarchies and Autocracies

To construct a general theoretical model, we first start with the political economic assumption that power derives from the control of the factors of capital, land and labor. The distribution of these factors can be described by a point in a high dimensional *economic factor space*. Perpendicular to the economic space is the *political space*.

The empirical work to date suggests that the definition of the political space depends on the specific country and time. For example, the work presented in Chapter 5 presents evidence that this political axis in the United States can be identified with civil and social rights.³⁶⁸ For Britain, Chapter 6 suggests that the axis is defined by nationalism, and in particular by attitudes to the European Union. The analysis of Israel and Turkey in Chapter 10 indicated that both religion and nationalism (or security) define the political space.

For purposes of exposition, Figure 11.1 gives an extreme simplification of this idea, representing a single dimensional economic factor space, involving an opposition between Land or Labor and Capital, and a single dimensional political space, to be interpreted in terms of the degree of political equality in the society - namely the opposition between pure democracy, to the north in Figure 11.1, and autocracy to the south in the figure. Indeed, for countries like Turkey and Israel, it would be necessary to utilize a number of dimensions to represent the conflicting economic and political interests.

Below we comment on recent transitions in Tunisia, Egypt and Iran. In such countries in addition to a predominant economic dimension involving inequality, we would need to add a religious dimension.

Figure 11.1 is based on the same idea of activist groups as Figure 1.9. It is meant to suggest that democratic and partially democratic or oligarchic polities can, in principle, be modelled in similar ways.

Schofield (2006a, 2009a) suggests the following formal model, which was developed further in Chapter 5.

Firstly, the capital elite has an ellipsoidal utility function, centered at R, as illustrated in Figure 11.1, indicating their primary concern with that factor. Similarly the political elite, whether autocrat or prime minister or president, is less interested in the particular disposition of economic factors, but rather in their utilization in order to maintain political power. This assumption on elite utilities provides the context in which the economic and political elite arrange the bargain that keeps them in power. Figure 11.1

³⁶⁸See also Schofield, Miller, and Martin (2003), Miller and Schofield (2003, 2008) and Schofield and Miller (2007).

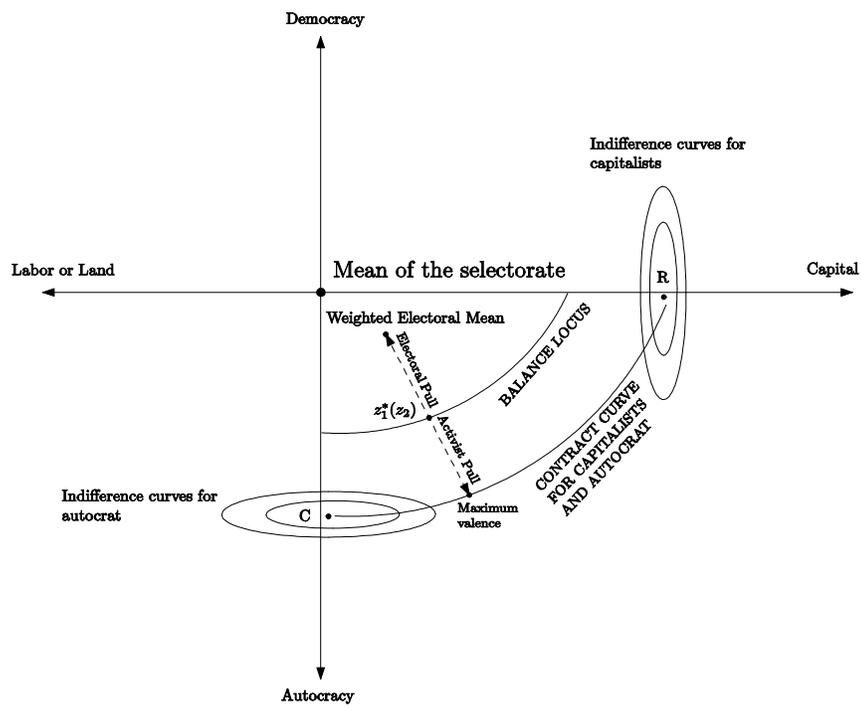


Figure 11.1: The autocrat balance locus

presents a *contract curve (or set)* between the economic elite (whether land or capital) and the autocrat's immediate supporters. In many parts of the world, the key autocrat supporters would be the military. It is implicit here that the preferred policy point, on the social or political axis, of different elements of the economic elite need not coincide with those preferred by the autocrat or the military. This contract curve represents the set of bargains that are possible, and thus specifies the nature of the resources, military and capitalistic, that can be made available to the political leader. Again, it is not crucial that the bargain be only between capital and the political or military elite. It is quite possible in some regimes that the landed elite control the critical factor.³⁶⁹ The resources made available by this contract can then be used to maintain political power, either by offering bribes in order to maintain support, or by threatening punishment against opposition members.³⁷⁰

The "valence" of a political leader can be affected by the resources contributed by the various activists who support the leader. We call this "activist valence." With just two activist groups, the "activist valence" of the autocrat, named 1, can then be expressed as a combination

$$\mu_1(z_1) = \mu_C(R_C(U_C(z_1))) + \mu_R(R_R(U_R(z_1))).$$

As defined more precisely in Chapter 5, $R_C(U_C(z_1))$ are the resources contributed by the immediate autocrat supporters, expressed in terms of the supporters' utility function, $U_C(z_1)$, and dependent on the autocrat position, z_1 , while $R_R(U_R(z_1))$ are the resources contributed by the capitalist elite. In the same way we may assume that an anti-regime leader, named 2, will gain resources from democratic and labor activists, as described by a contract curve located in the opposed quadrant in Figure 11.1. Each member or citizen, i , in the society has a utility function, based partly on some preferred position in the factor space, but also on what we have called the *valences* of the various political leaders. This model distinguishes between the perceived valences by the citizens of the various political leaders and the valence that results from the resources made available to the political leader by the economic or political elites. The *balance locus* gives the equilibrium locus of each of the political leader, j , obtained by the maximization of an appropriate support function, V_j . In Figure 11.1, the point marked $z_1^*(z_2)$ satisfies the *balance condition for leader 1*, because the electoral and activist "pulls" are directly opposed.³⁷¹ This point denotes the position that maximizes the regime's support function, in response to an opposition position, denoted z_2 . The simple model of support maximization can be readily extended using the notion of a family of support operators, defined via a system of beliefs, over the probabilities associated with various outcomes.

³⁶⁹ As Diamond (2008) has noted, oil is the crucial factor in many authoritarian petro-regimes, including such states as Azerbaijan, Gabon, Iran, Kazakhstan, Nigeria, Russia, Sudan, Uzbekistan and Venezuela.

³⁷⁰ Acemoglu et al. (20010a) offer a more economic model of a game between elite, citizenry and the military. A model of targeting the citizens through "clientism" is offered in the Appendix to Chapter 5.

³⁷¹ The formal definition of the balance condition is given in Chapter 5. It is the condition that specifies how the leader will maximize support, based both on electoral and activist support.

In a democratic regime, the best position (what we have called a *local Nash equilibrium*, or LNE) of a political leader will depend on the intrinsic valences of political opponents and the activist contribution functions. In a “partial democracy” or oligarchy, the weighted electoral mean of the leader will be a weighted sum of the preferred positions of those with some power in the polity (called the *selectorate* by Bueno de Mesquita et al, 2003).

In Figure 11.1 we distinguish *the contract set* of the elite support group of the leader from the *weighted electoral mean* of the regime’s leader as well as the *mean of the selectorate*. The point denoted “the mean of the selectorate” is the center of the distribution of preferred positions of all who have a say in politics. The weighted electoral mean of the leader weighs the different members of the selectorate depending on sociodemographic parameters such as ethnicity, or location, or wealth, etc. Opposition leaders will also be characterized by possibly a quite different support group and thus by different weighted electoral means. Indeed, the model proposed in the Appendix to Chapter 5 suggests that the weighting used by the various political leaders may depend on the degree to which the members of the selectorate are “bribeable.” The point of this model is that it allows, in principle, for the formation of different support groups for a political leader and a potential opposition. These opposed support groups may indeed be members of the society’s oligarchy but defined by their control of different factors, or by different ethnicity etc. The model can also be adapted to the case of coup d’état, when some members of the autocrat’s support group switch allegiance to an opposition leader.

In both democratic and autocratic regimes, the leader with greater intrinsic valence will be less dependent on the resource support of activists or the factor elite. Moreover, the greater the intrinsic valence of an opponent, whether a revolutionary or a leader of a democratically chosen opposition, the further will the position of the regime’s leader be from the center. The expression for the activist valence, given above, is for the simple case of two activist groups supporting the autocrat. The model can be readily generalized to the case of many groups. The essence of the model, however, is that there will be conflict both within activist groups and between the groups.

Some partial democratic systems have evolved so that the political equilibrium is relatively stable, as illustrated by *Russia* under President (now Prime Minister) Putin. The model presented in Chapter 9 shows that Putin had extremely high valence in the election of 2007. This appears to be the consequence of the price of oil and the status of Russia as an oil exporter.

The conflict with Georgia over South Ossetia and Abkhazia in August, 2008, and the problem over Russian gas prices and supplies in Eastern Europe and the Ukraine in January 2009 show that Putin is ready and able to extend Russian power in its sphere of interest, especially in a situation where the United States has its military resources over-committed in Iraq and Afghanistan.³⁷² Putin was able to force through legislation in the Duma in January 2008 that potentially allows him to regain the office of President

³⁷²See Lucas (2009).

in the future. More recently, the higher price of oil has confirmed Putin's popularity.

Russia also had a hand in the overthrow of Kyrgyzstan's President, Kurmanbek Bakiyev, in April 2010, leading to a new government under Roza Otunbayeva. Bakiyev himself had deposed the first president, Askar Akayev, in the so-called Tulip Revolution in 2005.

Russia has further extended its influence in its "near abroad", by persuading Ukraine's president Victor Yanukovich, to extend the lease on Russia's naval base in Sebastopol until 2017, in return for a bargain price on Russian gas. Yulia Tymoshenko, the hero of Ukraine's Orange Revolution of 2004, had become Prime Minister but lost the Presidential election in 2009 to Victor Yanukovich. In return for Russian support, Yanukovich has cracked down on the pro-west opposition and has been accused of autocracy.

As we also saw in Chapter 9, Saakashvili came to power in the Rose Revolution in Georgia and, while pro-west has become increasingly autocratic, as has President Ilham Aliyev in Azerbaijan.

Collier (2009) has discussed the ability of autocrats, particularly in Africa, to remain in power for years. For example, Mugabe has been in power in *Zimbabwe* since 1980, and the country currently suffers from inflation of over a million percent. A month after Zimbabwe's election on March 29, 2008, the electoral body declared that Morgan Tsvangirai, the leader of the opposition party, had won more votes than President Robert Mugabe, but only 48%, not a majority, and that a runoff on June 27 would be necessary. Mugabe and his supporters initiated a process of murder and intimidation forcing Tsvangirai to withdraw, leaving Mugabe in power. On July 11, 2008, Russia and China vetoed a US led attempt in the U.N. Security Council to impose sanctions on Zimbabwe, and on July 26, the Bush administration announced new sanctions against Zimbabwe. Although the talks over power-sharing broke down on July 29, because of Mugabe's insistence that he remain president, the opposition candidate for Speaker of the Legislature, Lovemore Moyo, won the position by a vote of 110 to 98. On September 15, 2008, a power-sharing agreement set up a finely-balanced coalition government. The combined opposition will have a one-person majority in the cabinet, but it will be chaired by President Robert Mugabe. Morgan Tsvangirai will be Prime Minister and deputy chair of the cabinet, and will also chair a Council of Ministers, which will "oversee the formulation of government policies by the cabinet" and "ensure that the policies so formulated are implemented by the entirety of government." Mugabe's party, the Zanu-PF and the two opposition groups in the Movement for Democratic Change (MDC) agreed to "accept the irreversibility of Mugabe's seizure and redistribution of land." Nonetheless, there still appeared to be a deadlock in October, 2008, over Mugabe's insistence that he retain control of the police and security forces, as well as most of the crucial ministries. In November, Mugabe decided to forbid a humanitarian visit by Mr. Jimmy Carter, Kofi Annan, the former United Nations Secretary General, and Graça Machel, Nelson Mandela's wife. However, the deadlock appeared to have broken on January 30, 2009, when Tsvangirai agreed to join the government in return for shared control over the police. Finally, Tsvangirai was sworn in as Prime Minister on February 11. Mugabe made an extraordinary show of his power by inviting the Iranian president, Mahmoud

Ahmadinejad to Harare for an international trade show in April, 2010.

Not all autocrats are able to hold on to power as tenaciously as Mugabe. In *Pakistan*, the assassination of Benazir Bhutto, on 27 December, 2007, and the military's increasing fear of the power of the Taliban, led the way to the defeat of President Pervez Musharraf's party in the election on February 18, 2008, and the creation of a coalition government consisting of the Pakistan Peoples Party (with 120 seats), chaired by Asif Ali Zardari (Bhutto's widower) and the Pakistan Muslim League-N (with 90 seats), led by Nawaz Sharif. The Pakistan Muslim League-Q, led by Chaudhry Shujaat Hussain, with only 51 seats in the 342 seat National Assembly, still supported Musharraf. (See Rashid, 2008, for the maneuvering between the United States and Musharraf in the period up to the election.)

On Monday, August 18, 2008, Musharraf was forced to resign from the Presidency, in order to avoid impeachment. The coalition broke up on August 25, and Yousaf Raza Gilani became Prime Minister. Zardari was elected President on September 6, 2008, apparently with Sharif's support. The army remained neutral in these various political contests, but on September 10, the day after Zardari's inauguration as President, the military chief, General Ashfaq Parvez Kayani, strongly criticized the United States for its incursions into the tribal areas of Pakistan to seek out the Taliban and Al Qaeda. Although Zardari is considered pro-American, he echoed Kayani's sentiments at his speech to Parliament on September 20. While the nature of the implicit compact between the military and the government is unclear, the army still owns or controls enormous wealth, land and much of the manufacturing capacity of the country, as well as its nuclear arsenal. After the terrorist attack by Lashkar-e-Taiba (part of the Islamic Front, and linked to el Qaeda) on Mumbai, India, in late November, 2008, fears have been expressed that this attack was supported by elements of the Pakistan security forces, and designed to further destabilize Indian Pakistan relations. Since then, relations between Zardari and Sharif have soured. The Supreme Court, at Zardari's behest, disqualified Sharif from elective office. The Punjab, Sharif's stronghold, has been put under the rule of a governor and its provincial assembly dismissed. On the other hand, Zardari reinstated Chief Justice Iftikhar Chaudhry on March 16, and this move can be seen as an important step towards the rule of law.

In April, the Taliban struck a peace deal with Zardari, allowing them to control the Swat Valley and then the town of Bruner, only 65 miles from Islamabad. By May, this peace deal had broken down, and fighting between the Taliban and the military forces had caused refugees, estimated at 1.3 million, to leave the Swat Valley. Rashid (2009) suggests that

Pakistan is close to the brink, perhaps not to a meltdown of the government, but to a permanent state of anarchy, as the Islamist revolutionaries led by the Taliban and their many allies take more territory, and state power shrinks.

Osama bin Laden was killed by US marines in Pakistan on May 2nd, 2011. His bunker was near a Pakistan military camp, which led many to infer that the military had provided him with some protection.

In *Afghanistan*, in the first round of the presidential election, on August 20, 2009, the incumbent President, Hamid Karzai, won about 50% of the vote, but this result appeared to be the result of massive fraud. The challenger, Abdullah Abdullah, who won about 31%, withdrew from the second round. Under U.S. pressure, Karzai has promised to deal with corruption. To show his independence, however, Karzai invited Ahmadinejad to Kabul in late March, 2010. The election for the Parliament, the *Wolesi Jirga*, took place on 18 September 2010. Many of the elections for the 249 parliamentarians were declared fraudulent or invalid, but by November the Independent Election Commission had declared the final result valid. Karzai avoided the inauguration of the Parliament for over two months, ruling by decree, but on January 26 he swore in the country's new Parliament. Perhaps Parliament would be able to start work despite ongoing investigations into electoral fraud. Transparency International had previously rated the regime as the second most corrupt in the world after Somalia's.

In *Iraq* after the election in March, 2010, there was still uncertainty after ten months about the form of the government.³⁷³ In the election, Ayad al-Allawi's Iraqiya list was first with 91 seats; Prime Minister Maliki's State of Law coalition took 89 seats; the Shi'a Iraqi National Alliance was third with 70 seats (40 seats of which were held by the Sadrist group led by Moktada al-Sadr); the Kurdistan Alliance was fourth with 43 seats. Other factions won 32 seats. Allawi first attempted to construct a coalition with a majority of 163 seats out of 325. On May 4, State of Law joined forces with the Iraqi National Alliance, and called itself the National Alliance, but only controlled 159 seats. On May 15 the Sadrist group within the National Alliance withdrew its veto over Maliki becoming prime minister again. Maliki and Allawi then held their first meeting on June 12. But on August 16, Iraqiya broke off all talks with State of Law saying that Maliki had described Iraqiya as a Sunni grouping. Iraqiya followed this on September 25 by announcing it would not participate in a government led by Maliki. The National Alliance then chose Maliki as its candidate for prime minister on October 1. In some desperation, on October 30, Saudi Arabia invited Iraq's political leaders to Riyadh in an attempt to find a compromise, and on November 1, Maliki was able to obtain support from the Shiite Fadila faction. On November 11, Parliament held its second session since the election and chooses Osama al-Nujaifi, a Sunni and member of Iraqiya, as its speaker, and re-elected Jalal Talabani, a Kurd, as president. Finally, on November 25, Talabani officially re-appointed Maliki as prime minister and ordered him to form a cabinet, which he did on December 21, 2010. However, three key security ministries—the Ministry of Defense, the Ministry of Interior, and the Ministry of State for National Security remained unfilled and were taken by Maliki for himself “until suitable persons can be found, Allawi accused Maliki of failing to keep to his promises and withdrew his support.

On June 12, 2009, elections were held in *Iran*, and the reformist candidate, Mir Hussein Moussavi, was declared to have been beaten by Mahmoud Ahmadinejad in

³⁷³Members of Parliament still received their monthly checks of \$10,000 and appeared in no hurry to form a government.

a Presidential election that was probably fixed. The establishment reacted violently to street demonstrations in support of Moussavi. On June 20, an innocent girl, Neda Agha-Soltan, was murdered in Tehran, allegedly by a militia man, although Ahmadinejad called the death "suspicious." On July 4, the former presidents, Mohammad Khatami and Ali Akbar Rafsanjani, together with an influential group of clerics, the Association of Researchers and Teachers of the holy city of Qum, came out against the establishment and Supreme Leader, Ayatollah Ali Khamenei. Eventually, on August 3, Khamenei approved Ahmadinejad as president, although the two former presidents still dissented. Major opposition demonstrations continued till December, 2009. Some 4,000 people were arrested in connection with protests following the presidential election. At least three of the demonstrators died in prison, and a number of prison guards were indicted for murder. Ahmadinejad continued his strategy of annoying the West, and on September 23, 2010, even went so far as to declare to the United Nations General Assembly in Washington that the U.S. had orchestrated the terrorist attacks on September 11, 2001.

One inference from this model is that the "equilibrium" position of an autocrat may be so far from the center that the citizens will attempt to remove the dictator, even in the face of bribes or punishment strategies.

For example, on January 14, 2011, *Tunisia's* president, Zine el-Abidine Ben Ali, was forced to flee the country after 23 years of autocratic rule, because of huge popular demonstrations, during which perhaps 200 people died. The Muslim political movement, *Ennahdha*, or Renaissance, began regrouping, and were fears that there would be conflict between Tunisia's secular military forces and religious groups. Elections were planned for July, but were postponed till 24 October, 2011. The election gave *Ennahdha* about 40% of the vote and Moncef Marzouki, founder of the liberal political party, said that he was discussing a coalition with *Ennahdha*.

On 25 January 2011, thousands of protesters in *Egypt*, mobilized largely through the Internet and the social networking sites and energized by the revolution that ousted Tunisia's dictator, occupied Cairo's Tahrir Square for hours, beating back attempts to dislodge them by police officers wielding tear gas and water cannons. Egypt is the most populous country in the Arab world and there is fear that the popular uprising might spread to other Middle Eastern countries. People flooded into public squares in Cairo, Alexandria and other major cities. In spite of the government imposed curfew, Egyptians are still on the streets on Sunday 30 January 2011. Tens of thousands of protesters are calling for Hosni Mubarak to step down, and demanding a move towards a more democratic country. This is the most serious challenge to Mubarak's regime as the uprising has brought to the surface decades of smoldering grievances against Mubarak who has been in office for 30 years. Within days of the start of the protests, Mubarak called in the army. On 28 January he ordered his entire cabinet to resign while stating that he would stay in office. The change in the cabinet did not calm protesters who were asking for Mubarak resignation. Mubarak relied on the military for support by naming the head of military intelligence, Omar Suleiman, as his new vice president. State media said the country's new prime minister would be the air force chief, Ahmed Shafik. On January 31, the military declared that it would not use force to stop the

protests, and the next day Mubarak, under pressure from Obama, declared he would not run for re-election. The pressure from the military intensified, and Mubarak resigned from the Presidency on February 11, much to the delight of the protesters. About 800 people died in the protests that brought about this change. The military council then took over and disbanded Parliament, forced the resignation of the unpopular Prime Minister, Ahmed Shafiq, suspended the constitution and announced it would remain in power for six months, until an election could be arranged. The military council faced a quandary over how to deal with the protestors and announced that "it is aware of the demands of the people, but wants to underline the need for the return of normal life in Egypt." The new Prime Minister, Essam Sharaf told the crowds in Tahir Square on March 4 that they were the ones "to whom legitimacy belongs."

Even a fairly popular monarch can have severe difficulties from popular unrest. King Abdullah II of *Jordan* dismissed his government on February 1, 2011, after street protests, inspired by events in Tunisia and Egypt, demanded the resignation of Prime Minister Samir Rifai, who is blamed for a rise in fuel and food prices. The King asked Marouf al-Bakhit to be Prime Minister and a new cabinet was formed in mid July. The King's motorcade was attacked by youths on June 13, after he had given a speech promising reforms leading to a Parliamentary system of government. He did say that sudden change could lead to "chaos and unrest."

On July 1, Moroccans voted overwhelmingly to approve a new constitution proposed by the popular King Mohammad VI roughly two weeks earlier. This new constitution represents the culmination of a process crafted largely by the king in an attempt to quell the protests. However, the King will choose the Prime Minister from the majority party in Parliament, but he will still hold ultimate power. There were protests later that the reforms had not gone far enough.

In Manama, *Bahrain*, protesters in Pearl Square demanded that King Hamad bin Isa al-Khalifa, a Sunni, agree to a constitutional democracy, which would probably give power to the main Shi'ite opposition group, *Al Wefaq*. The crown prince, Sheikh Salman bin Hamad al-Khalifa, ordered the police to leave the square on February 19. *Al Wefaq* pulled out of parliament and demanded the dismissal of the Prime Minister, Sheikh Khalifa bin Salman al-Khalifa, the King's uncle, as well as the formation of a new unity government. On March 17, Saudi Arabia sent 1,000 troops to Bahrain, to help contain pro-democracy protests led by majority Shi'ite Muslims. These protests had led to the deaths of 29 people. The government of Bahrain proceeded to imprison doctors who helped wounded insurgents. *Saudi Arabia* has neutralized opposition by spending lavishly on low income housing.

In the *Yemen*, Ali Abdullah Saleh, President for 32 years, offered concessions to protesters, announcing that he would not run again, but he also said he would only transfer power to "safe hands." About 200 protesters have been killed during the political rallies. The Presidential Palace was attacked and Saleh was flown to Saudi Arabia on June 4 for urgent medical treatment of wounds sustained in the attack.

In the *Sudan*, there were protests against Omar Hassan al-Bashir, who took power in a military coup in 1989. More than 70,000 people fled the violence in Sudan's South

Kordofan state, where the government says it is disarming rebels. The region borders South Sudan, a largely Christian and animist region, which gained independence from the mostly Arabic-speaking, Muslim north on 9 July, 2011.

There were also violent clashes between the police and demonstrators and hundreds of deaths in Benghazi, the capital of *Libya*, where Col. Muammar el-Qaddafi has been in power for 41 years. By February 20, the uprising had spread to the capital, Tripoli, and the autocrat's son, Saif al-Islam el-Qaddafi, spoke on television about an "apocalyptic civil war." In the next few days the closing of oil wells in Libya forced the price of oil to over \$100/barrel and the U.S. stock market, as measured by the Dow, fell 2%. By early March, Libya had indeed fallen into civil war. A prize in this contest is Libya's sovereign wealth fund, valued at \$70 billion and seemingly controlled by Saif al-Islam el-Qaddafi. Qaddafi sent in mercenaries and members of the military that were still loyal against the opposition. The makeshift rebel army portrayed itself to the West and to Libyans as an alternative to Qaddafi's autocratic rule. The rebels faced the possibility of being outgunned and outnumbered in what increasingly looks like a civil war. As Qaddafi's troops advanced to within 100 miles of Benghazi, the rebel stronghold in the west, the United Nations Security Council voted to authorize military action, aimed at averting a bloody rout of the rebels by loyalist forces. On March 19, American and European forces began a broad campaign of strikes against Qaddafi and his government, unleashing warplanes and missiles in a military intervention on a scale not seen since the Iraq war. Qaddafi was defiant in the face of allied strikes and warned of a "long war." Without the Arab League's endorsement, the United Nations Security Council likely would not have passed Resolution 1973 on March 17, which approved "all necessary measures" to protect the Libyan people. By late June it appeared the rebels were running out of money and ammunition. In spite of the international assistance it was unclear whether the rebels would be able to dislodge Qaddafi. The death toll was estimated to be many thousands. However, in late August the rebels suddenly took Tripoli, and Qaddafi's family fled to Algeria. On September 1, the rebels' Transitional National Council, under the interim prime minister, Mustafa Abdul-Jalil, convened in Paris, to discuss the transition to a new government with the major powers involved, France, the United Kingdom and the United States. Britain and the US released over \$3 billion of frozen assets. A draft constitution will be put to a referendum within four months. Qaddafi had fled from Tripoli when it fell to the rebels on August 21 and was eventually found and killed in Surt on October 20. Three days later Mustafa Abdul-Jalil made a keynote speech declaring that Libya would adopt Islamic Sharia Law.

The demonstrations in Tunisia, Egypt, Bahrain, the Yemen and Jordan in January and early February triggered further demonstrations in Iran on February 14, which the government attempted to put down as before. Protests also erupted in Tahrir Square in Baghdad, Iraq, on February 25, and many demonstrators were killed by the security police. Unlike other demonstrations in North Africa the people did not demand a change in the political situation but in the provision of public goods and jobs.

In *Syria* in March, Bashar al-Assad, who took control after his father's death in 2000, has set the military against the protesters, leading to perhaps a 1300 deaths. A

spokesman for the U.N.'s Office of the High Commissioner for Human Rights said that the "situation in Syria has worsened considerably" during the week of March 19-26, with the use of live ammunition and tear gas by the authorities having resulted in a total of at least 37 people being killed in Daraa, including two children. Hundreds of people took to the streets in and around the capital, Damascus, on April 1 and security forces and ruling party loyalists attacked protesters with batons at Rifaii mosque in the city. Thousands of refugees fled over the border to Turkey, and President Erdogan of Turkey formally objected to Assad's use of excessive force.

There were now fears of a civil wars of Sunni against Shia throughout the Middle East.

The relationship between Israel's Prime Minister, Benjamin Netanyahu and Turkey's Prime Minister, Tayyip Erdogan was however still strained because of the "Gaza Freedom Flotilla" incident" on 31 May 2010.

These examples all show how elites can be fragmented in autocratic states, but must yet compete with each other for some degree of popular support. The possibly chaotic response of the mass of citizens seems to follow what have been called *belief cascades*. The idea underlying this notion is that of a cascade as a society goes through a sequence of tipping points as groups in the society turn against the autocratic regime. Karklins and Petersen, (1993) and Lohmann (1994) used this idea in an attempt to understand the "third wave of democratization"³⁷⁴ that occurred twenty years ago in Eastern Europe and Russia. The current events in the Middle East and North Africa suggest that the people in these regions have had enough of autocracy and stagnation. Contrary to the argument by Huntington (1998) about the "Clash of Civilizations," there seems to be a universal desire for autonomy.

Nonetheless, the uncertainty surrounding the revolutionary zeal at present in these countries suggests the profound importance of the social choice notion of "chaos." Theory suggests that in the absence of a dictator or autocrat, then political choice may be completely indeterminate.³⁷⁵ Recent events in Tunisia, Egypt, and Libya, and potentially in Syria and Iran, as well as the earlier civil wars in Serbia, Croatia, Kosova, and in the Caucasus after the collapse of the Soviet Union, provide evidence of this possibility.

Indeed the result of the removal of Saddam Hussein in Iraq provides even stronger evidence. As we have seen in Iraq, it can take many years to build democratic institutions that may be capable of generating required public goods. As Schofield (2006a) points out, Keynes was well aware of this social quandary when he wrote his great work in 1936.

Applying the formal model presented in this chapter, it may be possible to pinpoint the logic of autocratic durability, by analyzing the complex relationships between leaders, the military, the people and, in countries like Afghanistan, warlords and religious ac-

³⁷⁴Huntington (1991).

³⁷⁵See Chapter 1.

tivists. Schofield and Levinson (2008) used a simplified version of this model to examine three types of authoritarian regimes that have predominated in the twentieth-century: bureaucratic military dictatorship, fascist dictatorship, and the communist party dictatorship.

They argued that the theoretical prerequisites for regime change to democracy were sequentially harder to meet. These prerequisites included:

(1) enough economic and or political inequality to induce an oppositional underclass to demand that some power redistribution be formally institutionalized,

(2) not so much inequality in economic or political power that the authoritarian elite is willing to incur almost any cost to keep power,

(3) the ability of the regime's opponents to overcome the collective action problem inherent in organizing a revolution,

(4) for democracy to be achieved, reformers within the authoritarian bloc must align themselves with moderate opposition leaders to force authoritarian hardliners into accepting transition.

While these conclusions were drawn from an historical analysis of Franco's Spain, Argentina under the military Junta during 1976-1983 and the Soviet Union, they may also be valid for the anocracies discussed above.

Extending this model to deal with complex polities, like Iran, Iraq, Pakistan and Russia would potentially involve three economic factor dimensions, as well as various political dimensions such as equality, nationalism, and religion. It is possible that the military will be strongly opposed to religious activists, as Chapter 10 shows is the case in Turkey. On the other hand, in Pakistan it would seem that the military is divided between those who support and those who fear religious fundamentalism. In Afghanistan and Iraq the situation is even more complex. The former country is, in a sense, partly governed by factious warlords, whose wealth depends on their control of trade in opium³⁷⁶ and weapons, and who rightly fear that the Taliban threaten their power. In Iraq, the election in 2010 showed that the electorate is sharply and regionally divided between Sunni, Shia and Kurd, with a policy space characterized by religion and nationalism, just as in Turkey.

In October, 2009, Erdogan visited Tehran and met with President Ahmadinejad of Iran. Turkey and Russia are also discussing the possibility of having Russian gas supplies transit through Turkey. The result of these moves by Turkey will affect the whole Middle East. Rashid (2001) suggests that the situation in the Middle East can be called the "New Great Game" after the struggle for empire in the eighteenth century contest between Russia and Great Britain (Hopkirk, 1994; Meyer and Brysac, 1999). One aspect of the current great game is that the United States deploys an imperial toolkit that includes "democratization" and "liberalization of markets." Chua (2003) notes that these can induce "backlash."

As noted above, Levitsky and Way (2002) comment that the initial optimism about

³⁷⁶Rashid (2008) notes that in 2006 Afghanistan produced 93% of the world's heroin. There are also untapped reserves of oil, gas and many minerals.

democratization has been followed by the realization that many regimes in Africa, Eurasia and Latin America, are only partially democratic, and do indeed involve authoritarian governance. Khalizad (2010) and Worden (2010) suggest that democratization in Iraq and Afghanistan, in particular, will be hindered by widespread corruption.

The recent events in the Middle East show however that popular support for democracy can overwhelm even powerful autocrats. Since many of these autocrats were secular and opposed religious activist groups, their overthrow may well pose a quandary for the United States.

In the next section we present an application of the model to the case of Argentina, based on Schofield and Cataife (2007) and Galiani, Schofield and Torrens (2011). Argentina is currently democratic, but has exhibited swings to military autocracy in the past. We suggest that activist influence can induce fairly rapid switches in political policy, particularly when the economy is so heavily dependent on trade and thus on its exchange rate policy and the degree to which it protects some factors of production or provides support for some export sectors.

11.3 Trade and Development

In this section we present an application of the model to the case of Argentina, based on Schofield and Cataife (2007) and Galiani, Schofield and Torrens (2011). Argentina is currently democratic, but has exhibited swings to military autocracy in the past. We suggest that activist influence can induce fairly rapid switches in political policy, particularly when the economy is so heavily dependent on trade and thus on its exchange rate policy and the degree to which it protects some factors of production or provides support for some export sectors

Many developing countries adopted trade protectionist measures during the second part of the twentieth century. Most of these countries, if not all of them, did not have a comparative advantage in the manufacturing sector and they did not industrialize in a sustainable way as a result. Instead, they had a comparative advantage within the primary sector.³⁷⁷ In contrast, countries with comparative advantage in the manufacturing sector tended to remain much more open to trade. Additionally, the countries that adopted import substitution policies tended to show substantial volatility over time in their trade policies. Consider, just as an example, the case of Argentina. This country is relatively well endowed with highly productive land, and its comparative advantage has always been in the production of primary goods.³⁷⁸ Up to the 1930s, Argentina was well integrated to the world economy. Some protectionism naturally developed during the world recession of the 1930s, and then again after World War II, when for the first time workers massively voted in a presidential election.³⁷⁹ The country closed itself off in large degree from world markets becoming almost autarkic until the mid-1970s. Since

³⁷⁷See Syrquin (1989).

³⁷⁸See Brambilla, Galiani and Porto (2009).

³⁷⁹See Cantón (1968).

then, even though Argentina has tended to reintegrate with the world economy, there was a 10 year period, from 1981 to 1990, when GDP per capita decreased substantially. Hopenhayn and Neumeyer (2005) argue that this was, to some extent, due to the degree of uncertainty about trade policy which significantly hampered capital accumulation.

These remarks suggest that there is a close and complex connections between political choice and economic structure. As discussed in Chapter 5, many models of political choice emphasize political convergence to an electoral mean or median. Such models appear to be of limited use in explaining the oscillations that can occur as a result of divergent political choices by parties. As we have argued in Chapter 5, political parties will not converge if there is sufficient difference in the *valences* of political leaders.

Galiani, Schofield and Torrens (2011) have extended the stochastic model of electoral competition, as presented in Chapter 5, to study the economic and political determinants of trade policy. They model a small open economy with two tradable goods, each of which is produced using a sector specific factor (e.g., land and capital) and a third factor (e.g., labor) which is mobile between these tradable sectors. There is also one non-tradable good, which is produced using a specific factor (e.g., skilled labor). The political model has an elected government with the mandate to fix an ad valorem import tax rate. The tax revenue is used to provide two local public goods. One public good is targeted at the specific factors of production while the other is targeted at the mobile factor of production. We use this general equilibrium model to explicitly derive the preferences of the different socioeconomic groups in society (landlords, industrialists, workers and service workers). We then use those derived preferences for political policies to model the individual probabilistic voting behavior of the members of each of these socioeconomic groups. The combined model is thus based on micro-political economy foundations of citizens preferences. The model by Galiani, Schofield and Torrens (2011) offers an explanation why differences in the factor endowments of countries explain trade policy divergence between countries as well as trade policy instability within countries. Trade policy instability requires that political parties diverge in equilibrium over the political economic platforms that they present to the electorate, and commit to implement if elected.

Just as in Grossman and Helpman (1994, 1996) there are two interconnected sources of political influence: electoral competition and interest groups. In their study of the political economy of protection Grossman and Helpman proposed a model of protection in which economic interests organize along sectoral lines, so that interest groups form to represent industries. Their model predicts a cross-sectional structure of protection, depending on political and economic characteristics, and provides an excellent model of within country cross-section variability of trade policy. In contrast, the focus of this chapter is on the variability of trade policy both across countries and within a country over time, rather than across sectors.

Roemer (2001) also presents several models of political competition in which the central economic dimension is the distributive conflict among different socioeconomic groups. Acemoglu and Robinson (2006a) also offer a theory of political transition that uses the distributive conflict between the rich and the poor as the main driving force

behind political change, and they also stress structural differences between rural elites (landlords) and urban elites (industrialists) in highlighting important equilibrium institutional differences across countries. We emphasize redistributive conflict as the main determinant of trade policy. Thus our work is related to the analysis of Rogowski (1987, 1989) and Baldwin (1989), which use the Stolper-Samuelson (1941) Theorem to model the effects of international trade on political cleavages and alignments, as well as changes in those cleavages over time as a consequence of exogenous shocks in the risk and cost of foreign trade.

Albornoz, Galiani and Heymann (2008) introduce foreign direct investment in infrastructure such as railways in the standard two sector model of a small open economy and study how the redistributive effect of the railway (triggered by Stolper-Samuelson effects) differentiates the interests of landlords and workers with respect to policies such as expropriation. Dal Bo and Dal Bo (2011) introduce appropriation activities in the two sector model of a small open economy, and employ the Stolper-Samuelson theorem to study how economic and policy shocks affect the intensity of appropriation activities. The beauty of the Stolper-Samuelson Theorem is that it identifies winners and losers under free trade in simple economies.

However, the Stolper-Samuelson Theorem does not explain why trade policy changes occur. Chapter 1 has discussed a number of significant policy changes, including the repeal of the Corn Laws in Great Britain in 1846, followed by the Reform bill in 1867. Chapter 1 also commented on other policy switches in the United States. After the Civil War, the Republicans had become closely associated with pro-capital protectionism. It took the election of the Democrat, Woodrow Wilson, in 1912 to weaken the dominance of the protectionist Republican regime and begin the transformation of the US economy to one where manufacturing began to dominate over agriculture. Indeed, it was not until the North American Free Trade Agreement was signed in 1993, during the presidency of William Clinton, that the protectionist inclinations of domestic interest groups were sufficiently weakened to allow for such a free trade regime. Such an agreement was clearly against the interests of working people, who had tended to support the Democrat Party. In 1999, China and the U.S. had negotiated the entry of China into the World Trade Organization. The AFL-CIO opposed China's entry and the meeting of the WTO in Seattle sparked angry riots. As Karabell (2009) argues, this agreement formed the basis for "Chimerica," the synergy between the U.S.A. and China that has resulted in the very rapid growth of China, and the equally rapid growth of the USA debt in the decade 2000-2010.

A more recent realignment that has been noted in 2010 is the switch by many "evangelicals," who typically vote Republican, but have realigned with the Hispanic community, and as a result are in favor of Obama's attempts to push through immigration reform.

We have followed the classification by Rogowski (1987) of economies according to their factor endowments of capital, land and labor. His classification suggests that there are two main types of political cleavages: a class cleavage and a urban-rural cleavage. The underlying model presented by Galiani, Schofield and Torrens (2010) can include

non-tradable goods and thus can allow for a richer characterization of political alignments. In particular, in natural resource (land) abundant economies, without the inclusion of non-tradable goods, landlords favor free trade, and industrialists and workers are protectionist, inducing a urban-rural cleavage. However, once non-tradable goods are introduced in the model, distributive conflict among urban groups will also be present. Industrialists and unskilled workers may favor protectionist policies while skilled workers favor free trade policies (see Galiani, Heymann, and Magud, 2009). Furthermore, Galiani, Schofield and Torrens show that the presence of a distributive conflict between urban groups can have political effects in the determination of trade policy.

Their paper constructs a taxonomy to classify different economies given their economic structures:

1) *Natural resource-rich economies*. This set comprises countries that are highly abundant in the factor specific to the less labor-intensive tradable industry (land). They specialize in the production of primary goods.

2) *Diversified natural resource-rich economies*. They comprise countries that are moderately abundant in the factor specific to the less labor intensive tradable industry (land), but they display an important activity in the production of the two tradable goods.

3) *Industrial economies*. They comprise countries that are either abundant in the factor specific to the more labor-intensive tradeable industry (capital) or are highly endowed with the mobile factor of production (labor).

Galiani, Schofield and Torrens show that in a natural resource abundant economy with very little capital, or in an economy with comparative advantage in the manufacturing sector (i.e., industrial economies), political parties tend to converge to the same policy platform. Trade policy is likely to be stable and relatively close to free trade. In contrast, in a natural resource abundant economy with an important domestic industry which competes with imports, parties tend to diverge. Trade policy is likely to be more protectionist and unstable. This is consistent with the empirical evidence in O'Rourke and Taylor (2006) who show that, in the late nineteenth century, democratization led to more liberal trade policies in countries where workers stood to gain from free trade. Using more recent evidence, Mayda and Rodrik (2005) show that individuals in sectors with a revealed comparative disadvantage tend to be more protectionist than individuals in sectors with a revealed comparative advantage. They also show that individuals in non-tradable sectors tend to be the most pro-trade of all workers.

Galiani, Schofield and Torrens also show that when policy platforms diverge, then the economic structure influences the pattern of divergence. In particular, in specialized natural resource-rich and industrial economies, parties tend to propose very similar trade policies, but they differ in their budget allocation proposal. Thus, distributional conflict mainly occurs in the budget allocation, which does not affect the efficiency of the economy. On the other hand, in diversified natural resource-rich economies parties tend to differ in both dimensions. Thus, party rotation induces significant changes in the efficiency of the economy since each party implements a very different trade policy.

We can apply this model to the situation in the United States, as discussed in Chapter 1.

In the 1790s import tariffs in the U.S. were not very high and the main purpose of them was to finance the government rather than protect domestic industries. In the period from 1790 to 1820 tariffs were increased, but mainly to obtain more revenue and to finance the War of 1812 (Irwin, 2003). Early industrialization in the U.S. and the demand of raw materials from the industrialization of the U.K. radically changed this situation in the 1820s. The North produced manufactures that competed with British imports and favored protectionist measures. The South exported cotton and preferred free trade. From 1820 to 1830 tariffs were significantly raised with the crucial purpose of protecting domestic industries from foreign competition. The North obtained the necessary votes in Congress to increase tariffs, by offering the West financial resources for internal improvements. However, from 1830 to the Civil War, tariffs were decreased. This time the West voted with the South. Two circumstances contributed to this switch. First, President Andrew Jackson vetoed the internal improvements bills, which undermined the North-West coalition. Second, the West began exporting grain, making them more supportive of free trade. As a result, the Compromise Tariff of 1833 established a progressive reduction of tariffs that undid almost all the increase that took place during the 1820s (Irwin, 2006a).

During the Civil War, the Tariff Acts of 1862 and 1864 were proposed as means to raise capital for the effort against the south. It is likely this was not the only reason. Indeed, Lincoln's economic advisor, Henry Carey argued in his book of 1896, that the "American system" involving tariffs, was the only way to maintain equality, in contrast to the free trade British system of imperialism. After the Civil War, the Republicans became even more closely associated with pro-capital protectionism, while the Democrats, associated with the agrarian interest in the South and the West, called for a reduction of import duties. In 1887, President Cleveland, a Democrat, made tariffs the key focus of his State of the Union Address, arguing that duties should be reduced, or even abolished, for raw materials. In the 1888 presidential election, Harrison, a Republican, was elected, and the Republicans obtained majorities in both the Senate and the House. They immediately began to work on a new bill to raise tariffs. In fact, in 1890, the Congress, dominated by Republicans, passed the McKinley tariff Act, which significantly increased the average duty. In the 1892 presidential election, the Democrats took control of the Presidency, the Senate and the House and in 1894 they passed the Wilson-Gorman Tariff, which lowered tariffs again undoing some of the changes introduced by the McKinley Act. The conflict between protectionist interests of the north-east and the agrarian interests of the west and south came to a head in the presidential contest of 1896 between the Republican William McKinley and the Democrat William Jennings Bryan, which was won by McKinley with 51% of the popular vote but 60% of the electoral college. McKinley, who was known as the Napoleon of Protection, while he was president, stated in an speech to the Republican Party: "Under free trade the trader is the master and the producer the slave. Protection is but the law of nature, the law of self-preservation, of self-development, of securing the highest and best destiny of the race of man."

In terms of the model, during the nineteenth century the U.S. was a diversified nat-

ural resource rich economy with a comparative advantage in the primary sector, but with an important and growing manufacturing sector that competed with imports. This period illustrates a divergent political equilibrium, in which trade policy is unstable. Either a party with a protectionist platform (the Republicans) or a party with a free trade platform (the Democrats) could win the elections.

In the twentieth century, the economic structure of the U.S. suffered an extraordinary change. As Irwin (2006b) has put it:

At the end of the nineteenth century, though, the pattern of U.S. trade changed dramatically. For most of the century, the United States had a strong comparative advantage in agricultural goods and exported mainly raw cotton, grains, and meat products in exchange for imports of manufactured goods. But in the mid-1890s, America's exports of manufactures began to surge. Manufactured goods jumped from 20 percent of U.S. exports in 1890 to 35 percent by 1900 and nearly 50 percent by 1913. In about two decades, the United States reversed a century-old trade pattern and became a large net exporter of manufactured goods.

This reversal in the comparative advantage in the U.S. had a crucial effect on its political equilibrium. Once the U.S. became an industrial economy, industrial capitalists and workers gradually converted to free trade and the country moved to a convergent equilibrium with low tariffs. Moreover, except in very extraordinary circumstances, like the Great Depression, tariffs ceased to be an important source of political conflict and was no longer a key issue for political polarization and party differentiation.

A second possible application of the model is to the 'Marriage of Iron and Rye' in the context of trade policy in Germany in the late nineteenth century. As Schonhardt-Bailey (1998, 2001) notes, the marriage was a coalition of the agrarian Junker elite and heavy industry which was successful in 1879 in promoting a protectionist tariff policy for both manufactures and agriculture. After the creation of the German Empire in 1871, the iron, steel and cotton industries of Alsace-Lorraine had been absorbed into the Zollverein, leading to overproduction. Agricultural tariffs were raised again in the 1880's, but in the 1890's reductions in agricultural tariffs were exchanged for reductions in tariffs on German exports. The agrarians then retaliated by enlarging their coalition, forming the *Bund der Landwirte*, and bringing in small farmers in support of further import restrictions. According to Pugh (1986) by 1907, about a third of the members of the Reichstag supported the *Bund*. It would seem that Bismark's social reforms in the 1880's had brought the political axis into prominence in Germany. The success of the *Bund* was due to a political maneuver, bringing the element of populist nationalism into this axis.

11.4 Activist Coalitions and Policy Switches in Latin

America.

For a more elaborate example, we now apply aspects of the model to Argentina in the period 1989 to 1995.³⁸⁰ In this illustration, the main policy instrument was the exchange rate. Different parties had very different constituencies with very different preferred policies, and the resulting swings in policy in Argentina had demonstration effects on other countries in Latin America.

As discussed in Chapter 1, the work by Acemoglu and Robinson (2006a) offers a theory of political transition that uses the distributive conflict between the rich and the poor as the main driving force behind political change. They also stress structural or factor differences between rural elites (landlords) and urban elites (industrialists) in highlighting important equilibrium institutional differences across countries (see also Acemoglu et al., 2008). Such a model immediately implies that there are at least two dimensions to economic and political choice. One economic dimension is defined essentially by tax policies, and the nature of public goods produced in the polity. The other dimension is defined by external relations, the exchange rate regime, or the effect of import taxes or subsidies.

Policy change is often abrupt and affects several countries of a region concurrently. Such is the case of Latin America, whose polities seem to swing in a random fashion between pro-market and anti-market democracies (Dominguez, 1998).

Chapter 5 has presented a formal model of voting based on the concept of valence. As mentioned earlier, valence relates to voters' judgements about positively or negatively evaluated conditions which they associate with particular parties or candidates. These judgements could refer to party leaders' competence, integrity, moral stance or "charisma" over issues such as the ability to deal with the economy, foreign threat, etc. The important point to note is that these individual judgements are independent of the positions of the voter and party.

Stokes (2001) suggests that policy switches are the result of politicians attempting to implement policies that they know are unpopular, but which they think are best for the general good. In this section, we offer an alternative explanation. The model presented here generates these policy shifts as the result of electoral forces. It is important to note, however, that in this model the cause of policy shifts is not directly due to a change in electoral preferences, but to a change in the valence of some leaders, triggered by the support of foreign interest groups.

Rather than discussing these questions abstractly, we consider the case of the Argentinean elections of 1989, 1995 and 1999. The study of a particular polity allows us to provide a better motivation for the analysis as well as an evaluation of the empirical implications of our model. We study Argentina rather than one of the other polities in the region because the sequence of events in Argentina shows that the causal connection is from political strategies to voter preferences rather than from preferences to strategies, as is usual in formal models. Implicit in our argument is the premise that foreign

³⁸⁰This section is based on Schofield and Cataife (2007).

interests lobby for the implementation of a particular policy on all, or at least several, countries of a given region. The underlying idea is that foreign groups of interests favor those domestic leaders willing to implement their preferred policy. By contributing resources, the foreign interest groups alter the relative valence of the domestic leaders, which in turn increases the likelihood of electoral victory of their favorites as well as policy shifts across countries of the same region. The contributions of foreign interest groups often takes the form of financial support and bilateral commercial opportunities. However, recent evidence suggests that these contributions may actually take the most direct form, namely money for political campaigning, as it has been persistently alleged in the case of the 2007 Argentine election.³⁸¹

The activist valence model presupposes that policy activists (either domestic or foreign) donate resources to their party. Such resources allow a party to present itself more effectively to the electorate, thus increasing its valence. Since activists tend to be more radical than the average voter, parties are faced with a dilemma. By accommodating the political demands of activists, a party leader gains resources to enhance the leaders valence, but by adopting the radical policies demanded by activists, the party may appear too extreme and lose electoral support. The party must therefore *balance* the electoral effect against the activist valence effect. As shown in Chapter 5, the result gives this as a first order balance condition between electoral and activist support. Since valence in this model is affected by activist support, it may exhibit “decreasing returns to scale” and this may induce concavity in the vote share functions of the parties. Consequently, when the concavity of activists’ valence is sufficiently pronounced then a pure strategy Nash equilibrium (PNE) of the vote maximizing game will exist. The result indicates that there is no reason for this equilibrium to be one where all parties adopt centrist positions. Since the balance condition depends on all leader valences and policy positions, *as well as* on the willingness of domestic and foreign groups of interests to support the policies of leaders, it is quite possible for the chosen policy to swing back and forward. Unlike domestic interest groups, contributions made by wealthy and powerful foreign interest groups affect several countries within a region, changing the relative valence of those leaders willing to support their preferred policies. This in turn increases the likelihood of victory of those leaders, even when the preferences of the electorate remain unchanged, offering a quite possible explanation for the phenomenon of “regional swings”. In our case study, first the US and the IMF, and then the government of Venezuela, constitute the interest groups that may have had such an impact in shaping the relative valences of domestic leaders.

Argentina 1989-1999: From Populist Promises to Neoliberalism

In 1989, Carlos Menem, the candidate of the PJ (Partido Justicialista), was elected President of Argentina with almost 50% of the votes. Menem’s populist platform, which included a universal rise in salaries (*salarioazo*) and a big push to the productive sector (*revolucion productiva*), was supported by the working class, and was the key to

³⁸¹U.S. prosecutors in a Miami courthouse asserted that the government of Venezuela sent US\$790,550 in cash to help Cristina F. Kirchner’s electoral campaign. The Argentine government denies this allegation.

Menem's electoral victory. In contrast, the middle and upper class generally supported the historical rival of the PJ, namely the UCR (Union Civica Radical).

The Argentinean upper middle class probably regarded Menem as a demagogue from the countryside. From their perspective, Menem lacked both the values and the skills to lead a country that had suffered under a harsh military dictatorship (1976-1983) followed by a democratic government (1983-1989) that failed in fighting hyperinflation. It was believed that Menem's electoral promises, if implemented, would lead to a highly redistributive policy, with a strengthening of the labor unions and a weakening of private property.

Surprisingly, once in office Menem implemented policies that were opposite to his electoral promises. The new policies included the liberalization of trade and the labor market, and the privatization of several state companies. More importantly, in 1991, Menem established a currency board that pegged the Argentinean peso to the dollar, by legally forcing the Central Bank to hold dollar reserves to cover its Argentinean peso liabilities in a 1-to-1 ratio. Although this policy (soon known as the "Convertibility Plan") succeeded in controlling inflation, it led to three major problems. First, the financial system became very fragile, since the Central Bank lost its role of lender of last resort for the economy. Second, the government sacrificed its control over the real exchange rate. Third, the resulting monetary policy was not accompanied by fiscal discipline. This was because the discretionary allocation of fiscal resources by the federal government in Argentina was crucial for the manipulation of political and electoral support at the local level. These problems made the economy especially vulnerable to exogenous shocks, particularly those resulting from "contagion" from the international economy.

The Two Periods of the Convertibility Plan

As long as the value of the dollar did not appreciate with respect to Argentina's major commercial partners, and the government was able to finance itself either through foreign debt or counter cyclical funds, the economic plan succeed in providing the stability required for economic growth. Indeed, the absence of exogenous shocks in the period 1991-1995 provided Argentina with high rates of economic growth (over 8% on average between 1991 and 1994) and a widespread optimism both at home and among foreign investors.

As soon as the international conditions changed, Argentina's vulnerability to external shocks proved to be very high. The principal shocks were the Tequila crisis in 1995, the East Asian crisis in 1997, the devaluation of the Brazilian real in 1998 and the appreciation of the dollar relative to the European currencies after 1995. An analysis of the consequences of each particular crisis on Argentina is beyond the scope of this illustration. Although the Convertibility Plan survived all these shocks, the cumulative effect was to make Argentina's economic scheme unsustainable.

The Argentinean peso appreciated by 25% in real terms between 1990 and 1998 (the appreciation reached 32% by 2000), making Argentina an expensive country even by European and U.S. standards. Given that the Convertibility Plan outlawed the printing of money without dollar backing, the fiscal imbalances in Argentinean currency had to be financed through foreign debt. In addition, the appreciation of the currency magni-

fied the levels of debt when denominated in dollars. Consequently, between 1991 and 2001, the public debt increased from U.S. \$87 billion to U.S. \$145 billion. Thus, the Convertibility Plan succeeded in controlling hyperinflation, but when the external conditions became unfavorable, it forced the government to replace monetary laxity with foreign debt. Of course, this strategy paid-off from an electoral point of view, at least as long as the government managed to refinance the short-term debt.

Argentina's economic performance over the 1990's could be said to have two different periods. The period 1991-1995 was characterized by sustainable fiscal deficits, high economic growth and a reasonable (although perhaps not competitive) real exchange rate. In contrast, the period 1995-2001 was characterized by a much lower economic growth (indeed with economic contractions in 1995, 1999, 2000 and 2001), high unemployment rates, large fiscal imbalances and an increasing foreign debt. All of these were the product of the inflexibility of Argentina's economy. In retrospect, it seems clear that, sooner or later, a severe enough external shock would occur, forcing a political decision to abandon the Convertibility Plan and to allow the market to re-establish some sort of equilibrium. The longer the exchange rate correction was postponed, the greater the private and public sector dollar-denominated loans. In sum, postponing a devaluation only increased the probability of default and bankruptcy. It is hard to see, then, how the merits of the Convertibility Plan in 1991-1994 could be dissociated from its costs in 1995-2001. The seeds of the crisis of 2001 were already present in the early apparent success of the Plan.

Losers and Winners

We can easily determine who were the domestic winners and losers over the ten year cycle of the Plan.

Carlos Menem and his entourage were in office for these ten years. In this period, Menem managed to control a plurality in both chambers of Congress. By increasing the Supreme Court of Justice from five to nine, and by maneuvering these appointments, he also obtained an "automatic majority" in the Court. This maneuver could guarantee immunity from later accusations of corruption over the U.S. \$20 billion federal fund collected from privatizations.

In order to increase the real value of assets and profits, it was in the interest of the foreign companies hoping to acquire publicly owned companies that Argentina maintain an appreciated currency. Because the interests of the politicians in office were aligned with those of the foreign companies, they also wanted Argentina to stick to the Convertibility Plan.

The Argentinean upper-middle class also benefited from the economic scheme. After years of complete absence of credit (a consequence of a high-inflation and closed economy), the Convertibility Plan brought about a consumption boom of imported goods and the possibility of travel abroad. The political elite in office was perceived by the upper-middle class citizens to be corrupt and to condone corruption at all levels of government. Although this corruption violated the ethical standards that might have been dominant earlier, the benefits associated with the new consumption habits proved to be irresistible. In 1995, Menem was re-elected with a percentage of the votes similar

to 1989. Although he lost 10% of the left votes to a new party, FREPASO (Frente Pais Solidario), he gained 10% of the center-right votes.

Despite their initial aversion, the upper-middle class felt more than satisfied with Menem's government. Indeed, Menem's policies created an excellent business environment, starting with economic stability and a regressive tax structure. Indeed, members of this class also became business partners in Argentina's modernization and infrastructure projects.

For the working class, the real wage remained practically unchanged from 1990 to 2000. On average, the unions had organized one general strike (across the different industrial sectors) every six months during the presidency of Raul Alfonsin of the UCR. Menem, Alfonsin's successor, avoided this problem by giving the union leaders control over the resources of the health plans of their respective industrial sectors. As a result, Menem only faced one general strike on average every fifteen months.

As a consequence of the Convertibility Plan, the per-capita public debt increased by US\$1750 in 1991-2001. This money would eventually have to be paid through taxes by the citizens. Any devaluation would make the burden of the foreign debt even heavier. Eventually Argentina defaulted on part of its debt (although not its debt with the international financial organizations). Two points need to be considered. First, the default was the product of the circumstances, not a plan devised ahead of time. Second, the country did have to pay the costs of the devaluation and default, and the ensuing crisis may well be considered the most profound that the country has had to face in recent history.

At least theoretically, the upper middle class was able to insure against the damages of an eventual devaluation, by saving in dollars and sending their money out of the country. Of course, although this strategy was in principle available to everyone, the working class was unable to use it. They received meager benefit from the consumption boom, and had to face the full consequences of the per-capita increase in the public external debt.

The Role of the IMF and the U.S. government

Domingo Cavallo, Argentina's Economy Minister in 1991-1996, and architect of the Convertibility Plan, has stated that although some of the policies implemented by Menem and himself were aligned with the so-called Washington Consensus (namely privatization, trade liberalization and deregulation), other recommendations of the Consensus (fiscal discipline, a competitive exchange rate, and tax reforms) were not.³⁸² Cavallo mentions that, in the beginning, the technical staff of the IMF did not support Menem's package of policies, because they were not fully aligned with the Consensus. Nonetheless, adds Cavallo, the intermediation of Clinton's administration in favor of the Argentinean government induced the endorsement of the IMF. In other words, the initial support of the IMF for the Convertibility Plan was not due to the technical recommendation of the staff, but to pressure from the U.S. government. Later on in the 1990's, the IMF repeatedly supported Argentina's economic reforms and, in particular, asserted

³⁸²Cavallo, 2004.

that Argentina's currency board was an example of a credible and viable regime. In the words of the Independent Evaluation Office of the IMF, "the IMF had been almost continually engaged through programs [with Argentina] since 1991" and "IMF resources were provided in support of Argentina's fixed exchange rate regime, which had long been stated by the IMF as both essential to price stability and fundamentally viable."³⁸³

Throughout the crises induced by external contagion, the IMF backed Argentina in two ways. First, it provided the financial aid that would prevent a run on Argentinean financial resources. Second, it helped the Argentinean government cope with both short-term public debt and the pressure to devalue. Although from 1994 onwards, Argentina failed to accomplish the fiscal targets agreed with the IMF, this failure was systematically ignored so that the country could receive extra financial aid. In the 1992-2001 period, the IMF granted loans of \$22 billion. Indeed, in 2000, the IMF further approved what in Argentina became popularly known as *blindaje financiero* (financial shielding), namely a loan for \$40 billion, which was composed of loans from the IMF (U.S. \$14 billion), the World Bank and the IADB (\$5 billion), the government of Spain (\$1 billion) and a further \$20 billion that came from the private sector. Needless to say, the crisis of 2001 was triggered despite the efforts of the IMF.

It seems natural to ask the following: Why would the U.S. government support a package of reforms that did not fully comport with the technical recommendation of the IMF? The two recommendations (fiscal discipline and a competitive exchange rate) of the Washington Consensus that were neglected by Cavallo's plan seem to have had a key role in the collapse of the Argentinean economy. We can examine the consequences of these missing components.

The U.S. government followed an official policy of a "strong dollar" at least from 1995. Clinton's Treasury Secretary, Robert Rubin, was perhaps the main advocate of this U.S. policy. The benefits for the U.S. from a strong dollar are three-fold. First, it helps finance the large current account deficit by means of capital inflows. Second, it nurtures the U.S. stock market. Third, it reduces inflationary pressure. These benefits had been sought since the administration of Ronald Reagan, even though there was, on occasion, some concern about the undesired result of a strong dollar, namely the trade consequences of a less competitive exchange rate.

A convenient strategy for the U.S. government at the time Argentina implemented its currency board would have been to attempt to appreciate the dollar without affecting the rate of exchange relative to key U.S. commercial partners, like Western Europe, China and Japan.

We suggest that at the beginning of the 1990's there was an alignment of interests between the Argentinean upper middle class, the politicians of that country and the U.S. government. Several years of the Convertibility Plan were the product of this alignment. The evolution and effect of this alignment and its collapse can be presented briefly.

By 1989 the Argentinean state was bankrupted and forced to finance itself via a monetary laxity that produced hyperinflation. In order to enrich themselves, members

³⁸³IMF (2004).

of the political elite would first have to enrich the state, and the best way to achieve this was to privatize the publicly-owned companies. However, to make the bankrupted state companies attractive enough to foreign investors, the whole economy would require some modifications, beginning with macroeconomic stability and a strong currency.

This package of policies was beneficial to the Argentinean upper middle class. Nonetheless, given Menem's party affiliation and personal background, he had no chance of being elected in 1989 by targeting this class. Instead, he targeted the working class with promises that, we suggest, he had little intention of implementing. Once in office, Menem needed the endorsement of the IMF. In this respect, the sole challenge was to get the support of the IMF for two mainstays of his plan, namely a loose fiscal discipline (helpful for political and electoral purposes) and a non competitive exchange rate (required to make privatization an attractive proposition for foreign firms). The remaining policies fitted with the Washington Consensus, and would therefore induce no opposition.

The currency board proposed by Cavallo happened to be in line with the interests of the U.S. Treasury. (The opinion of Nicholas F. Brady, U.S. Treasury Secretary at that time supports this view.) In turn, the support of the U.S. government would facilitate the endorsement of the IMF. Thus the Convertibility Plan could be implemented.

As we have noted, Carlos Menem (of the PJ) won the 1989 presidential election with the 47.5% of the vote, based on a populist platform. The working class, which tended to identify with the PJ, supported Menem and gave him the victory. In contrast, the middle and upper classes mainly supported the candidate of the UCR (Union Civica Radical), Eduardo Angeloz, who proposed a "red pen" to reduce the size of the state apparatus in an attempt at fiscal austerity to stop inflation and generate macroeconomic stability. Angeloz only gained 37% of the vote.

After the 1989 election, Menem implemented a package of policies, including the Convertibility Plan (discussed above), which was completely incongruent with his electoral promises. Five years after the implementation of the Plan, Menem had the opportunity to try for the re-election. This time, Menem's platform was supported by a new electoral coalition that included the upper middle class and this support gave him the electoral victory.

Figure 11.2 shows the balance locus and *weighted electoral mean* for Menem in 1995. As we have defined it in Chapter 5, the *weighted electoral mean* for a party leader is the equilibrium position the leader would adopt in the absence of activist support. This figure also shows a simplified contract curve for Menem (between the economic left at L and the hard currency supporters at H). This contract curve will involve conflicts between these groups over the nature of their demands and their willingness to support the party leader. The overall equilibrium position for Menem will depend on the difference between the valences of the candidates.

Menem's move to the right on the economic axis in 1995 (as illustrated in Figure 11.2) may have lost him some votes. However, we suggest he gained votes from the increased resources made available from the new activist group at the hard currency

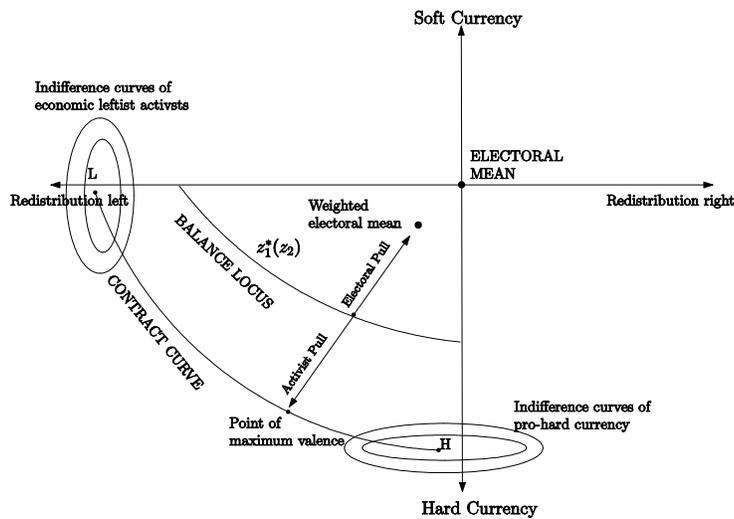


Figure 11.2: The balance locus and *weighted electoral mean* for Menem in 1995.

position. Note that Figure 11.2 is simply a heuristic sketch of possibilities.³⁸⁴ Domestic activists for Menem in 1995 included many labor groups as well as elements of the business community. Some business interests were hurt by the convertibility plan, as the over-valued exchange rate destroyed manufacturing exports.

The Swing to the Left

After a failed attempt by Menem for re-election, a new President, Fernando De La Rúa, was elected in 1999. Although De La Rúa belonged to the opposition (UCR), in his electoral platform he committed himself to maintain the economic scheme implemented by Menem. De La Rúa kept this promise once in office. However, the negative consequences of the Convertibility Plan were so severe that they became impossible to ignore. The public debt was already extremely high, and the economy showed serious symptoms of high unemployment, fiscal imbalance and stagnation. Cavallo was appointed as Minister of the Economy in March 2001. Despite Cavallo's efforts, the Argentine economy fell into crisis in December 2001. After the resignation of De La Rúa and a chaotic sequence of interim presidents, Nestor Kirchner, candidate of the PJ with leftist leanings, was elected in May 2003.

By 2006 it became evident that left-wing politicians had won popularity not only in Argentina, but in several countries of the region. This phenomenon encouraged scholars to talk of "Latin America's (new) leftward swing." (Vargas Llosa 2005, Castaneda 2006). These countries included Argentina, Bolivia, Brazil, Chile, Ecuador, Uruguay,

³⁸⁴Figure 11.2 is clearly just a variant of Figure 11.1.

Peru, and Venezuela. Of course, there is significant variation in terms of the policy stances of the leftist leaders in each of these countries. There were also marked similarities among some of them. The most anti-free market position has been taken by Hugo Chavez (Venezuela). Following Chavez were Evo Morales (Bolivia), Ollanta Humala (Peru), Rafael Correa (Ecuador) and, to a lesser extent, the Kirchners (Argentina).³⁸⁵ Ideas supported by these leaders included the repudiation of national debts, suspension of review of their national economies by the IMF, re-nationalization (or even expropriation) of certain industries, etc. Chavez has either openly or allegedly campaigned for these leaders. For instance, in the case of Ollanta Humala, Chavez campaign support for him was persistent and open. In the case of Cristina Kirchner, US prosecutors have alleged in a Miami courthouse that Chavez provided a bag full of money to contribute to the campaign that gave her the presidency of Argentina in 2007. Chavez further facilitated these leaders' resources to pursue policies in line with his recommendations. For instance, the Argentine government, lacking any access to international financial markets, has eased its financial needs by borrowing from Venezuela. Also, several accords have been signed between Chavez and Morales to boost Bolivia's recently nationalized energy industry.

Venezuela's central role in the region is only possible thanks to its wealth from natural oil reserves. These resources allow Chavez to intervene directly or indirectly in the political processes of other countries in the region. It is quite possible that his control over Venezuela's state wealth and his public support may have had a significant impact on the relative valence of domestic politicians. In the same fashion that the US and IMF had affected the valences of the leaders in the 1990's, contributing to the temporary success of rightist policies and hard currency regimes, Chavez now pushes toward the implementation of anti-free market policies. Since anti-free market policies are by their very nature incompatible with the possibility of having access to financial markets to borrow money, the economic dimension is linked to the external dimension. As the Argentine case shows, once an anti-free market stance has been taken, it is no longer possible for a government to borrow money at sustainable rates. This has two effects on the external dimension. First, non-traditional lenders become the only alternative. In the case of Argentina, Venezuela took that role, reinforcing the view of Argentina as Venezuela's ally. Second, a hard currency is no longer a viable option. This leads to conflict over whether the government supports the agricultural sector through export subsidies, or taxes it to raise revenue. In the case of Argentina, the resulting political crisis led to public confrontation between the President Cristina Kirchner and Vice President Julio Cobos. Cobos had favored the agricultural activist group that opposed an increase of export taxes on soybean and sunflower. In terms of our formal model, these political events can be understood as a positioning of the Kirchners on the north west quadrant of the policy space. According to the model, in equilibrium, any party that will opposes the Kirchners in 2011 must locate in the south east quadrant of the

³⁸⁵Not all these leaders took office. Ollanta Humala was defeated in Peru's run off election by Alan Garcia. But Nestor Kirchner not only won the 2003 election in Argentina, he was followed by his wife, Christina, in 2007.

policy space.

Inferences from the discussion of trade policy

In the above discussion, we suggest that in the Latin American polities, an electoral dimension is defined in terms of the “external” issues of the exchange rate, debt, and the relationship with the United States and other developed polities. The oscillation in one polity follows naturally from the two-dimensionality of the policy space, as activist groups are brought into prominence as a result of the links between choices made in the internal and external dimensions. As the Argentine case illustrates, the form of the support provided by both internal activists (large companies, syndical leaders, etc.) and external activists (multilateral organizations, US or European business interests or policy makers) may vary, but the ultimate goal is to contribute to the success of candidates supporting policies favourable to the activist groups. External conditions are crucial, because they influence the responses of the various activist groups, and thus the strategic responses of the political candidates.

As it is sometimes suggested, political choices in one polity, like Argentina, may trigger a demonstration effect, or belief cascade, in other polities of the region. We thus have a reason for the possibility of “contagion” from one polity to another. However, our model provides another, more direct, form of contagion, rooted in the democratic process. This form of contagion stems from external activist groups. Supporting similar policies across polities induces a high correlation between the electoral swings of the countries in the region. In other words, when a hegemonic power makes a policy choice on issues such as the exchange rate, savings level, openness of the market, etc., then it has an incentive to try to influence the policy of other countries, through support for any candidate who is willing to implement the preferred policy. However, the support of activists for the hegemon can induce a counter-response by other activists (usually leftist). These changes in the electoral equilibria make it appear *as if* the domestic electoral preferences change temporally or geographically in a chaotic fashion across the region.

Our analysis suggests that this is a misinterpretation. What drives the electoral swings is not a change in preferences, but a change in the distribution of perceptions that the electorate has of the quality of candidates of left and right. Because these perceptions result from the actions of activists who respond to outside influences, we see that the electoral outcomes in Latin American polities will tend to display intrinsic uncertainty. A similar conclusion will hold for other other countries whose economies are dependent both on natural resources and manufacturing.

As Edwards (2011) has recently observed in his analysis of Latin American political economy, the problems are fiscal irresponsibility and persistent corruption. The model we have proposed here suggests why these problems are so persistent.

Chapter 12

Chaotic Leadership Transitions

Prior to this chapter we have examined how activists—whose interests may not be perfectly aligned—influence the policy positions of leaders or parties in democratic regimes when both activists and leaders anticipate voters' electoral response to the leaders' positions. Elections in several countries were studied. A general conclusion from modelling elections in these countries is that the influence activists have on parties' positions depends on whether elections take place under majoritarian or proportional representation systems. This influence also depends on the voters' valences over candidates. By design, these empirical models examine the effects of activists within the context of a single election.

In this chapter we use dynamic models to examine changes in leadership and concentrate on studying leadership transitions in non-democratic countries. Non-democratic transitions happen mostly in countries with weak or young democracies or in countries having no democratic history. When one dictator deposes another, the coup installs a new dictator in office.

The majority of leadership transitions are non-democratic. As stated by Magaloni (2008) autocratic leaders may govern in military, monarchic, or in countries single-party or multi-party legislatures. In her study of leaders governing between 1950 and 2000, 62% of the world's regime-years were autocratic. Moreover, Golder (2005) shows that between 1946 and 2000 dictatorships were more common than democracies with the number of democracies surpassing the number of dictatorships only after 1992.

We start from the premise that to stay in office dictators must maintain the support of certain groups in society. Dictatorial succession is controlled mostly by members of the country's élite (see e.g., Acemoglu and Robinson, 2001, 2006a; Bueno de Mesquita *et al.* 2003; Gallego and Pitchik, 2004; Gallego, 1996, 1998; Luttwak, 1979; Olson, 2000; Tullock, 1987; and Wintrobe, 1998). Implying that only a *small* group of citizens is involved in staging a coup. Luttwak (1979) writes that “Mass participation before and during a coup d'état has been the exception rather than the rule”. In this chapter we examine the circumstances under which dictators maintain the support of the élite to stay in office and the circumstances under which the élite stage a coup d'état.

In Section 12.1 we use the leadership transition model of Gallego and Pitchik (2004) to examine the circumstances under which the élite stage coups when a leader

needs to make an investment targeted exclusively to the kingmakers, the leader's support group. The novelty of this model in the political economy literature is that kingmakers stage coups in order to have a chance at becoming the new dictator as well as to punish the dictator for making less effort than demanded by kingmakers. In Section 12.2, we review the literature on non-democratic leadership models. In Section 12.3 we use the empirical model of Gallego (1996,1998) to test some of the predictions outlined in the theoretical models presented in Sections 12.1 and 12.2 and then show evidence supporting the hypothesis that it is the élites who trigger leadership transitions in non-democratic regimes. In Section 12.4, we review the literature describing different types of autocratic regimes: military, monarchic, and anocracies with single-party or multi-party legislatures. Concluding remarks are given in Section 12.5.

12.1 An economic theory of leadership turnover

Gallego and Pitchik (2004) develop an infinite-horizon model where the actions of a dictator are disciplined by the threat that a finite group of kingmakers may remove the leader from office by staging a coup. In each period, the incumbent dictator makes an investment that benefits the kingmakers either in the form of an excludable public good or a cash transfer targeted exclusively to the kingmakers. Kingmakers are productive economic agents who sell their output in the international market.³⁸⁶ The export profits of the kingmakers increase in the investment made by the dictator. The efficacy of the dictator's investment in any given period depends on the realization of a commonly-observed random export price. The kingmakers' profits increase as the export price rises. The model applies broadly but for exposition purposes is presented by allowing kingmakers period profits to be affected an exogenous random shock, the internationally determined price of the export good.

In the Gallego and Pitchik model kingmakers perfectly monitor the effort exerted by the dictator. However, even under imperfect monitoring, the predictions of the model remain: coups occasionally occur as kingmakers try to seize power or punish the autocrat for not delivering the goods.

12.1.1 The model

The timing of events is as follows. At the beginning of every period, the players observe the price of the export good \mathbf{p} . Each period, the price p is independently and identically drawn from a distribution F with support $[0, \infty)$. After observing p , the dictator collects the rent $W(\mathbf{p})$ from the citizens (who play no other role in the model),³⁸⁷ where W is continuous and $W(\mathbf{p}) \in [\underline{W}, \overline{W}]$ for all p .

³⁸⁶Using countries studies, O'Kane (1987) finds that countries highly dependent on a single good for their export revenue are prone to coups. She documents that export revenue is affected by shocks and by the government response to fluctuations in these shocks. Governments must work hard to maintain support and avoid coups when export revenue is volatile.

³⁸⁷Dictators may also invest in public goods that affect the citizens' well-being which in turn, affect the dictator's rents (see e.g., Bueno de Mesquita *et al.*, 2003). If the rents are mainly tax revenues, then they

After receiving the rent, the dictator makes an investment $x \in [0, 1]$ that affects the kingmakers.³⁸⁸ While being costly to the dictator, the investment benefits kingmakers as it increases their export profits.

Once the dictator chooses the investment level x , a kingmaker is randomly selected to decide whether the kingmakers should stage a coup. If a coup is staged, the dictator is ousted. When there is a coup, with probability $q \in (0, 1)$, the new dictator is a randomly-selected kingmaker, who is replaced by a *potential* kingmaker.³⁸⁹ With probability $(1 - q)$, the new dictator is a *potential* kingmaker. In this case, with probability $(1 - s)$, a kingmaker remains a kingmaker and with probability s is expelled from the kingmakers' club and thus ceases to be a kingmaker.³⁹⁰ The expelled kingmaker no longer benefits from the dictator's investment or from the benefits of a coup. As a consequence, whenever a coup occurs, a kingmaker permanently loses access to power with probability $(1 - q)s$. Coups are then risky for kingmakers. There is no collective action or free rider problem among the kingmakers (because it is a weakly dominant strategy to take part in a coup whenever the benefit exceeds the opportunity cost).

Dictators differ in their investment costs. Dictator i incurs a cost $C_i(x)$ when investing x where $C_i : [0, 1] \rightarrow R^+$ is an increasing, convex, continuous function with $C_i(0) = 0$ and $C_i(x) < C_{i+1}(x)$ for all $x \in (0, 1]$ and $i \in I$ indicates the dictator's type. So that, lower types face *lower* costs. Moreover, only the dictator knows his type and only when taking office. The period payoff to dictator i who invests x is

$$W(\mathbf{p}) - C_i(x).$$

When there is no coup, the dictator remains in power. If a coup is staged, the ousted dictator's collects the rents this period, exits the game and so receives no rents thereafter. The lifetime payoff of a dictator is the discounted sum of the period payoffs, with discount factor $\delta \in (0, 1)$.

In any period in which there is no coup, each kingmaker receives an equal share of export profits

$$\frac{\mathbf{p}Y(x)}{n}$$

where $\mathbf{p}Y(x)$ is the export profit when the dictator invests x , and $Y : [0, 1] \rightarrow R^+$, is an increasing, concave, continuous function with $Y(0) = 0$ and n is the number of kingmakers. The kingmaker's period payoff increases in both the price and the dictator's investment. In any period in which a coup is staged, each kingmaker's payoff is 0.

may also depend on the random shock ($W(p)$) as the shock may also affect the tax paying citizens. In Olson (1993, 2000) and McGuire and Olson (1996) the dictator sets the tax rate imposed on citizens to maximize tax revenue.

³⁸⁸Bueno de Mesquita *et al.* (2001, 2003) examine the relationship between a leader's investment decisions and the existing political institutions. Like Gallego and Pitchik (2004), they assume that the winning coalition, the leader's support group, is small relative to the members of the selectorate, those that may have a say in determining the leader's fate.

³⁸⁹Potential kingmakers correspond to the selectorate in Bueno de Mesquita *et al.* (2003).

³⁹⁰The new dictator may replace some kingmakers as the new leader may not have the same affinity as the deposed dictator for the kingmakers. In Bueno de Mesquita *et al.* (2003) a leader does not have the same affinity for all the members of the winning coalition.

The lifetime payoff of a kingmaker is the δ -discounted sum of the period payoff that the kingmaker receives while remaining a kingmaker plus the expected payoff that the kingmaker receives if chosen to be dictator after a coup. The period payoff of a *potential* kingmaker is zero.

12.1.2 Equilibrium

As in other infinite horizon stochastic models, the model has multiple Nash equilibria.³⁹¹ Gallego and Pitchik focus on sequential equilibria and examine only equilibria supported by “credible threats”. In the model, all kingmakers are identical and all dictators of a given type ($i \in I$) are identical at the beginning of their term in office. In addition, since the payoffs in each period are determined solely by the current levels of observable variables, they restrict their attention to symmetric Markov sequential equilibria (MSE).³⁹²

Gallego and Pitchik look for a Markov strategy profile in which the state space, decision sets, period return function, and law of motion are as follows. When choosing an investment level in the compact set $[0, 1]$, the dictator knows the current state, i.e., knows the current price \mathbf{p} , the current beliefs π of kingmakers regarding the dictator’s type, and the fact of being in office. A Markov strategy for a dictator of type $i \in I$ transforms prices and beliefs into investment levels. The period return function, $W(\mathbf{p}) - C_i(x)$ for $i \in I$, is bounded and the discount factor δ is bounded away from 0 and 1. The law of motion of the system is a conditional probability determined by the Markov strategy of the kingmaker (which stipulates the circumstances of a coup) and so is Markov. Since this dynamic programming problem satisfies Harris (1987, pp. 20–28), the solution is determined by the dictator’s Bellman equation. (see details in Section 12.1.4).

When kingmakers decide on a coup, they know that the current state is given by the current price, the dictator’s current investment, and their belief regarding the current dictator’s type. If a coup occurred in the previous period, then their belief on the type of the current dictator’s type is given by the exogenous vector π_0 . Otherwise, the belief is updated following Bayes’ rule whenever possible. The decision set of a kingmaker is the compact set $\{1, 0\}$, where 1 represents a coup. A Markov strategy transforms the current price, investment and belief into a decision about a coup. The period return function, $pY(x)/n$, is greater than or equal to zero and the discount factor is bounded away from 0 and 1. The law of motion of the system is a conditional probability determined by the Markov strategy of the dictator (that stipulates the investment level for each price)

³⁹¹There is a Nash equilibrium where kingmakers threaten a coup unless the dictator makes the maximum feasible investment. This threat supports an outcome in which the dictator makes a high investment in each period and a coup is never staged. In one Markov equilibrium the dictator invests zero and kingmakers stage a coup in each period. In this equilibrium kingmakers oust the dictator regardless of price, investment and beliefs on dictator’s type. This equilibrium is not sequentially rational.

³⁹²An MSE remains an equilibrium in the game in which players are not restricted to Markov strategies (see Fudenberg and Tirole, 1992, Chap. 13). Acemoglu and Robinson (2001, 2006a) and Acemoglu, Ticchi and Vindigni (2010a) also use MSE to model regime transition between democracy and non-democracy.

and so is Markov. Since this dynamic programming problem satisfies Stokey and Lucas (1989, pp. 241–251), the solution is determined by the kingmaker's Bellman equation. The details are given in the next section.

12.1.3 The kingmaker's best response function

When making the coup decision, the representative kingmaker knows the current state variables: the price, the dictator's investment, and the belief held by kingmakers regarding the dictator's type. After a coup, the kingmakers' beliefs on the type of the new dictator is the exogenously given distribution of dictator types, the vector π_0 . When there is no coup, kingmakers update their beliefs following Bayes' rule whenever possible.

When there is a coup, kingmaker's period payoff is zero. The *benefit of a coup* is the present value of either becoming the new dictator or continuing on as kingmaker with a new dictator. The benefit of a coup is therefore *independent* of the current price and updated beliefs about the previous dictator and depends only on *future* prices and on the exogenous distribution of dictator types. That is, the benefit of a coup is *fixed* over time and given by

$$\sigma\delta\mathbf{E}K + \frac{q}{n}\delta\mathbf{E}D_a$$

where $\sigma = 1 - [q/n] - (1 - q)s$ represents the probability of remaining as kingmaker when there is a coup; $\mathbf{E}K$ is the lifetime payoff of a kingmaker; q/n is the probability of becoming dictator when there is a coup; and $\mathbf{E}D_a$ is the average lifetime payoff of a newly appointed dictator. Since the kingmaker's expected lifetime payoff in any MSE equals the benefit of a coup then

$$\mathbf{E}K = \sigma\delta\mathbf{E}K + \frac{q}{n}\delta\mathbf{E}D_a.$$

After solving for $\mathbf{E}K$, the *benefit of a coup* for any MSE equals

$$\mathbf{E}K = \frac{q}{(1 - \sigma\delta)n}\delta\mathbf{E}D_a. \quad (12.1)$$

When there is no coup, a kingmaker receives a period payoff and continues to the next period with the same dictator. The *opportunity cost* of a coup is the sum of the current period payoff and the present value of being a kingmaker in the next period while retaining the current dictator which depends on the *updated beliefs* π over dictator types. In general, the opportunity cost depends on the current price p , the current investment of the dictator x and the current updated beliefs over types π . In any MSE, the *opportunity cost of a coup* equals

$$\frac{\mathbf{p}Y(x)}{n} + \delta\mathbf{E}K,$$

which depends only on price, the dictator's investment and exogenous parameters. After substituting for $\mathbf{E}K$ in (12.1) the opportunity cost of a coup equals

$$\frac{\mathbf{p}Y(x)}{n} + \frac{q}{(1-\sigma\delta)n} \delta^2 \mathbf{E}D_a. \quad (12.2)$$

In any feasible MSE strategy of the representative kingmaker, a coup is staged when the *variable* opportunity cost of a coup given by (12.2) is less than the *fixed* benefit given by (12.1), i.e., when

$$\frac{\mathbf{p}Y(x)}{n} + \frac{q}{(1-\sigma\delta)n} \delta^2 \mathbf{E}D_a = \frac{q}{(1-\sigma\delta)n} \delta \mathbf{E}D_a$$

that is when

$$\frac{\mathbf{p}Y(x)}{n} = \left[\frac{q(1-\delta)}{(1-\sigma\delta)n} \right] \delta \mathbf{E}D_a$$

so that the equilibrium investment demanded by kingmakers to avert a coup is

$$x^K \equiv Y^{-1} \left(\frac{q(1-\delta)}{(1-\sigma\delta)} \times \frac{\delta \mathbf{E}D_a}{\mathbf{p}} \right) \quad (12.3)$$

which depends only on the current price and exogenous parameters. Note that as the export price falls kingmakers demand a higher investment from the dictator in order not to stage a coup.

12.1.4 Dictator i 's best response function

When choosing how much to invest, dictator i knows the current state variables: the price \mathbf{p} , the beliefs π of kingmakers regarding the dictator's type and the fact of being in office. The dictator can prevent a coup by delivering the investment demanded by kingmakers, i.e., by investing x^K given by (12.3). If the dictator delivers x^K , then the dictator incurs a cost and continues on as dictator. Dictator i 's lifetime payoff from preventing a coup is

$$W(\mathbf{p}) - C_i(x^K) + \delta \mathbf{E}D_i,$$

where $\mathbf{E}D_i$ represents the expected payoff of dictator i . The dictator's expected payoff from *continuing in power* depends only on future prices and exogenous parameters, and thus is *independent* of the current price and updated beliefs.

If the dictator chooses not to deliver x^K which triggers a coup, the dictator invests zero, keeps the rents and exits the game. The dictator's lifetime payoff when there is a coup is $W(p)$.

Dictator i delivers x^K only when profitable to do so. In equilibrium, dictator i delivers x^K only if i 's lifetime payoff from meeting the kingmaker's demands is greater than the payoff from triggering a coup, i.e., only if

$$W(\mathbf{p}) \leq W(\mathbf{p}) - C_i(x^K) + \delta \mathbf{E}D_i.$$

After substituting x^K from (12.3) this implies that

$$C_i \circ Y^{-1} \left(\frac{q(1-\delta)}{(1-\sigma\delta)} \times \frac{\delta \mathbf{E}D_a}{\mathbf{p}} \right) \leq \delta \mathbf{E}D_i. \quad (12.4)$$

so that dictator i meets the kingmakers' demand only when i 's investment costs are less than the expected payoff of continuing on as dictator.

From (12.3), it is clear that to avert a coup kingmakers demand a higher investment x^K from the dictator as the price falls. However, meeting the kingmakers' higher investment demand raises the dictator's costs. Therefore, for each type of dictator there exists a sufficiently low price \mathbf{p} such that the dictator's best response is not to meet the kingmakers' demand, i.e., to invest zero and trigger a coup. Only for high enough values of \mathbf{p} , it is profitable for the dictator to deliver x^K and prevent a coup.

Thus, for each type of dictator there is an equilibrium *trigger price*, below which, the price is so low that the dictator prefers to invest zero and trigger a coup. From (12.4) the equilibrium trigger price is given by

$$\mathbf{p}_i(\mathbf{ED}) = \frac{q(1-\delta)}{(1-\sigma\delta)} \times \frac{\delta \mathbf{ED}_a}{Y \circ C_i^{-1}(\delta \mathbf{ED}_i)}, \quad (12.5)$$

where \mathbf{ED} represents the vector of payoffs to each type of dictator. At $\mathbf{p}_i(\mathbf{ED})$, the dictator is indifferent between meeting the kingmakers' demands to prevent a coup or triggering a coup by investing zero and strictly prefers either to any other investment level.

The following theorem is proven in Gallego and Pitchik (2004).

Theorem 1 *There is a unique MSE (up to a set of measure zero).*

In equilibrium, for low enough prices even the *lowest* cost dictator may find it too costly to prevent a coup. Coups occur even when dictators are identical. It is low prices and not dictators abilities that cause coups in the model.

12.1.5 The equilibrium probability of a coup

When dictator i is in power, a coup occurs only when the price is below the dictator's trigger price $\mathbf{p}_i(\mathbf{ED})$. Thus, *conditional* on the dictator's type, the equilibrium probability of a coup is the probability that the price falls below the dictator's trigger price, so that the probability of a coup is given by $F(\mathbf{p}_i(\mathbf{ED}^*))$.

Theorem 2. *The equilibrium probability of a coup for dictator i is independent of i 's duration in office and is higher for dictators with higher costs. Therefore, the equilibrium probability of a coup increases in i .*

Note that since dictator i knows her/his type, i knows that in every period the probability of a coup is $F(\mathbf{p}_i(\mathbf{ED}^*))$. However, for kingmakers the situation is different. In any period, kingmakers know only the average probability of a coup as they *only* know the distribution of dictator's type. The average probability of a coup is the *weighted* average of the probabilities of a coup for each type where the weights are the current updated beliefs on dictator types.

In order to relate the results of Gallego and Pitchik to other hazard models, in the theoretical and empirical literature, it is necessary to take into account that kingmakers'

beliefs—the weights used in the average probability of a coup—depend on the information used when updating. In Banks and Sundaram (1993), beliefs are conditioned only on the leader’s duration in office. Gallego and Pitchik argue, however, that to update beliefs the stream of prices, read shocks, observed since the dictator took office should also be taken into account as the stream of prices reveals information on the dictator’s type.

When the updated distribution is conditioned *only* on the dictator’s length of time in office and *not* on the stream of prices observed since the dictator took office, the average probability of a coup is called the hazard rate. Recall that when dictator i is in office, a coup occurs whenever the price falls below i ’s trigger price $\mathbf{p}_i(ED^*)$ given by (12.5). The probability that dictator i survives for ρ periods is $(1 - F_i^*)^\rho$, where $F_i^* = F(\mathbf{p}_i(ED^*))$ is the probability of a coup. Thus, conditioning *only* on having survived ρ periods and using Bayes’ rule, kingmakers believe that the probability that current dictator is of type i is

$$\frac{\pi_0(1 - F_i^*)^\rho}{\sum_{j \in I} \pi_0(1 - F_j^*)^\rho}$$

Consequently, the longer dictator i has been in office, the more likely that the price has fallen below the trigger price of dictators with higher costs. Since higher types are ousted at these lower prices, the conditional vector of probabilities will be more biased towards types who face *lower* costs. Thus, by Theorem 2, the longer the dictator survives, the lower the probability of a coup next period when conditioning *only* on duration in office.

Theorem 3. *Suppose that there are at least two types of dictator. The hazard rate of a coup decreases as the dictator’s duration in office increases.*

When the associated updated distribution of types depends on the stream of prices observed since the dictator took office as well as on the dictator’s length of time in office, the average probability of a coup is referred to as the *conditional* hazard rate. Kingmakers know that the trigger price increases in dictator’s type (Theorem 2) and that higher types cannot prevent coups at lower prices. Thus, to update their beliefs kingmakers use the *lowest* price for which there has been *no* coup during a dictator’s tenure in office. The lower is this lowest price, the lower is the highest feasible type of dictator. Taking into account the lowest price since the dictator took office when updating their beliefs allows kingmakers to redistribute weight away from higher types and towards types with lower costs who are more willing to prevent a coup at this lower price. This highlights that the conditional hazard rate of a coup depends directly on the lowest price in the observed stream of prices/shocks and not specifically on the length of a dictator’s term in office.

Theorem 4. *The conditional hazard rate of a coup is independent of a dictator’s duration in office.*

Theorem 4, one of the major contributions of Gallego and Pitchik, proves that once the worst shock in a dictator's tenure in office is taken into account the conditional hazard rate of a coup is independent of how long the dictator has been in office.

The Gallego and Pitchik model—referred to as the coup model from now on—also makes a novel contribution to the principal-agent literature of both political competition and dictatorship.³⁹³ The novelty is that a kingmaker/principal can become a dictator/agent. Coups occur even when dictators are identical (so that kingmakers are indifferent between any old and new leader). Kingmakers stage coups—or in this perfect monitoring model, dictators trigger coups—when the price falls below the dictator's trigger price. Thus, implying that coups are not caused by variable leader ability. Moreover, a coup may be staged under imperfect monitoring since kingmakers use coups as both a means of seizing power as well as a punishment.

Variable leader ability was studied in Banks and Sundaram's (1993) electoral competition model where voters choose election rules to deal with moral hazard and adverse selection. They find that the re-election probability increases with duration in office as the electorate gets rid of leaders with low ability. By contrast, in the coup model, kingmakers stage a coup when profitable and do so regardless of which type is in power. A bad enough shock may make it too costly for even low cost dictators to prevent a coup. Since more talented dictators survive more negative shocks, the worst shock observed since a dictator took office is informative about the dictator's type and about the probability of a coup. Thus, if in empirical models the lowest shock experienced by a dictator is not taken into account, the results may falsely conclude that there is a positive correlation between duration and survival probability.

12.1.6 Comparative statics

The probability of a coup depends on the price in the current period and on the parameters of the model. Kingmaker's period profits depend on the number of kingmakers n , on their profits function Y and on the dictator's investment level, either x^K given in (12.3) or 0. The dictator's period payoff depends on the dictator's investment level and on the dictator's cost function C_i . The riskiness of coups to kingmakers depends on the probability that after a coup the new dictator comes from the set of *potential* kingmakers $(1 - q)$, in which case each kingmaker ceases to be a kingmaker with probability $(1 - s)$.

The following comparative statics are proven in Gallego and Pitchik (2004)

Corollary 1.

(i) *As the number n of kingmakers increases, the equilibrium probability of a coup rises.*

(ii) *Suppose $Y \circ C_i^{-1}(x) = \alpha g_i(x)$ for $i \in I$, $\alpha > 0$, then the equilibrium probability of a coup falls and all equilibrium payoffs rise as α increases.*

³⁹³The coup model draws on the work of Green and Porter (1984), Ferejohn (1986), Olson (1993, 2000) and McGuire and Olson (1996).

(iii) *An increase in the kingmakers' exit probability after a coup, i.e., an increase $(1 - q)s$, lowers the equilibrium probability of a coup.*

The intuition for these comparative static results is simple. **(i)** The probability of a coup rises when the size of dictator's support group increases, i.e., an increase in n creates greater competition among kingmakers for the dictator's position. **(ii)** Note that $Y \circ C_i^{-1}(x)$ represents the production of the export good expressed in terms of the dictator's investment. If kingmakers' profit extraction technology becomes more profitable, due to an upward shift in Y or a downward shift in C_i , the opportunity cost of a coup increases relative to the benefit for kingmakers and the probability of a coup falls. **(iii)** An increase in the probability that kingmakers lose access to power after a coup—an increase in $(1 - q)s$ due to a decrease in the probability that a kingmaker remains kingmaker, a fall in q , or to an increase in the probability a kingmaker is expelled from the kingmaker's club, an increase in s —lowers the probability of a coup.

12.2 Leaders, élites and citizens

In the previous section we examined Gallego and Pitchik's (2004) coup model where kingmakers determined the dictator's fate. In this section we summarize models where citizens may also determine the fate of dictators.

Olson (1993, 2000) and McGuire and Olson (1996) develop models in which the dictator invests in a pure public good for the citizens in order to increase the rents the autocrat can extract from the citizens. Olson argues that roving bandits become stationary—replacing anarchy with government—to reap the benefits of the large increase in output that accompanies the provision of peaceful order and public goods. Forward looking autocrats become stationary bandits to collect greater rents from the citizens in the future. Moreover, citizens prefer stationary over roving bandits as they keep a greater portion of their own income for themselves. To maximize income the stationary bandit must induce citizens to make greater investments. The return on long-term investments materializes long after the investments are made. The autocrat with a long view has then an incentive to create property rights in order to convince citizens that they are permanently protected from theft by others and from expropriation by the autocrat. There is no leadership transition in their model.

In Bueno de Mesquita *et al.*'s (2003) selectorate theory support for the leader comes from the winning coalition W and the selectorate S . The selectorate are those citizens who *may* have a say in choosing the leader. Members of the coalition, a subset of the selectorate, control the resources essential for the incumbent's political survival. The leader provides private goods³⁹⁴ to the coalition and public goods³⁹⁵ to the selectorate.

³⁹⁴Private goods include the booty or rent distributed only among supporters of the regime, favourable tax policies, subsidies to special interests, favorable trade or tariff policies.

³⁹⁵Public goods include foreign policy (e.g., national security) and domestic policy (e.g., rule of law, transparency and accountability, policy services, education, antipollution legislation, communication and trans-

The size of W relative to S determines whether the leader operates under dictatorship or democracy. The supply of private and public goods depends on the institutional environment under which the leader operates. In autocracies, societies with small W and large S , the leader and challenger compete in the provision of private goods. In democracies with large W relative S , they compete in the provision of public goods. Consequently, a leader's survival depends on the institutions in which she/he operates and on the leader being able to provide sufficient resources to sustain the political support of her/his backers. In their basic model there is complete information and no shocks and thus no leadership transitions. In the presence of incomplete information and random shocks, they conjecture that leadership transitions take place within a regime.

Acemoglu and Robinson³⁹⁶ (2001, 2006a) examine transitions between democratic and non-democratic regimes with no leadership transition occurring within a regime. In their basic model there are two classes, the rich élite and the poor citizens with the poor being more numerous than the élite. While the poor prefer the policies implemented under democracy and thus prefer democracy over dictatorship, the opposite holds true for the élite. For example, the élite oppose redistributive taxation that the poor favor. Since different policy choices are made under democracy and non-democracy, the élite and the poor have conflicting preferences over the two political institutions. Institutions give those in office *de jure* political power. Unanticipated shocks gives those not in office *de facto* political power all-be-it only temporarily. Those not in office use this transitory power to obtain policy concessions from those in office. Once the temporary power disappears those in office may reverse these concessions.

The élite stage coups to transform democracies into dictatorships, and the poor stage revolutions³⁹⁷ to transform dictatorships into democracies. Both coups and revolutions destroy a fraction of the income during the period in which it takes place. In an extension of their model, they show that coups are more likely in more unequal societies since the élites have more to gain than when inequality is low. A consolidated democracy is one where an effective coup has never been staged and citizens set policies without worrying about coups. In a semi-consolidated democracy, citizens prevent coups by accommodating the demands for more pro-élite policies. In an unconsolidated democracy coups cannot be prevented and frequently occur. They predict that a transition from non-democracy to democracy is more likely to emerge when a country is facing a serious crisis or experiencing negative macroeconomic shocks.

The models of Bueno de Mesquita *et al.* (2003), Gallego and Pitchik (2004) and Acemoglu and Robinson (2006a) complement each other. Gallego and Pitchik study the determinants of the probability of a coup. Bueno de Mesquita *et al.* examine how leaders use the provision of private and public goods to stay in office under different

portation infrastructure).

³⁹⁶Acemoglu and Robinson developed many versions of their basic theory all summarized in their 2006 book so we refer only to their book.

³⁹⁷Acemoglu and Robinson (2006) argue that revolutions are staged only if the poor overcome their collective action problem. Deeper crises make it easier for the poor overcome their collective action problems. They give numerous examples where democratic transitions occur in the presence of significant social unrest.

institutions. Acemoglu and Robinson (2006a) examine the transitions between non-democratic and democratic regimes.

The electoral competition literature on leadership transitions includes the models of Banks (1990), Banks and Sundaram (1993) and Ferejohn (1986). These models assume that public goods are necessary to all citizens and that their provision requires the leader to undertake costly actions. In these models, the base of power (the median voter) uses its ability to reappoint the incumbent to provide the leader with incentives to exert costly effort on their behalf. The period payoff of the median voter depends positively on the leader's choice and a random component. The optimum decision of the median voter is to set a minimum level of well-being and to remove the incumbent if this threshold is not met. Under some circumstances, there is a change in leadership. Democratic leadership transitions are stochastic and depend on the properties of the random variable affecting the period payoff of the median voter.

The theories of electoral competition, coups and regime transitions use performance based rules. In these dynamic models, leadership transition occurs when the well-being of the leader's support group does not reach a minimum level of well-being. Using the prediction of these models let us now examine the evidence on leadership transitions.

12.3 Empirical studies of leadership transitions

The service provided by the dictator targeted exclusively to kingmakers in the coup model, the winning coalition in the selectorate theory and the élite in the regime transition theory include,³⁹⁸ but are not limited to, preferential access to high quality goods, lucrative contracts, education subsidies, limited foreign exchange in countries with high black market premiums, favourable labor and trade policies and maintenance of public order. Moreover, the élites in Acemoglu and Robinson (2001, 2006a) and Acemoglu *et al.* (2010a,b), the winning coalition in Bueno de Mesquita *et al.* (2003), and the kingmakers in Gallego and Pitchik (2004) are the economic élites in less developed countries (LDCs).

Gallego and Pitchik (2004) predict that coups occur only when the export price, the dictator's investment, and the kingmakers' profits are low (because, in equilibrium, the opportunity cost of a coup increases in these variables). In addition, the coup model also predicts that the probability of a coup falls the higher the shock \mathbf{p} affecting kingmaker profits, the greater the service x provided by the dictator for the kingmakers, the greater the well-being of kingmakers $\mathbf{p}Y(x)$, and the greater the profit extraction ability of kingmakers, $Y \circ C_i^{-1}$. Since these variables can be proxied by *EXPORTS* and *GDP* or *INV*, there is evidence supporting the predictions of the coup model as now explained.

O'Kane (1987) finds that a decline in the export profits of élites leads to coups.

³⁹⁸For extensive discussions on the services provided by dictators to its support group see Bueno de Mesquita *et al.* (2003), Olson (2000), and Wintrobe (1998). The services provided for the citizens are fixed in the coup model.

Export firms are mainly owned by the élites in LDCs. The price of exports is in general determined in the international market and thus exogenously determined for any country. Moreover, exports depend on the dictator's trade policy. The value of a country's *EXPORTS* measures then the well-being of kingmakers. Using a multi-country analysis, O'Kane finds evidence that countries highly dependent on a single good for their export revenue are prone to coups. She documents that export revenue is affected by shocks and by the leader's response to fluctuations in these shocks, and argues that leaders must work hard to maintain support and avoid coups when export revenue is volatile. Her finding that a decline in the export profits of élites leads to coups supports the prediction of the coup model.

There is evidence that a high coup propensity is associated with a decrease in *GDP*. To see this note that income is highly concentrated among the élites in LDCs (World Development Report, 1994, Table 30, p. 220) and that the services provided by public infrastructure mostly benefit the élite (World Development Report, 1994, Table 1.4, p. 32). Since the income of the élite fluctuates with the level of service provided by the dictator, then *GDP* also serves as proxy for kingmaker payoffs. The evidence on *GDP* and the probability of a coup is as follows. Per capita lagged *GDP* is used by Londregan and Poole (1990), in a worldwide sample, and by Londregan *et al.* (1995), for African countries. Current per capita *GDP* is used by Galetovic and Sanhueza (2000), using a sample of developing countries with autocratic regimes. Alesina *et al.* (1996) use the current growth rate in a worldwide sample. The empirical findings that the probability of a coup decreases in *GDP* also support the predictions of the coup model.

The endogenous growth literature decomposes growth into components associated with changes in capital, labor, or increases in productivity. From Corollary 12.1, Section 12.1.6, we know that an increase in the profitability of the kingmakers' profits³⁹⁹ in terms of the dictator's investment, i.e., a shift in $Y \circ C_i^{-1}$, decreases the probability of a coup and that this increase in profitability can be associated with an upward shift in Y or a downward shift in C_i . Moreover, note that any change in labor, capital, or technology causes a shift in $Y \circ C_i^{-1}$. Thus, an upward shift in $Y \circ C_i^{-1}$ can be associated with higher levels of *GDP* and *GDP* growth since each can be affected by, say, an increase in education.⁴⁰⁰ Corollary 12.1 then predicts that the probability of a coup may fall when there is an increase in *GDP* (due to, say, an increase in education).

12.3.1 Estimating leadership transition probabilities

Using a worldwide sample, Gallego (1996, 1998) estimates leadership transition models that take into account the leaders' exit mode. Gallego uses a subset of Bienen and van de Walle's (BvdW, 1991) non-communist worldwide sample (that includes China and Yugoslavia) for leaders governing between 1950 and 1987. Leaders' entry and exit

³⁹⁹The function $Y \circ C_i^{-1}$ represents the production of goods in terms of the dictator's investment. The cost of producing μ units of private good using $Y^{-1}(\mu)$ units of public investment provided by the dictator is $C \circ Y^{-1}(\mu)$ so that its inverse $Y \circ C^{-1}$ is the production function.

⁴⁰⁰Spending on higher education mainly benefits the élite in LDCs (see Alesina, 1998).

modes are coded as happening through constitutional or unconstitutional means. A change is considered constitutional when it takes place through regular constitutional channels.⁴⁰¹ Unconstitutional exits include leaders exiting via revolutions and coups d'état.

To study leadership transitions, Gallego (1998) matches BvdW political data with Summers and Heston's (1991) economic data. The economic data is given in annual per capita real 1985 dollars. Leader's duration is measured in years as BvdW's data only has the leader's entry and exit year. Moreover, not all countries are included in the data for the same number of years and some are not in it for a consecutive number of years.⁴⁰²

The data consists of 593 leaders facing 705 leadership spells, who ruled in 118 countries between 1950 and 1987.⁴⁰³ Of the 554 leaders who were removed from office, 377 did so constitutionally with the remaining 177 ousted by unconstitutional means. The remaining 151 leadership spells include leaders with right-censored spells who may be repeaters. Leaders' duration varies from just a few months (zero duration) to 38 years.⁴⁰⁴ The sample is highly skewed as many are removed before their first anniversary (124), mostly by constitutional means (77). Fifty eight (58) of the 70 leaders ousted at duration 4 exit by constitutional means. More than half (55%) are removed before their fifth anniversary.

TABLE 12.1: LEADERS BY REGIONS

| Region | All Leaders | Right-censored ^a | Const. Spells ^b | % Const. Exits ^c | Unconst. Spells ^d |
|---------------|-------------------|-----------------------------|----------------------------|-----------------------------|------------------------------|
| Middle East | 59 (8.4%) | 20 | 19 (5.0%) | 48.7 | 20 (11.3%) |
| Africa | 121 (17.2%) | 41 | 16 (4.2%) | 20.0 | 64 (36.2%) |
| Asia | 92 (13.0%) | 20 | 49 (13.0%) | 68.1 | 23 (13.0%) |
| Latin America | 206 (29.2%) | 35 | 105 (27.9%) | 61.4 | 66 (37.3%) |
| NAEA | 227 (32.2%) | 35 | 188 (49.9%) | 97.9 | 4 (2.2%) |
| Total | 705 (100%) | 151 | 377 (100%) | 67.7 | 177 (100%) |

^a Leaders still in office in 1987 or who died while in office.

^b Leaders removed from office by constitutional means.

^c % of total leaders exiting by constitutional means in corresponding region.

^d Leaders overthrown by unconstitutional means.

Figure 12.1 shows the Kaplan-Meier estimate of hazard rate at each duration (Ta-

⁴⁰¹ BvdW code transitions between military leaders in Argentina (e.g., Viola succeed Videla in 1980) as constitutional as these transitions were done following the constitution drafted by the junta and in spite of the lack of democratic support for these leaders.

⁴⁰² For example, African countries before independence have no executive leaders. In some countries, there are periods with no head of government or with interim leaders—interim leaders are not in the sample. Periods of shared rule (Uruguay 1951-1958 and Yugoslavia 1978-1987) are excluded. Also some leaders' characteristics may be missing. For a list of countries and time periods see Gallego (1998).

⁴⁰³ Of the 112 repeaters, 79 were in office twice, 14 three times, 4 four times, 3 five times, and 14 are censored as they had not left office in 1987.

⁴⁰⁴ The Spanish Franco died while still in office in 1975 after having ruled for 38 years. Franco is included in the data as a right-censored spell.

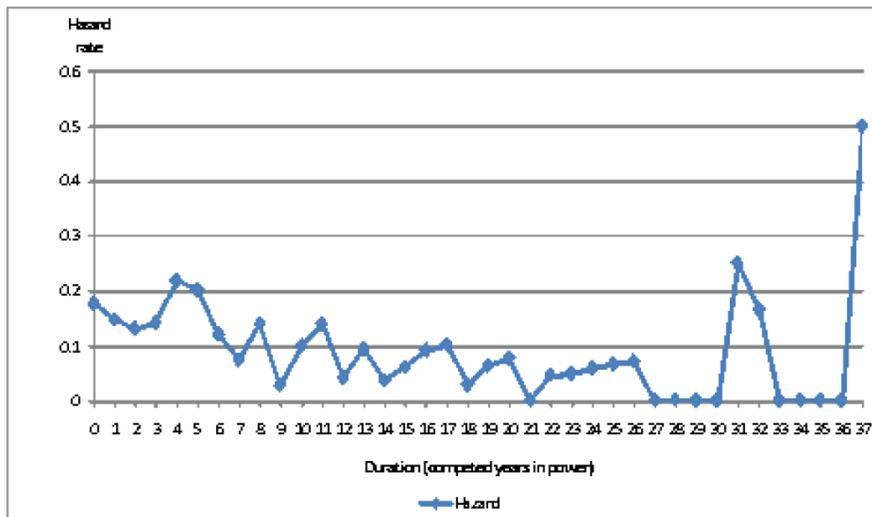


Figure 12.1: Hazard rate – Kaplan-Meier estimates

ble A12.1 in Appendix gives the values at each duration). The Kaplan-Meier hazard rate is a raw hazard as it is estimated before controlling for any systematic effect different covariates might have on the hazard. The Kaplan-Meier hazard varies as duration increases with the hazard being highest at duration 4 for durations of less than 31 years.

Table 12.1 shows that while most African leaders are removed by unconstitutional means, those in North America, Europe and Australasia (NAEA) lost office almost exclusively by constitutional means.⁴⁰⁵

Transition probabilities are estimated controlling for leader-specific covariates that include dummy and continuous variables. *MANNER* tests whether a leader who comes to office by unconstitutional means (*manner* = 1) is more likely to face an unconstitutional exit (Londregan and Poole 1990). *MILITARY* captures whether the military (*military* = 1) had any influence on the leader attaining office.⁴⁰⁶ This dummy tests Luttwak's (1979), Acemoglu and Robinson's (2006a) and Acemoglu *et al.*'s (2010a,b) theory and O'Kane's (1987) finding that having the support of the army

⁴⁰⁵BvdW code four leaders as exiting by unconstitutional means in NAEA countries: the American Kennedy (1963), the Greek Paraskvopoulos (1966), the Portuguese Caetano (1973), and the Swedish Palme (1982).

⁴⁰⁶BvdW code military as 1 when either the leader spends a significant part of his career in the military or when the armed forces were crucial to the leader attaining office.

is important during coups d'état and tests for BvdW's finding that leaders enjoying military support face lower risks of being removed from office. *ENTRY* is a categorical variable indicating the number of times a leader has been in office. It controls for repeaters and tests whether their risks of losing office differ from those in office only once.

Countries are classified as having a parliamentary, a presidential or some other political system.⁴⁰⁷ Some countries experience *regime transitions* that is transitions to and from democracy and non-democracy. When transitioning for the first time to democracy a country must choose whether to operate under a parliamentary, a presidential or some other political system. The country's political system classification is maintained for the entire period the country is in the sample even when they transition to non-democracy as they are assumed to be not only conditioned by existing socioeconomic structures and political institutions but because it too costly to create new political institutions or to change, ban or dismantle pre-existing ones (see Przeworski, 1986; Karl, 1990; Bratton and van de Walle, 1994; and Acemoglu and Robinson, 2006a; Gandhi and Przeworski, 2007). Thus, countries are classified according to whether they adopted a parliamentary (*PARL* = 1), presidential (*PRES* = 1) or an *OTHER* (*PARL* = 0, *PRES* = 0) political system sometime in their history. Country fixed effects are then captured by the political system dummy as the variable is held constant for the entire period the country is in the sample.

Other variables that may systematically affect the leader's exit probability include continuous variables. The *DATE* the leader took office tests whether political risks decrease over time. This variable partially accounts for time fixed effects. Time-varying country-specific economic data allow for intra-spell events to affect the transitions and are expressed in per capita annual real (1985 dollars) terms. Gallego focuses only on the impact *domestic* economic conditions have on leadership turnover.⁴⁰⁸ To measure the well-being of domestic agents, she creates a variable labeled domestic absorption (*DA*), the sum of consumption (*CON*), investment (private and public gross domestic capital formation, *INV*), and government consumption spending (*GOV*). While *DA* is a first approximation to measuring the economic well-being of domestic agents, others in the literature use either *GNP* or *GDP* which includes exports and imports. Only lagged values of the economic variables are used in the analysis.

Table 12.2 shows the descriptive statistics of these variables. For leaders exiting by constitutional means the economic variables have a greater mean, median and standard deviation than those unconstitutionally removed from office. Not surprising, as close to 50% of constitutional transfers take place in *NAEA* countries (Table 12.1). This suggests that economic variables have a differential impact on the two transition

⁴⁰⁷ Countries are classified using Derbshire and Derbshire's (1989) political system classification. Some democracies, like France, are a hybrid between a parliamentary and a presidential system. The residual or "other" category includes countries with hybrid systems, unlimited presidential terms, military and communist regimes.

⁴⁰⁸ Foreign groups may affect leadership transitions but they are not part of her study. For a theoretical analysis of how foreign governments and interests affect regime transitions see Acemoglu and Robinson (2006a).

probabilities.

Table 12.2 also highlights that leaders exiting by constitutional parliamentary means face lower durations (mean, median and standard deviation) than their presidential executives counterparts. This highlights that among those exiting by constitutional means, prime ministers face higher risks of being constitutionally removed from office than presidents. Prime ministers need to maintain the support of parliament to stay in office. In minority situations prime ministers often form coalitions with other parties that frequently collapse. Moreover, prime ministers may lose non-confidence votes in parliament.

As shown in Table 12.2, leaders ousted by unconstitutional means in countries with a presidential tradition face lower durations (mean and median) with higher standard deviation than those in countries with a parliamentary tradition. This accords with Acemoglu and Robinson (2006a) statement that the elected presidents of developing countries are more prone to coups than their parliamentary or presidential counterparts in developed countries.

Table 12.2: Descriptive Statistics

| Variable | Constitutional ^a | | | Unconstitutional ^b | | |
|---|-----------------------------|---------|-------|-------------------------------|---------|-------|
| | Median | Mean | SD | Median | Mean | SD |
| Leaders in all Countries | | | | | | |
| DURATION | 3 | 3.769 | 4.586 | 2 | 4.230 | 5.645 |
| <i>DA</i> ^c | 4,415 | 5,053 | 3,428 | 1,355 | 1,768 | 1,521 |
| <i>CON</i> ^c | 2,690 | 3,142 | 2,072 | 893 | 1,224 | 1,007 |
| <i>INV</i> ^c | 886 | 1,201 | 977 | 193 | 288 | 329 |
| <i>GOV</i> ^c | 602 | 787 | 615 | 230 | 316 | 376 |
| Manner | 0 | 0.11 | 0.32 | 0.5 | 0.50 | 0.50 |
| Military | 0 | 0.15 | 0.36 | 0 | 0.43 | 0.49 |
| Entry | 1 | 1.22 | 0.53 | 1 | 1.16 | 0.55 |
| Date | 1968 | 1967.53 | 9.74 | 1966.5 | 1967.36 | 8.60 |
| Age | 57 | 58.47 | 9.71 | 52.0 | 52.37 | 10.95 |
| Leaders in Countries with Parliamentary Executive Regimes | | | | | | |
| DURATION | 2 | 3.300 | 3.622 | 3.5 | 4.375 | 3.998 |
| <i>CON</i> | 3,994 | 4,041 | 1,883 | 1,453 | 1,955 | 1,859 |
| <i>INV</i> | 1,716 | 1,723 | 899 | 426 | 620 | 705 |
| <i>GOV</i> | 913 | 1,019 | 619 | 320 | 583 | 922 |
| Leaders in Countries with Presidential Executive Regimes | | | | | | |
| DURATION | 4 | 3.708 | 4.075 | 2 | 3.731 | 5.093 |
| <i>CON</i> | 1,736 | 2,194 | 1,752 | 1,166 | 1,447 | 1,075 |
| <i>INV</i> | 401 | 539 | 517 | 251 | 363 | 328 |
| <i>GOV</i> | 362 | 539 | 477 | 227 | 321 | 392 |

^a Number of leaders: 375. Only leaders exiting by constitutional means are included. These values are for the year they exited.

^b Number of leaders: 178. Only leaders removed by unconstitutional means are included. These are values for the years they exited.

^c All economic variables are measured in real (1985 dollars) and per capita terms.

12.3.2 The hazard of overthrow

In order to obtain results comparable to those in the literature, the hazard of overthrow is first estimated without taking into account the leader's constitutional or unconstitutional exit mode. Each leader is then "in or out" (*IO*) of office. The leader's hazard of overthrow is the conditional probability that the leader is removed from office in period t of his/her term in office. Leaders are assumed to face at most one transition, implying that once a leader is ousted office s/he remains in that state forever.⁴⁰⁹

The theoretical underpinnings of the empirical models follow the leadership transition models of Banks (1990), Banks and Sundaram (1991), Ferejohn (1986), and Gallego and Pitchik (2004), and the regime transition models Acemoglu and Robinson (2006a) and Acemoglu *et al.* (2010a,b). The leader's survival depends on maintaining the support of certain groups in society. Leader i is ousted when the well-being of her/his support groups does not reach a minimum level u_i^* . As in the theory models, it is assumed that the groups' well-being is affected by periodic random shock and given by

$$u_i^*(t) = u_i(t_{oi} + t) + \epsilon_i \quad (12.6)$$

where ϵ_i is the stochastic term and $u_i(t_{oi} + t)$ is defined below. Even though this trigger point is not observable, the leader's "in or out of office" status is known. Consequently, the state the incumbent is in is just a realization of a binomial process. When the stochastic term ϵ_i has a logistic cumulative distribution, the probability the leader is removed from office, or hazard rate, at duration t has a logit specification (King, 1989; Lancaster, 1990). In more formal terms, for leader i , whose tenure in office begins at time t_{oi} , the hazard of overthrow at duration t of a leader's term in office is then

$$\lambda_i(t|r_i) = \frac{\exp\{r_i(t_{oi} + t)\}}{1 + \exp\{r_i(t_{oi} + t)\}} \quad (12.7)$$

where

$$r_i(t_{oi} + t) = \alpha + h(t) + \beta' \mathbf{X}_i(t_{oi} + t) \quad (12.8)$$

and

$$h(t) = \sum_{k=0}^K \gamma_k D_k. \quad (12.9)$$

In (12.8), α is a constant; t represents the leader's duration in office; $h(t)$ embodies the duration dependence effect or baseline hazard function (more on this below); β is a vector of parameters; and $\mathbf{X}_i(t_{oi} + t)$ represents the vector of covariates (at time $t_{oi} + t$). The covariates include *leader-* and *country-*specific characteristics which may change over time with different frequencies.

⁴⁰⁹Nearly 16% of the leaders in the Gallego (1998) sample were in office for at least two separate time periods. These repeaters are incorporated into the log-likelihood function as if they are different leaders. The assumption is that when a leader attains office for a second (or third, ...) time, the political and economic environment and the stochastic events confronting her/him are different than the ones encountered during her/his previous term(s).

From Figure 12.1, we know that the Kaplan-Meier hazard varies as duration increases. Han and Hausman (1990) argue that under this circumstance duration dependence should be modeled by a series of dummy variables as this makes no prior assumption about the parametric form of the baseline hazard function. The duration dependence effect for each leader is given by (12.9). Thus, for a leader existing at duration t of the leader's term in office, $D_k = 1$ for all $k \leq t$ and zero for all $k > t$ for $k \in [1, 8]$. That is, a leader's duration dummies are active only while in office. For example, for a leader overthrown during his second year in office, $D_1 = 1$ and $D_2 = 1$ with all other duration dummies being zero. For leaders who were in office for less than a year, $D_0 = 1$ with all other duration dummies set to zero. Since only 20% of leaders were still in office after nine years, with few or no leaders exiting at each duration, the baseline hazard at durations beyond nine years may not be precisely estimated. To overcome this problem, for $k \in [9, 20]$, the dummy variables are: D_{912} , D_{1316} , and D_{1720} where $D_{ik} = 1$ for t in $[i, k]$. The default dummy includes those who survived beyond their 21st anniversary and constitute only 4% of the sample.

The hazard model include several time varying covariates: the *AGE* of the leader, the *DATE* the leader comes to office and the duration dependence polynomial. To avoid multi-collinearity problems, the models do not correct for time fixed effect as these dummies would be highly correlated with some or all of these covariates or a linear combination of them.

An crucial point made by Gallego and Pitchik (2004), and discussed earlier in this chapter, is the importance of distinguishing between duration dependence and unobserved heterogeneity. Suppose, as in Banks and Sundaram (1993) and Gallego and Pitchik (2004) that leaders have different public good production abilities. Leaders with higher abilities face on average longer durations. Therefore, at later durations the sample is populated by leaders with high abilities who face low hazard rates. Meyer (1986) argues however that by modelling duration dependence as a series of dummy variables, the results are less sensitive to the specification chosen to represent the distribution of unobserved heterogeneity.

Model 1 in Table A12.1 gives the coefficients of the hazard rate as a function of leader specific characteristics and *DA*. The results indicate that as *DA* increases, so does the hazard. This contrasts with Bienen and van de Walle's (1991) finding of a significantly negative impact of the 1973 *GNP* on the hazard.

Gallego gives three plausible explanations for this counter-intuitive result. First, *DA* may be capturing the effect of differences in the risk of being removed by constitutional and unconstitutional means. Second, *DA* may not accurately measure the well-being of the leader's support group under constitutional and unconstitutional transfers. Suppose a leader is ousted even though *DA* is rising but that the well-being of the leader's support group is falling so that some theories predict a change in leadership. *DA* may then be too broadly defined to capture changes in the well-being of the leader's support group. Finally, the sample includes countries that adopted different political systems. Since leadership transition rules in parliamentary and presidential systems differ, the transition probabilities should also depend on the political system, as Table 12.2 sug-

gests. Thus, DA may also be absorbing the systematic leadership transition differences due to heterogeneity across political systems. Each of these explanations is examined in sequence below.

12.3.3 Constitutional and Unconstitutional (CU) Transitions

To take the leader's exit mode into account, it is assumed that *all* incumbents can be removed by constitutional and unconstitutional means. A leader faces then two independent transition probabilities and her/his hazard of overthrow is the sum of these transition probabilities. Each leader is then in one of *three* states: in office ($j = 0$); removed by constitutional ($j = 1$) or by unconstitutional ($j = 2$) means. The two exit modes are mutually exclusive, and exhaust the leader's possible destination states. Since the stochastic disturbances are independent of each other and have a logistic cumulative distribution, the transition probabilities have a multinomial-logit specification. For leader i , the transition probability to the j^{th} state for $j = 1, 2$ in period t of her/his term in office is

$$\lambda_i^j(t|r_{ij}) = \frac{\exp\{r_{ij}(t_{oi} + t)\}}{1 + \sum_k \exp\{r_{ik}(t_{oi} + t)\}} \quad (12.10)$$

where

$$r_{ij}(t_{oi} + t) = \alpha_j + h_j(t) + \beta_j' \mathbf{X}_i(t_{oi} + t) \quad (12.11)$$

and

$$h_j(t) = \sum_{k=0}^K \gamma_{kj} D_k. \quad (12.12)$$

In (12.11), α_j is the transition-specific constant; $h_j(t)$ represents the transition-specific duration dependence effect; β_j is the vector of transition-specific parameters; other terms are as in (12.8). The terms in (12.12) are as in (12.9) except that the coefficients are now transition-specific.

Figure 12.2 shows the Kaplan-Meier estimates of the constitutional and unconstitutional transition probabilities (see values in Table A12.1 in the Appendix). The constitutional transition probability lies above the unconstitutional one for durations of less than 8 years. Since many countries have a four-year constitutional inter-election period, the constitutional transition probability is highest at duration 4 for durations less than 32 years. In addition, for countries with no fixed election date, there is usually a maximum constitutional inter-election period (e.g., in Canada the maximum is five years). As a consequence, the constitutional transition probability at duration 5 is the second highest for durations of less than 32 years. From Table 12.2 we know that the mean duration for leaders exiting by constitutional means is *less* than four years and that of those unconstitutionally overthrown it is *more* than four years. The reverse holds for median durations. Figure 12.2 and Table 12.2 suggest that the constitutional and unconstitutional transition probabilities should exhibit different dynamics as duration increases.

To test this hypothesis, Model 2 in Table A12.2 in the Appendix uses the same covariates as Model 1 taking into account the leader's constitutional or unconstitutional

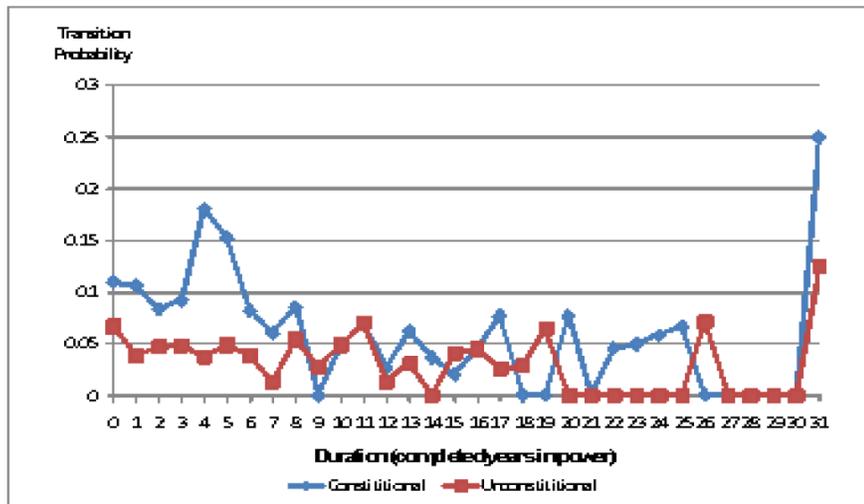


Figure 12.2: Constitutional and Unconstitutional – Kaplan-Meier Estimates

exit mode. As expected, some covariates exert a differential and significant effect on each transition probability. The functional forms of each of these transition probabilities given in (12.10) make the multinomial logit coefficients difficult to interpret. A more informative but equivalent way of presenting these results is to calculate how changes in one covariate affect the median leader's transition probabilities while holding all other variables constant at their median values. A median leader is defined as the leader having the median characteristics of the leaders in the sample for the median country, while being removed from office at the median duration. Median rather than mean values are used because the sample not only includes leaders with censored spells but is also highly skewed. The change in the transition probability for a dummy is estimated by increasing it by one discrete unit, and for a continuous variable by increasing its median value by one percentage point.

Table 12.3 shows that a median leader at the median duration faces almost twice the risk of exiting by constitutional (0.0902) rather than by unconstitutional means (0.0415). Furthermore, the effect that each variable has on leadership turnover depends on the leader's exist mode. The significantly positive effect of *MANNER* on the unconstitutional transition gives support to Londregan and Poole's (1990) finding that s/he who lives by the coup is more likely to die by the coup. The significantly negative impact of *MILITARY* on the leader's hazard found in Model 1 (Table A12.2) and in BvdW affects *only* leaders exiting by unconstitutional means. Leaders who reached office at a later *DATE* face lower political risks, meaning that both transition probabilities have shifted down over time (Model 1, Model 2 and BvdW). As the median leader *AGE*s her/his probability of leaving by constitutional means rises but the probability of exiting by unconstitutional means falls. The effect of *DA* on the unconstitutional transition is as expected. However, the probability of a constitutional exit rises as *DA* increases. A plausible explanation for this counter-intuitive result is that other sources of heterogeneity may be embedded in the effect that *DA* as on the transition probabilities.

Table 12.3: Change in Transition Probabilities for Model 2^a

| Original Medians Variable | Constitutional 0.0902 | | | Unconstitutional 0.0415 | | |
|------------------------------------|--------------------------|------|------|----------------------------|------|-------|
| | change | t | % | change | t | % |
| <i>Lag log (DA/10²)</i> | 0.005*** | 4.96 | 0.5 | -0.006*** | 3.59 | 15.6 |
| Manner | -0.012 | 0.70 | 13.5 | 0.042* | 2.01 | 100.9 |
| Military | -0.020 | 1.70 | 26.8 | -0.016* | 2.14 | 39.3 |
| Entry | 0.027** | 2.13 | 29.7 | 0.010 | 1.02 | 23.1 |
| Date/100 | -0.017*** | 3.24 | 19.2 | -0.010** | 2.75 | 10.4 |
| Age/10 and (Age/10) ² | 0.006*** | 5.40 | 7.3 | -0.006*** | 3.62 | 15.0 |

^a Other variables: D_0 to D_8 , and D_{912} , D_{1316} , D_{1720}

*, *prob* < 0.05; **, *prob* < 0.01; ***, *prob* < 0.001

As argued by Acemoglu and Robinson (2006a), Acemoglu *et al.* (2010a,b), Bueno de Mesquita *et al.* (2003) and Gallego and Pitchik (2004) among others, leaders in

democracies depend on a different support group than those governing in non-democratic regimes. That is, the leader's support group depends on the political institutions under which the leader operates. Moreover, the theories of electoral competition, coups and regime transitions predict that the leader's fate depends on the stochastic changes to the well-being of the leader's support group. If economic crises differentially affect economic groups then these crises should exert a differential effect on democratic and non-democratic transitions. That is, the interactions between economic performance and democratic or non-democratic leadership transitions should exhibit different dynamics. Note that some leadership transitions may imply transitions to and from democratic and non-democratic regimes (Acemoglu and Robinson, 2006a).

12.3.4 Leader's support groups under different regimes

The electoral competition and nondemocratic theory models of leadership transitions given in Sections 12.1 and 12.2 assume that both democratically elected leaders and dictators are accountable to their power base and that the well-being of the power base is affected by an investment made by the leader and a random shock. To test whether different agents have a differential impact on constitutional and unconstitutional transitions it is necessary to take into account the leader's exit mode as well as to include economic data that more closely measures the well-being of different groups in society. To do so *DA* is replaced by its three components *CON*, *INV*, and *GOV*. The idea is that per capita real *CON* and *INV* are better proxies of the well-being of leader's support groups under different leadership transition modes and that per capita real *GOV* reflects the incumbent leader's decision on how government spending is allocated.

The rationale for including these three economic covariates depends on the leader's exit mode. In the non-democratic literature, the élites in Acemoglu and Robinson (2006a) and Acemoglu *et al.* (2010a,b), the winning coalition in Bueno de Mesquita *et al.* (2003) and the kingmakers in Gallego and Pitchik (2004) decide when to stage a coup. In addition, in Acemoglu and Robinson (2006a) and Acemoglu *et al.* (2010a) citizens decide when to stage a revolution to induce a transition to democracy. In the electoral competition literature, the median voter determines whether the incumbent is re-elected (see e.g., Banks, 1990; Banks and Sundaram, 1992; Ferejohn, 1986). To find the effect that different groups have on constitutional and unconstitutional transitions it is necessary to find variables that better proxy the well-being of these groups. As now explained, real per capita investment (the sum of public and private investment, *INV*) is used to measure the well-being of the élite and real per capita consumption (*CON*) to measure the well-being of the median voter.

INV measures the well-being of the élites, the members of the winning coalition or the kingmakers. Clarke (1995) finds a significant and negative correlation between the Gini coefficient of income distribution and per capita *GDP*. Yotopoulos (1989) constructs Gini coefficients using Summers and Heston's 1980 purchasing power parity deflator. He finds that during the 1973-1985 period (whenever income and expenditure surveys are available) the top quintile of the population generates a disproportionately large

share of income (Bangladesh 33%, India 44%, Sri Lanka 66%, Pakistan 43%, Indonesia 44%, Philippines 51%, Brazil 55%, Mexico 50%, and South Korea 38%). If these countries are representative of others within the same region, then these other countries will also have highly skewed income distributions. Furthermore, Alesina and Rodrik (1994) and Persson and Tabellini (1992) use the Gini coefficient of land distribution to proxy the distribution of wealth. They argue that there is a high correlation between inequality in land ownership and the accumulation of assets. Consequently, the élites in Acemoglu and Robinson (2006a), the winning coalition in Bueno de Mesquita *et al.* (2003) and the kingmakers in Gallego and Pitchik (2004) are members of the élites of LDCs.

Moreover, the services provided by public infrastructure mostly benefit the élite (World Development Report, 1994, Table 1.4, p. 32). Thus, investment in public infrastructure or its maintenance is a measure of the services that a leader provides for the élite in LDCs. In addition, the crowding-in literature finds that public investment is a determinant of private investment. The public capital hypothesis states that public investment increases the rate of return on private capital. Greene and Villanueva (1991) (after controlling for other variables) find that for LDCs between 1975-1987 the rate of public sector investment has a positive and significant effect on the ratio of private investment to *GDP*.

Moreover, private investment measures the well-being of the élites. Perotti (1994) argues that in LDCs investment by an individual in human and/or non-human assets is limited by her/his initial wealth. Lecaillon *et al.* (1984) argue that the distribution of capital depends on the distribution of property. Given that property is highly concentrated, there is then greater inequality of income from capital than there is from income from work. It is then reasonable to assume that the wealthy élites of the LDCs are the ones with the greatest investment capabilities. The élites invest if it is in their interest to do so, i.e., if they anticipate that their investments will help them prosper and if they are confident that their assets will not be confiscated as otherwise they may engage in capital flight (see e.g., Özler and Rodrik, 1992; Acemoglu and Robinson, 2006a). Thus, it is the élites who contribute to the bulk of private investment in LDCs. Private investment is then a good proxy for the well-being of the élites, the members of the winning coalitions and the kingmakers.

Consequently if private investment is done mostly by the LDC élites, and if private and public investment are complements, and public investment benefits mostly the LDCs' élites, then *INV* (private and public) is a better measure of the well-being of the LDCs élites than is *DA*, *GDP* or *GNP*.

Some electoral models assume that only the median voter influences the leader's turnover rate. Acemoglu and Robinson (2006a) argue that the median voter can be either a poor or a middle class voter. The country's per capita real consumption (*CON*) is a good measure the well-being of the median voter. In other models, interest groups also affect electoral outcomes (e.g., Grossman and Helpman, 1996). It is unlikely that random shocks such as an economy-wide recession will affect the median voter and interest groups in the same manner and with the same intensity. Moreover, since different

interest groups represent different economic interests, a change in aggregate private investment may not capture changes in the well-being of individual groups. In addition, Argimon *et al.* (1996) and Nourzard and Vrieze (1995) find evidence of crowding-in effects for OECD countries. If private and public investment are complements in both developed and less developed countries, *INV* can be used for leaders exiting by constitutional means. Developed countries have more diversified economies than LDCs and thus a greater variety of interest groups. Being an aggregate measure, *INV* may not reflect changes in investment of particular groups and thus is not expected to affect the constitutional transition probability.

As argued in Sections 12.1 and 12.2 in this chapter, the well-being of the citizens and of different interest groups also depends the leader's allocation of government resources among competing needs. Each leader must decide how to allocate government revenues between government expenditures *GOV* and public investment (already included in *INV*). Once the leader's revenues for a particular year have been determined,⁴¹⁰ the only way *GOV* can increase, is if public investment falls. As public investment falls so does the well-being of citizens and different interest groups. It is then expected that the constitutional and unconstitutional transition probabilities should rise as *GOV* rises.

Recall that when taking leaders' exit mode into account, *all* leaders face the risk of being removed from office by constitutional and by unconstitutional means. The CU approach allows then for regime transitions between democratic and non-democratic regimes. By allowing *CON*, *INV*, and *GOV* to have a differential effect on the constitutional and unconstitutional transition probabilities the decision to oust the leader can then be affected by different groups. If the leader's removal from office depends on multiple groups then the decision is multi-dimensional in nature. By incorporating these three economic covariates into the transition probabilities, the model assess the influence that different agents have on transitions.

The results of the CU model with disaggregated economic covariates are presented in Model 3, Table A.12.3 in the Appendix. Only *INV* has a negative and significant effect on unconstitutional transitions. Thus, suggesting that for LDCs, the timing of unconstitutional transfers is determined *only* by the élites. This supports Acemoglu and Robinson's (2006a), Bueno de Mesquita's *et al.* (2003) and Gallego and Pitchik's (2004) assumption that it is the élites in LDCs who decide when to stage coups. For constitutional transitions, only *CON* exerts a significant influence though opposite to that anticipated.

⁴¹⁰There are no reliable measures of how much dictators swindle out of the country. Moreover, Acemoglu and Robinson (2006a) argue that since some LDCs countries under-report government expenditures or tax revenues, it is difficult to determine how much these leaders divert away from their countries.

Table 12.4: Change in Transition Probabilities for Model 3

| Original Medians Lagged variables ^{a,b} | Constitutional | | Unconstitutional | |
|---|----------------|----------|------------------|----------|
| | 0.099 | | 0.035 | |
| | change | t - stat | change | t - stat |
| $\log (CON \times 10^2)$ | 0.054* | 2.17 | 0.044 | 0.51 |
| $\log (INV \times 10^2)$ | 0.004 | 0.23 | -0.018*** | 3.48 |
| $\log (GOV \times 10^2)$ | 0.001 | 0.04 | 0.001 | 0.11 |

^a Other covariates: manner, military, entry, date, age, and age²

^b Also includes duration dummies D_0 to D_8 , and D_{912} , D_{1316} , D_{1720} .

*: $prob < 0.05$; **: $prob < 0.01$; ***: $prob < 0.001$

Table 12.4 shows that in Model 3 increasing the median value of CON by one percentage point increases the constitutional transition probability by 5.4% points; and that a one percentage point increase in the median value of INV decreases the unconstitutional transition probability by 1.8% points.

12.3.5 Leadership transitions in different political systems

To explain the counter-intuitive result of CON on the constitutional transition probability, it is necessary to take into account that the constitutional transition probability may depend on the country's political system. To control for differences across political systems, the $PARL$ and $PRES$ dummies are included in the analysis, leaving countries with other political systems as the excluded category ($PARL = 0$ and $PRES = 0$). Table 12.5 shows that while most constitutional parliamentary leaders rule in North America, Europe and Australaia (NAEA) countries (76.6%), most constitutional presidential leaders govern in non-NAEA countries (93.6%). Note that of the 91 leaders unconstitutionally overthrown in countries with parliamentary or presidential traditions, 81 ruled in countries with a presidential tradition.

Table 12.5: Number of leaders by exit mode and by political regime

| Leaders | Constitutional | | | | Unconstitutional | | | |
|----------|----------------|------|------|-------|------------------|------|------|-------|
| | Total | Parl | Pres | Other | Total | Parl | Pres | Other |
| Total | 377 | 205 | 109 | 63 | 177 | 10 | 81 | 86 |
| NAEA | 188 | 157 | 7 | 24 | 4 | 2 | 1 | 1 |
| Non-NAEA | 189 | 48 | 102 | 39 | 173 | 8 | 80 | 85 |

As sown in Table 12.2 the economic covariates of countries with parliamentary traditions regardless of leaders' exit mode have higher medians, means, and standard deviations than leaders in countries with presidential tradition. Moreover, while leaders in parliamentary democracies have lower median and mean durations than their presidential counterparts, the reverse hold when leaders exit by unconstitutional means. Thus, leaders in countries with high levels of CON , INV , and GOV face, on average, shorter durations and are mostly parliamentary leaders.

Figure 12.3 shows the Kaplan-Meier estimates of the constitutional transition probability for leaders in parliamentary and presidential regimes. When exiting by constitu-

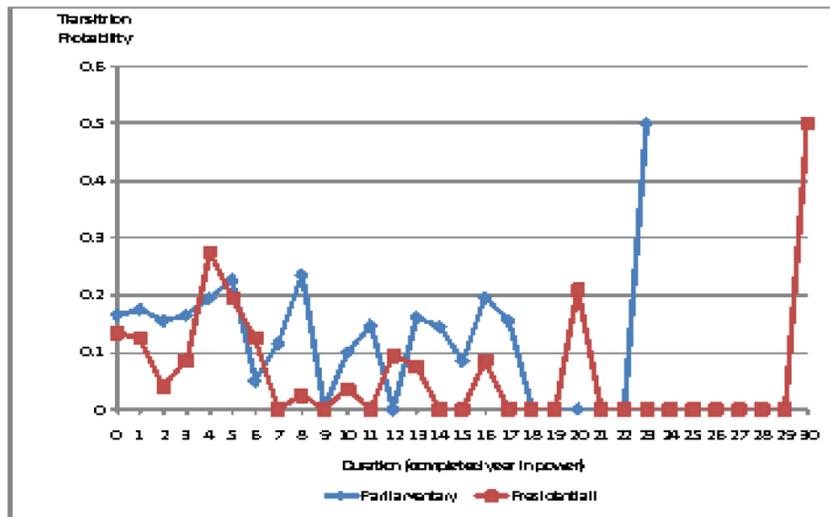


Figure 12.3: Constitutional Transition – Kaplan-Meier Estimates

tional means, prime ministers face a higher risk of being removed from office than their presidential counterparts at all durations except at durations 4, 6, 12 and 20. Moreover, Table 12.5 shows that almost half (46%) of the unconstitutional exits are by presidents of non-NAEA countries. This suggests that the economic covariates may be absorbing the effect of political system heterogeneity on the transitions. Leaders of parliamentary and presidential systems should face different transition probabilities as Figure 12.3 indicates.

Model 4, Table A12.3 incorporates the parliamentary and presidential dummies. The results are easier to understand when taking into account the political system. To do so, the changes in the transition probabilities are calculated for the median leader in each political system. That is, the transition probabilities are estimated for the median leader of the countries with a parliamentary ($PARL = 1, PRES = 0$), a presidential ($PARL = 0, PRES = 1$), and “other” ($PARL = 0, PRES = 0$) political system.

Table 12.6: Change in Transition Probabilities for Model 4

| Variable ^{a,b} | Constitutional | | Unconstitutional | |
|-------------------------------------|----------------|------|------------------|------|
| | change | t | change | t |
| At original medians and | | | | |
| $PARL = 0, PRES = 0$ | 0.0582 | | 0.0383 | |
| PARL | 0.062*** | 3.53 | -0.029** | 2.63 |
| PRES | 0.048*** | 3.10 | 0.017* | 1.83 |
| <i>Lag</i> log($CON \times 10^2$) | 0.003 | 1.55 | 0.22E-3 | 0.79 |
| <i>Lag</i> log($INV \times 10^2$) | -0.20E-3 | 0.27 | -0.49E-3** | 2.80 |
| <i>Lag</i> log($GOV \times 10^2$) | 0.90E-3 | 1.01 | 0.10E-3 | 0.56 |
| At original medians and | | | | |
| $PARL = 1, PRES = 0$ | 0.1206 | | 0.0096 | |
| <i>Lag</i> log($CON \times 10^2$) | 0.005 | 1.70 | 0.22E-3 | 0.73 |
| <i>Lag</i> log($INV \times 10^2$) | -0.56E-3 | 0.38 | -0.49E-3* | 2.04 |
| <i>Lag</i> log($GOV \times 10^2$) | 0.002 | 1.01 | 0.10E-3 | 0.49 |
| At original medians and | | | | |
| $PARL = 0, PRES = 1$ | 0.1060 | | 0.0559 | |
| <i>Lag</i> log($CON \times 10^2$) | 0.004 | 1.66 | 0.001 | 0.76 |
| <i>Lag</i> log($INV \times 10^2$) | -0.24E-3 | 0.19 | -0.003** | 3.01 |
| <i>Lag</i> log($GOV \times 10^2$) | 0.002 | 0.97 | 0.56E-3 | 0.51 |

^a Other covariates: manner, military, entry, date, age, and age²

^b Also includes duration dummies D_0 to D_8 , and D_{912} , D_{1316} , D_{1720} .

*: $prob < 0.05$; **: $prob < 0.01$; ***: $prob < 0.001$

The effect that changes in economic covariates have on the transition probabilities for Model 4 are reported in Table 12.8. An increase in *INV* significantly decreases unconstitutional transition probability under any political regime, though its effect is weakest for parliamentary leaders. The effect of an increase in *CON* on the constitutional transition, although positive, is much smaller and no longer significant. For constitutional transitions, a parliamentary and a presidential leader exiting within the year following her/his third anniversary face significantly greater risks than a leader governing in other political systems. A parliamentary leader faces a significantly lower risk of being overthrown by unconstitutional means (0.0096) than either a president (0.0559) or a leader in an other system (0.0383), reflecting the fact that 81 out of 91 leaders unconstitutionally overthrown in parliamentary or presidential systems, 81 were presidential systems (see Table 12.5). This result accords with Stepan and Skach (1993) finding and Acemoglu and Robinson (2006a) assertion that presidents are much more prone to regime changes than leaders in parliamentary democracies.⁴¹¹

The *conditional on exit* constitutional (unconstitutional) transition probability is the

⁴¹¹ Stepan and Skach (1993) explain that under presidentialism, the opposition may use coups to transfer power to overcome political impasses generated by the separation of powers between the executive and the legislature. Parliamentarism engenders mutual dependence, and political impasses are solved by holding early elections, thus, making it harder to stage unconstitutional transfers.

ratio of the constitutional (unconstitutional) transition probability to the hazard rate (the sum of the two transition probabilities). Table 12.7 shows that at duration 3, the median duration and conditional on exit, the risk of a leader exiting by constitutional parliamentary means is 12 times higher ($12.15 = 0.924/0.076$) than that of exiting by unconstitutional means. Conditional on exit, presidential leaders face almost *twice* the risk of exiting by constitutional ($1.89 = 0.654/0.345$) rather than unconstitutional means.

Table 12.7: Unconditional and Conditional Exit probabilities for Model 4

| At original Medians and | Unconditional | | | Conditional on Exit | |
|-------------------------|---------------|----------|--------|---------------------|----------|
| | Const. | Unconst. | Hazard | Const. | Unconst. |
| $PARL = 0, PRES = 0$ | 0.058 | 0.038 | 0.096 | 0.604 | 0.396 |
| $PARL = 1, PRES = 0$ | 0.121 | 0.010 | 0.131 | 0.924 | 0.076 |
| $PARL = 0, PRES = 1$ | 0.106 | 0.056 | 0.162 | 0.654 | 0.345 |

Summarizing, the positive effect of *CON* on the constitutional transition probability found in specifications where the *PARL* and *PRES* dummies are excluded can be explained by differences in the constitutional transition probability arising from the higher turnover rate of leaders in parliamentary systems (governing mostly in developed countries), relative to leaders in presidential systems (governing mostly in LDCs). Note however that even after controlling for political system differences and thus the country's fixed effects and controlling for time fixed effects through *DATE*, *AGE* and the duration dependence polynomial, *INV* continues to have a negative and robust effect on the unconstitutional transition probability. So that it is the élites of LDCs that determine when to stage an unconstitutional transition.

12.3.6 Transition probabilities and duration dependence

Up to now, the transition probabilities were examined for the median leader of the corresponding sub-sample at the median duration. As suggested by the Kaplan-Meier transition probability estimates in Figures 12.1, 12.2 and 12.3, a leader's risks of losing office change as duration increases. Moreover, the analysis above suggests that the transition probabilities should depend on the political system.

Using the results of Model 4, the transition probabilities are estimated as duration increases for each political system. The median values of the economic covariates of the parliamentary, presidential and "other" sub-samples are used to estimate the transition probabilities for a leader having the median political characteristics in each of these sub-samples. The transition probabilities are estimated as duration increases for up to 20 years. The figures shown below illustrate the effect that duration has on the transitions after controlling for the influence political and economic covariates have on the transitions.

Figure 12.4 shows the constitutional and unconstitutional transition probabilities for parliamentary leaders estimated using the coefficients in Model 4. As anticipated, leaders in parliamentary countries face basically no risk of exiting by unconstitutional means at all durations. Their constitutional transition probability however varies with duration

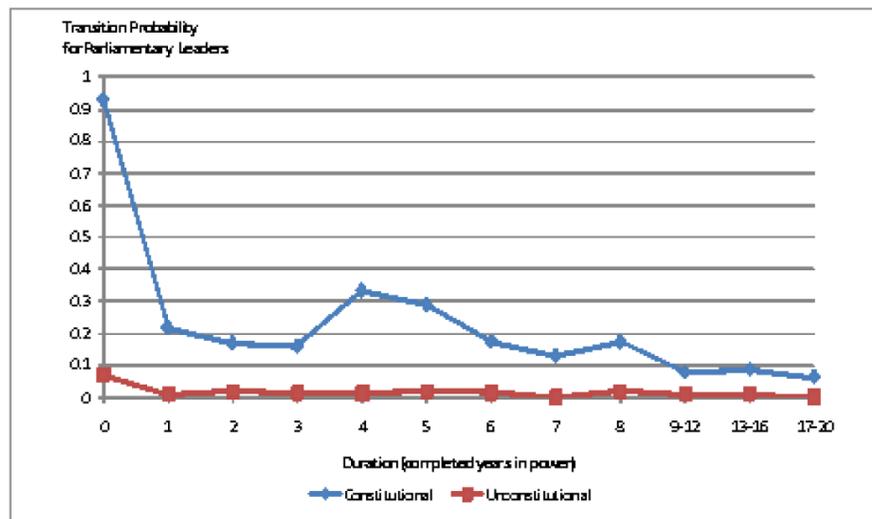


Figure 12.4: Transition Probability - Parliamentary Systems – Model 4

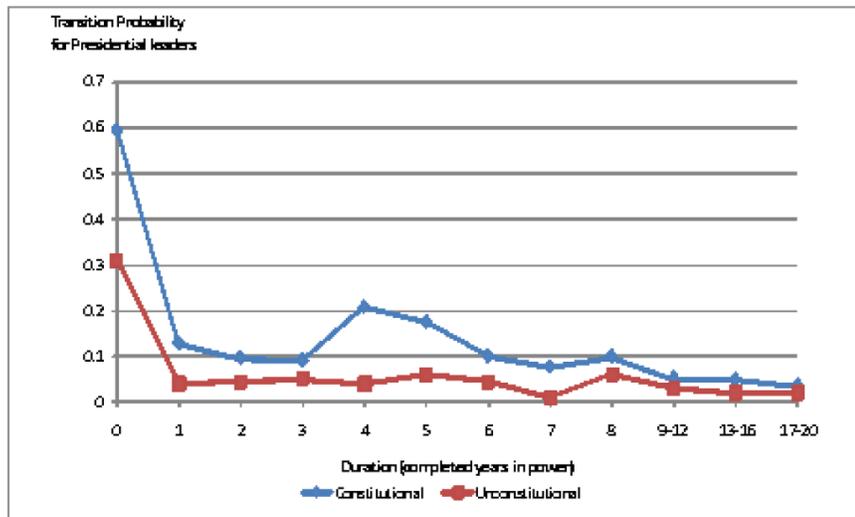


Figure 12.5: Transition Probability - Presidential Systems – Model 4

and exhibits a hump at durations 4 and 8. That is, Model 4 predicts that parliamentary democracies tend to have elections at regular intervals, such as at duration 4 and 8, even though elections may be called at any time before the maximum constitutional inter-election period is reached. The model also predicts that parliamentary leaders face extremely high risks of being ousted by constitutional means (93.13%) before their first anniversary. For leaders surviving their first year in office, their risks substantially decrease until they reach their fourth anniversary. The higher risks faced by leaders at durations 4 or 5 reflect the fact that the probability of calling an election rises as the leader's time in office approaches the maximum inter-election period (which varies by country). This contrast with Warwick's (1992) results that after controlling for inflation, unemployment, and *GDP* growth, as well as differences between socialist and bourgeois governments and between pre-oil and post-oil crisis, the hazard for leaders in Western Parliamentary countries rises as duration increases.

Figure 12.5 shows that the leader of countries with a presidential tradition are at risk of losing office by both constitutional and unconstitutional means at certain durations. Like their parliamentary counterparts they face higher risks of exiting by constitutional means at durations 4 and 8 but in this case this is due to the *fixed* inter-election period in presidential democracies. The probability of a constitutional exit before the leader's

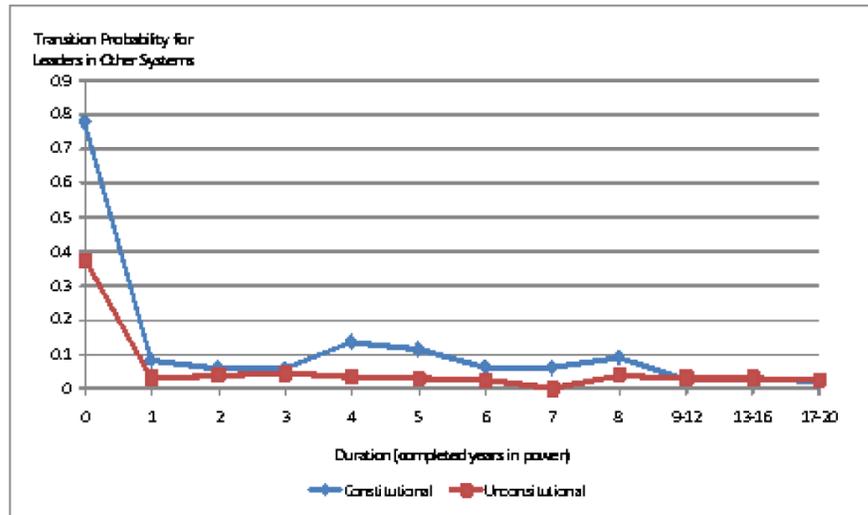


Figure 12.6: Transition Probability – Other Political Systems – Model 4

first anniversary is 60%—much *lower* than for parliamentary leaders—and that of an unconstitutional exit is 30%—much *higher* than for parliamentary leaders.

Model 4 predicts that leaders in “other” political systems (see Figure 12.6) also face non-negligible chances of losing office by both constitutional and unconstitutional means at certain durations. As their parliamentary and presidential counter-parts, they face higher risks of exiting by constitutional means at durations 4 and 8 and face very high probabilities of losing office before reaching their first anniversary (77% by constitutional and 37% by unconstitutional means).

Figure 12.7 shows the constitutional transition probability by political system. Relative to their counterparts, parliamentary leaders face higher risks of exiting by constitutional means at every duration not just before their first anniversary.

Figure 12.8 illustrates that the unconstitutional transition probability for leaders in countries with presidential or other types of executive systems tend to be *higher* than that of countries with parliamentary executives at every duration. Note that even after accounting for being ousted by unconstitutional means, the risks of being removed from office tend to be higher at durations 5 and 8. This suggests that democratic institutions tend to have an effect on unconstitutional transitions. There seems to be some sort of institutional memory when it comes to the dictator’s duration in office that is affected by the type of political system that is adopted when the country is going through democratic

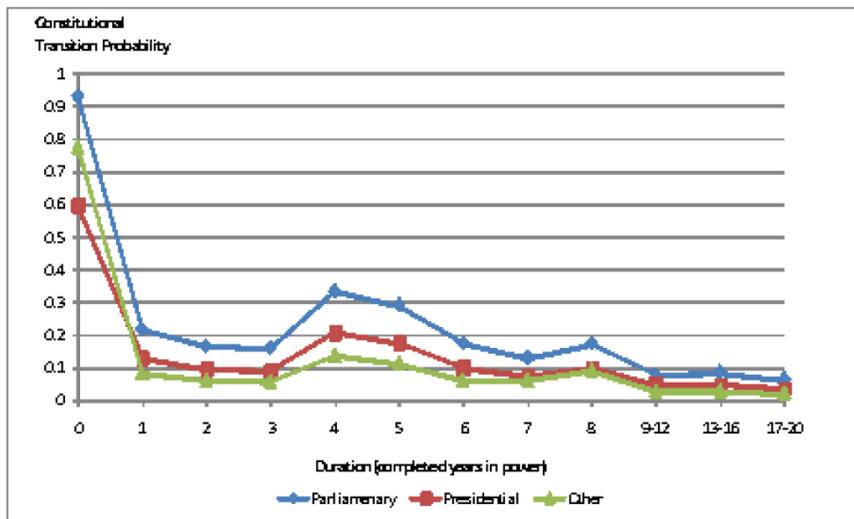


Figure 12.7: Constitutional Transition Probabilities – Model 4

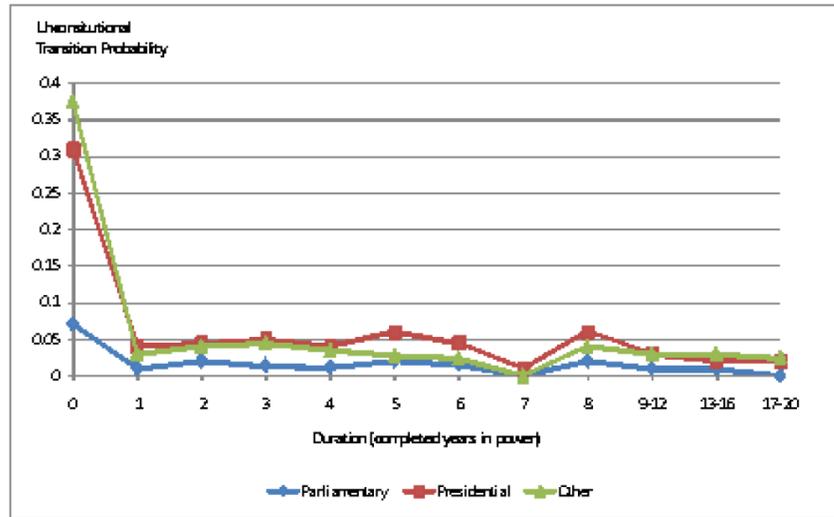


Figure 12.8: Unconstitutional Transition Probability – Model 4

spells.

12.3.7 Negative Duration Dependence

Figures 12.7 and 12.8 suggest that except for the higher risks faced by leaders at durations 4 or 5 and 8 regardless of exit mode, the transition probabilities exhibit negative duration dependence. That is, the risks of exiting by constitutional and unconstitutional means tend to decline with duration in office except at election times which seem to be determined by the country's institutions regardless of exit mode. This may be explained by the fact that when going through democratic spell the country adopts a political system (parliamentary, presidential, or other) that determines the timing of elections. In addition, though not considered in Gallego's (1996, 1998) study, some dictators govern alongside legislative bodies and may hold elections at regular intervals (see Section 12.4).

Bienen and van de Walle (1991) estimate the hazard rate without taking into account the leader's exit mode and find that the empirical hazard rate declines with duration. They conjecture that variable innate ability might explain this result. Of the papers surveyed in this chapter only the coup model of Gallego and Pitchik (2004) show the theoretical micro-foundations for this conjecture. That is, that a more able, low cost dictator faces a lower hazard rate, even though, conditional on initial exogenous beliefs, in

equilibrium, kingmakers are indifferent as to the ability of the current dictator. Theorem 3 in Section 12.1.5 shows that when conditioning only on duration in office, the longer a dictator is in office the lower the dictator's hazard rate in the next period.

One of the major contributions of Gallego and Pitchik (2004) is to show that after conditioning on the worst shock (lowest price) observed since the dictator took office, the conditional hazard rate of a coup is independent of duration in office (Theorem 3, Section 12.1.5). So that including the worst shock faced by a dictator up that date in empirical studies can help account for differences in hazard rates across dictators due to differences in ability. In the coup model, the exogenous i.i.d. shock that affects kingmakers' profits is an export price. If the empirical data contains a stream of aggregate i.i.d. shocks affecting the kingmakers' profits (e.g., shocks to export demand, production or prices), then these stream of shocks provide additional information on the dictator's ability. Including these exogenous shocks as variables that explain the unconstitutional transition probability should diminish the empirically observed decline in this transition probability as duration increases. To our knowledge, no one has tried to control for leader's ability by including the worst shock in the leader's tenure.

The coup model predicts that other variables may also help explain the empirical decline in the coup rate⁴¹² with duration (see Section 12.1.6). Differences among kingmaker group size (n) and among the probability that kingmakers exit after a coup i.e., differences in $(1 - q)s$ due to either differences in q or s may account for differences in coup rate across dictators. The coup rate increases when either n or q increases or s decreases (Corollary 1, Section 12.1.6). Thus, including proxies for n , q , and s as explanatory variables in cross-country studies may diminish observed decline in the coup rate with duration.

Evidence on the effect that the size of the group of kingmakers n has on the coup rate is provided by Bueno de Mesquita *et al.*'s (2006) empirical tests of the selectorate theory. They find that the leader's survival rate decreases in the size of the leader's coalition. The kingmakers in the coup model correspond to the winning coalition in Bueno de Mesquita *et al.* and the dictator's investment (an excludable public good targeted exclusively to the kingmakers) to the services the leader provides for the winning coalition (a black market premium) in the selectorate theory. This evidence supports the prediction of the coup model that the probability of a coup increases in n .

Evidence on the effect that n , q , and s have on the coup rate is given by Londregan *et al.* (1995) for African countries. They find that the probability of an unconstitutional exit increases as the population share of the leader's ethnic group increases. It seems reasonable that as an ethnic group grows so do the elite members in the group. Moreover, since African politicians rule through personal patronage (Bratton and van de Walle, 1994), when the current leader's ethnic group is large, it is the elites of the current leader's ethnic group that benefit from any investment made by the dictator (see arguments given in Section 12.3.4 for LCDs). They find that any immediate successor is disproportionately more likely to emerge from within the ethnic group of the cur-

⁴¹²The unconstitutional transition probability is the hazard or coup rate in the coup model.

rent leader. They explain that this “ethnic incumbency advantage” arises because as the size of a leader’s ethnic group grows, allegiance to any particular leader weakens as the élites of this group believe that the new leader will most likely be a member of their group (high q) and that they will remain members of the dictator’s click (low s). Thus, the élites of a leader’s large ethnic group are the kingmakers of the coup model. Londregan *et al.*’s findings then support the coup model’s prediction that leadership turnover increases as n or q increases or as s decreases.

The predictions provided by Gallego and Pitchik (2004) were published after Gallego’s (1996, 1998) empirical study was published. As a consequence, Gallego did not control for the effect that n , q , or s , or the worst shock observed since a dictator took office have on the transition probabilities. If variables that account for heterogeneity across dictators are included in the analysis, they might diminish the negative duration dependence effect on the constitutional and unconstitutional transitions.

12.3.8 Duration Models with Growth Covariates

Some argue that growth rates rather than the levels economic covariates should be used in the analysis as it is the change in the well-being of the leader’s support group that matters. To test the effect of growth rates Gallego (1998) replaces the economic covariates (up to now measured in levels) with variables that measure their growth. Two different growth rates are used in the analysis. The *long-run* growth rate is calculated as the deviation of log values from their corresponding *five-year moving average* centered on the current year (*DEVCON*, *DEVINV* and *DEVGGOV*). These long-run growth rates test the effect that long-run growth has on the transition probabilities. Short-run growth rates are estimated as the first difference of log values (*FDCON*, *FDINV* and *FDGOV*). The short-run rates test whether recent changes in economic conditions affect the transition probabilities. Only lagged values of the growth covariates are used in the analysis.

The results reported in Table 12.8 although smaller in magnitude, are similar to those discussed above. The growth of *INV* (short or long run values) continues to exert a significantly negative impact on the unconstitutional transition for leaders governing in presidential and other political executive regimes. In addition, *INV* now exerts a marginally significant and negative impact on constitutional transitions. A plausible explanation is that positive *INV* growth signals improvements in overall economic conditions in the near future that improve the well-being of many groups in society. Anticipating better economic conditions reduces the current probability that a leader exits by constitutional means as constitutional changes in leadership may create economic costs⁴¹³ for these groups. The effect of the growth of *CON* on constitutional exits for all political systems, although insignificant, is positive for the deviation covariates but negative for the first difference variables.

⁴¹³Economic costs could come in the form of increase uncertainty of the policies that could be implemented by the new leader.

Table 12.8: Change in Transition Probabilities for Model 4

| Variable ^{a,b,c} | DEV Variables | | | | FD variables | | | |
|--|---------------|------|----------|------|--------------|------|----------|------|
| | Const. | | Unconst. | | Const. | | Unconst. | |
| | Δ | t | Δ | t | Δ | t | Δ | t |
| At orig. medians & <i>OTHER</i> = 1 | 0.0546 | | 0.0503 | | 0.0526 | | 0.0509 | |
| <i>PARL</i> | 0.10*** | 4.95 | -0.04** | 3.18 | 0.10*** | 4.99 | -0.04** | 3.18 |
| <i>PRES</i> | 0.05*** | 3.28 | 0.02 | 1.53 | 0.05*** | 3.32 | 0.02 | 1.51 |
| <i>DEVCON</i> | 0.1E-5 | 0.82 | 0.5E-6 | 0.32 | | | | |
| <i>FDCON</i> | | | | | -0.1E-5 | 0.11 | 0.5E-5 | 0.39 |
| <i>DEVINV</i> | -0.4E-6 | 0.13 | -0.3E-5* | 1.85 | | | | |
| <i>FDINV</i> | | | | | -0.6E-5* | 1.85 | -0.7E-5* | 1.99 |
| <i>DEVGGOV</i> | -0.6E-6 | 0.91 | 0.6E-6 | 0.94 | | | | |
| <i>FDGOV</i> | | | | | -0.1E-4 | 1.25 | 0.8E-5 | 0.75 |
| At orig. medians & <i>PARL</i> = 1 | 0.1561 | | 0.0078 | | 0.1552 | | 0.0078 | |
| <i>DEVCON</i> | 0.3E-5 | 0.85 | 0.6E-7 | 0.25 | | | | |
| <i>FDCON</i> | | | | | -0.3E-5 | 0.10 | 0.8E-6 | 0.39 |
| <i>DEVINV</i> | -0.1E-5 | 0.19 | -0.5E-6 | 1.54 | | | | |
| <i>FDINV</i> | | | | | -0.2E-4* | 1.98 | -0.1E-5 | 1.58 |
| <i>DEVGGOV</i> | -0.2E-5 | 0.88 | 0.1E-6 | 0.97 | | | | |
| <i>FDGOV</i> | | | | | -0.4E-4 | 1.23 | 0.2E-5 | 0.83 |
| At orig. medians & <i>PRES</i> = 1 | 0.1025 | | 0.0671 | | 0.1002 | | 0.0676 | |
| <i>DEVCON</i> | 0.2E-5 | 0.82 | 0.5E-6 | 0.28 | | | | |
| <i>FDCON</i> | | | | | -0.3E-5 | 0.12 | 0.7E-5 | 0.40 |
| <i>DEVINV</i> | -0.6E-6 | 0.11 | -0.4E-5* | 1.87 | | | | |
| <i>FDINV</i> | | | | | -0.1E-4* | 1.87 | -0.9E-5* | 1.99 |
| <i>DEVGGOV</i> | -0.1E-5 | 0.94 | 0.9E-6 | 1.00 | | | | |
| <i>FDGOV</i> | | | | | -0.3E-4 | 1.29 | 0.1E-4 | 0.82 |

^a All economic covariates are lagged

^b Other covariates: manner, military, entry, date, age, and age²

^c Also includes duration dummies D_0 to D_8 , and D_{912} , D_{1316} , D_{1720} .

*: $prob < 0.05$; **: $prob < 0.01$; ***: $prob < 0.001$

Summarizing, the results of Gallego (1998) show that negative short and long run growth in *INV* increases the unconstitutional transition probability. This reinforces the conclusion derived above that it is the élites in LDCs who determine the timing of unconstitutional transfers. Moreover, this conclusion holds regardless of whether levels or growth rates of *INV* are used, so that this conclusion is not due to differences in development or investment levels. These results are consistent with those in the literature.

Using a worldwide sample and after controlling for endogeneity between political

instability and economic growth, Alesina *et al.* (1996) find evidence that probability of a government collapse increases when growth is negative. Note that Alesina *et al.* do not distinguish leaders by exit mode.

Bueno de Mesquita *et al.* (2003) use the country's black market exchange rate premium as a proxy for the provision of private goods that the leader provides to the winning coalition and economic growth as a proxy for the provision of public goods. They find that the higher the growth rate in a given year, the lower the probability of the leader being ousted from office. In small-coalition countries (that they identify with autocracies), growth improves the leader's survival probability but by a smaller amount than in large coalition countries (that they identify with democracies). This is due to the fact that in small-coalition countries a leader's risks of being overthrown was already relatively low. The presence of a black market exchange rate premium substantially improves the leader's survival chances in small-coalition countries. However, once the black market premium is taken into account, the survival rate of leaders in countries experiencing extremely high growth improves only by a small amount.

Acemoglu and Robinson's (2006a) model predict that regime transitions between democracy and non-democracy are more likely to occur when there are economic and political crises. An economic crisis is defined as a annual *GDP* growth rate of less than -5% in any of the previous five years for the 1970-1995 period (p. 66). Fig. 3.19 shows that the percentage of countries that transition to democracy is one third higher in periods of economic crises than when there are no crises. Similarly, Fig. 3.20 shows that the percentage of countries transitioning to non-democracy is three times higher in periods of economic crises relative to periods with no crises. They conclude that even though transitions to both democracy and non-democracy are more likely during economic crises, it is coups that far more likely to occur.

Geddes (1999) also finds that regime transitions are also more likely to occur during economic downturns. Haggard and Kaufman (1995) find that transitions to democracy tend to occur during severe economy crisis. Gasiorowski (1995) finds that coups tend to occur during recessions.

The evidence presented in this section using growth covariates also supports the hypothesis that leadership transition depend on changes in the well-being of different support groups. Because Gallego's (1998) data covers the 1950-1987 period, the second and third waves of democratization that occurred during the 1990s and 2000s are not part of her analysis. These regime transitions were possible because the cold war ended. These waves for democratization and the dictators response to them have generated much research over the last decade to which we now turn.

12.4 Anocracies

Earlier in this chapter we presented theories and evidence that different power groups are responsible for leadership transitions in democratic and non-democratic regimes. More recently, researchers have argued that systematic differences across autocratic

regimes affect the leader's survival probability (see e.g. Gandhi and Przeworski, 2007; Magaloni, 2008; Wright, 2008). Magaloni (2008) classifies autocratic regimes as military, monarchic, or dictatorships that govern using either single-party or multi-party legislatures. She finds (p.732) that

“[b]etween 1950 and 2000, 62% of the world's regime-years were autocratic. Single-party autocracies constitute the most common dictatorship. These account for 32% of the dictatorship-years, followed by hegemonic party autocracies (23%), military dictatorships with no political parties (14.3%), and absolutist monarchies (9.7%). Military dictatorships with political parties and electoral monarchies are not that common.”

Moreover, Golder (2005) finds that between 1946 and 2000 about half of the world's elections were authoritarian in nature. Specifically, in his sample 737 legislative and 300 presidential elections occurred under authoritarian rule compared to 867 legislative and 294 presidential elections under democracy. Recently some argue that autocrats use democratic institutions, such as parties, elections and legislatures, to help them stay longer in office.

In these hybrid systems, identified in the literature as anocracies, the autocrat governs alongside a legislature where members are chosen in tightly controlled elections. In single party anocracies candidates compete for positions within the party and if elected become members of the legislature. In multi-party legislatures, the dictator's party always wins a large majority of seats in the legislature with opposition parties gaining some legislative representation.

For Gandhi and Przeworski (2007) dictators use consultative councils, juntas or political bureaus to deal with threats from the élite and use democratic institutions such as parties and legislatures to neutralize the threat of rebellions (see also Geddes 1999). They explain that dictators may need the cooperation of “outsiders”—a large group of non-élite members—to generate rents.⁴¹⁴ Access to the legislature and limited policy influence gives outsiders incentives to cooperate and support the regime. In the legislature, members make policy demands on the dictator without appearing rebellious and dictators negotiate policy concessions without fearing a coup. The party mobilizes popular support for the leader, penetrates society to prevent rebellions, and rewards members through a stable patronage system. The dictator uses the party, elections and the legislature as strategic variables to lengthen their term in office. A weak opposition leads to a single-party legislature, a strong one to a multi-party legislature. They show evidence that legislatures allow dictators stay longer in office.

For Magaloni (2008) dictators use the party, elections and legislatures to make credible long-run rent-sharing commitments. She explains that to tie his hands the dictator gives the party's leadership control over access to power positions, spoils and privileges and the ability to promote party members to these positions. A long lived party al-

⁴¹⁴When rents come from oil or foreign aid, dictators do not need outsiders. Otherwise, to generate rents dictators need to tax domestic production and thus needs the “outsiders” to cooperate in production activities.

lows for repeated interactions between the dictator and its supporters⁴¹⁵ and conditional on support, members have expectation of receiving future benefits.⁴¹⁶ By selectively rewarding members and credibly threatening to withdraw access to benefits, the party creates loyalties and decreases the incentive to switch allegiances. Regular elections are used as a means of promoting the “rank-and-file” to power positions. She argues that in multi-party autocracies, the political mobility of the élite increases their bargaining power vis-à-vis the dictator. Magaloni finds evidence that party autocracies are more stable than military ones and that single-party dictatorships survive longer in office than multi-party autocracies.

Wright (2008) examines the role of the legislature in autocratic regimes as a function of revenue sources. He argues that when rents come mainly from taxing the domestic economy, dictators use “binding” legislatures to credibly constrain their confiscatory power which creates incentives for greater domestic investment, increased production and higher profits, all leading to increased tax revenues for the dictator (see Olson, 1993, 2000; McGuire and Olson 1996). When rents come from natural resources, Wright argues that dictators use “nonbinding” legislatures to reward or punish credible opponents by giving them offices in high places (a reward) but seats in the legislature (a punishment). After controlling for demographic characteristics, level of development, and former colonial status, Wright finds that military and single-party regimes are more likely to occur in countries that have larger populations, greater domestic investment and smaller oil reserves. The reverse holds true for personalist regimes and monarchies. Wright concludes that conditions that bring about single-party or military dictators differ from those of personalist dictators. Moreover, he finds evidence that binding legislatures exert a positive impact on economic growth and domestic investment, and that non-binding legislatures have instead a negative impact on economic growth.⁴¹⁷

Kim and Gandhi (2010) find evidence that institutional dictators, those with legislatures, provide more benefits to manufacturing workers (measured through higher average wages or higher labor share in manufacturing value added) than non-institutional dictators after controlling for per capita *GDP*, average labor productivity and the average price level of consumption. They also find that institutional dictators face lower levels of labor unrest, i.e., fewer strikes, after controlling for per capita *GDP*, inflation, unemployment and strike duration.

In Eastern European countries, opposition parties used scheduled elections to force a transition from authoritarian rule to democracy (see e.g., Bunce and Wolchik, 2006a, 2006b, 2009). These popular uprisings, the so called “color” revolutions, spread from

⁴¹⁵As argued by Gallego and Pitchik (2004, p. 2371), it is “[t]he repeated nature of the dictator/kingmaker relationship [that] provides the incentives in the model. The dictator and kingmakers are unable to sign binding contracts that determine payments as a function of individual behavior.”

⁴¹⁶For Magaloni (2008) the party offers exclusive access to privileges and positions (government jobs, education opportunities, and regularized cash transfers) to selected members and trade protection, government contracts, and political positions to the élite.

⁴¹⁷For Boix (2003) the presence of legislatures in authoritarian regimes means that there are multiple veto players, thus reinforcing property rights. This in turn reassures investors that their income will not be expropriated by the dictator.

one country to another through out eastern Europe. Thus giving support to the hypothesis that dictators can be ousted through elections in multi-party legislatures. Bunce and Wolchik (2006b, p. 14) argue that countries are more likely to democratize when they receive democratic assistance and

“[d]emocracy assistance is more likely to bear fruit in states that 1) have kept one foot in the democratic door, perhaps by holding regular and at least somewhat competitive elections; 2) have parties and a developed civil society that can act as local allies for democratization efforts; 3) exhibit short-term democratization-friendly trends such as increasingly competitive local elections, popular protests, vigorous legislatures and courts, cooperation among opposition groups, and popular opposition leaders; and 4) share borders with states that are both democratic and similar to them.

Popular uprisings played a major role in the democratic transition in Eastern European countries. It is yet unclear (at time of printing) whether the popular uprising that ousted the longtime dictator of Tunisia in January 2011, will allow Tunisia to transition to democracy.

For Fjelde (2010) a dictator’s ability to deal with civil unrest depends on whether the dictator exercises power through political parties or through other organizations, such as the military or the royal family. She studies onset of civil conflict between 1973 to 2004 for four types of authoritarian regimes (military, monarchy, single-party, and multi-party electoral autocracies). Her findings indicate that military regimes and multi-party electoral autocracies experience higher risk of armed civil conflict than single-party authoritarian regimes.

12.5 Concluding Remarks

The theories and evidence provided in this chapter allow us to predict that we should see a greater number of democratic and non-democratic leadership transitions in the near future. These transitions will be triggered by the depth of the great recession created by the financial and sub-prime mortgage crisis that lead to a worldwide economic recession from 2007 to 2010. We say in the near future as this international crisis may have a distinct impact on different countries and within each country the crisis may affect various groups with different intensities. Moreover, constitutional transitions will depend on the timing of elections.

We have already seen constitutional leadership transitions that we believe are related to this crisis but that of course need to be studied in greater detail. A year into the sub-prime crises, the Americans elected Obama, a democrat, to replace Bush, a republican, as president. The British gave prime minister Cameron, a minority mandate in their 2008 election forcing the conservatives to form a coalition government with the Liberal Democrats. The severe economic crisis in Ireland has evolved into a deep political crisis that on 23 January 23, 2011 left prime minister Cowen’s government without its

coalition partner, the Green party, and the parliament was dissolved.

The great recession of 2007-2010 has also affected non democratic countries. In Tunisia, the authoritarian regime of President Zine El Abidine Ben Ali who governed since 1987 was deposed on 15 January 2011, after wide-ranging popular protests—named the Jasmine Revolution after the national flower—forced the president to flee the country.

We anticipate increased leadership turnover in democratic and non-democratic countries in the near future for the following reasons. Many countries followed the Keynesian response to deep economic crisis. Countries borrowed, some heavily, and engaged in quantitative easing (printing money) to stimulate their economies. Government spending was increased to compensate for the large decrease in domestic and international demand that accompanied the crisis. It was believed that without government intervention the economies of these countries would collapse sending the world economy into a depression similar to the great depression that was triggered by the financial crisis of 1929.

The financial credit rating agencies downgraded the credit worthiness of certain countries (e.g., Greece, Portugal, Ireland and others that may follow) once deficits and debts passed certain levels. The higher borrowing costs has forced these countries to make heavy cuts in government spending in 2010-2011. Moreover, it is expected these cuts will remain in place for years to come. The European Union and the IMF gave Greece and Ireland a bail-out package under the conditions that they slash public spending and increase tax revenue. Other governments in Europe and across the world have also cut government spending. As a consequence of these large cuts, there have been massive demonstrations in some countries (e.g., Greece and France). We believe that this deep, unexpected and prolonged shock to the world economy will generate a wave of leadership transitions in both democratic and non-democratic countries as the leaders responses to the crises may be unable to compensate their power base for their losses. Moreover, the government cut backs to programs that benefit the poor will lead to massive protests. From the analysis carried out in this chapter, we know that both of these will increase the risks that leaders will be overthrown by constitutional means and in some countries by unconstitutional means.

12.6 Appendix

Table A12.1: Kaplan-Meier Probabilities for the Hazard, Constitutional and Unconstitutional transitions

| Duration | Hazard (H) | | Const. Trans. (CT) | | Unconst. Trans. (UT) | |
|----------|------------|--------|--------------------|--------|----------------------|--------|
| | H | SD | CT | SD | UT | SD |
| 0 | 0.1766 | 0.0144 | 0.1097 | 0.0118 | 0.0670 | 0.0094 |
| 1 | 0.1472 | 0.0149 | 0.1064 | 0.0130 | 0.0390 | 0.0082 |
| 2 | 0.1309 | 0.0156 | 0.0837 | 0.0128 | 0.0472 | 0.0098 |
| 3 | 0.1418 | 0.0177 | 0.0928 | 0.0147 | 0.0490 | 0.0101 |
| 4 | 0.2181 | 0.0230 | 0.1807 | 0.0215 | 0.0374 | 0.0106 |
| 5 | 0.2016 | 0.0257 | 0.1523 | 0.0231 | 0.0494 | 0.0139 |
| 6 | 0.1209 | 0.0242 | 0.0824 | 0.0204 | 0.0385 | 0.0143 |
| 7 | 0.0738 | 0.0214 | 0.0604 | 0.0195 | 0.0134 | 0.0094 |
| 8 | 0.1395 | 0.0305 | 0.0853 | 0.0246 | 0.0543 | 0.0110 |
| 9 | 0.0278 | 0.0158 | 0 | 0 | 0.0278 | 0.0158 |
| 10 | 0.0990 | 0.0297 | 0.0495 | 0.0216 | 0.0495 | 0.0216 |
| 11 | 0.1395 | 0.0374 | 0.0698 | 0.0275 | 0.0698 | 0.0275 |
| 12 | 0.0411 | 0.0232 | 0.0274 | 0.0191 | 0.0137 | 0.0136 |
| 13 | 0.0938 | 0.0364 | 0.0625 | 0.0303 | 0.0313 | 0.0217 |
| 14 | 0.0364 | 0.0252 | 0.0364 | 0.0252 | 0 | 0 |
| 15 | 0.0612 | 0.0342 | 0.0204 | 0.0202 | 0.0408 | 0.0283 |
| 16 | 0.0909 | 0.0433 | 0.0455 | 0.0314 | 0.0455 | 0.0314 |
| 17 | 0.1026 | 0.0486 | 0.0769 | 0.0427 | 0.0257 | 0.0253 |
| 18 | 0.0294 | 0.0290 | 0 | 0 | 0.0294 | 0.0290 |
| 19 | 0.0645 | 0.0441 | 0 | 0 | 0.0645 | 0.0441 |
| 20 | 0.0769 | 0.0523 | 0.0769 | 0.0523 | 0 | 0 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 0.0455 | 0.0444 | 0.0455 | 0.0444 | 0 | 0 |
| 23 | 0.05 | 0.0487 | 0.05 | 0.0487 | 0 | 0 |
| 24 | 0.0588 | 0.0571 | 0.0588 | 0.0571 | 0 | 0 |
| 25 | 0.0667 | 0.0644 | 0.0667 | 0.0644 | 0 | 0 |
| 26 | 0.0714 | 0.0688 | 0 | 0 | 0.0714 | 0.0688 |
| 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0.250 | 0.1531 | 0.250 | 0.1531 | 0.1250 ^a | 0.1169 |
| 32 | 0.1667 | 0.1521 | | | | |
| 33 | 0 | 0 | | | | |
| 34 | 0 | 0 | | | | |
| 35 | 0 | 0 | | | | |
| 36 | 0 | 0 | | | | |
| 37 | 0.5 | 0.3536 | | | | |

Table A12.2: Coefficients of the hazard rate

| Variable | Model 1 | | Model 2 | | | |
|-----------------------|---------|-------|----------|-------|-----------|------|
| | Total | | Const. | | Unconst. | |
| | Coeff. | t | Coeff. | t | Coeff. | t |
| $(DA \times 10^2)^a$ | 0.17* | 2.56 | 0.10*** | 5.43 | -0.34**** | 5.57 |
| Manner | 0.39** | 2.08 | -0.16 | 0.66 | 0.89*** | 3.58 |
| Military | -0.36* | 2.08 | -0.41** | 1.92 | -0.38 | 1.56 |
| Entry | 0.37* | 3.22 | 0.25* | 2.09 | 0.41* | 2.12 |
| Date/100 | -2.52* | 4.00 | -3.03*** | 4.17 | -1.66 | 1.60 |
| Age/10 | 0.90* | 2.01 | 1.96* | 3.12 | 1.14** | 1.83 |
| Age ² /100 | -0.06 | 1.63 | -1.39* | 2.60 | -1.04** | 1.81 |
| D_0 | 5.99*** | 11.06 | 6.58*** | 10.38 | 6.28*** | 8.06 |
| D_1 | 1.96*** | 4.74 | 1.98*** | 4.07 | 1.21* | 1.77 |
| D_2 | 1.66*** | 4.03 | 1.64** | 3.32 | 1.38* | 2.02 |
| D_3 | 1.67*** | 4.05 | 1.56** | 3.13 | 1.47* | 2.15 |
| D_4 | 2.29*** | 5.63 | 2.49*** | 5.16 | 1.30* | 1.85 |
| D_5 | 2.19*** | 5.30 | 2.27*** | 4.63 | 1.52* | 2.18 |
| D_6 | 1.59*** | 3.63 | 1.58** | 3.00 | 1.10 | 1.49 |
| D_7 | 0.94** | 1.88 | 1.20* | 2.10 | -0.77 | 0.65 |
| D_8 | 1.68*** | 3.72 | 1.55** | 2.83 | 1.35* | 1.82 |
| D_{912} | 0.94* | 2.26 | 0.59 | 1.13 | 0.92 | 1.35 |
| D_{1316} | 0.65 | 1.39 | 0.62 | 1.10 | 0.36 | 0.46 |
| D_{1720} | 0.52 | 1.01 | 0.18 | 0.27 | 0.12 | 0.14 |
| Constant | 14.42** | 2.58 | 18.32** | 2.56 | 9.01 | 0.89 |
| LL | -1092 | | -1364 | | | |
| LL ^b | -1305 | | -1734 | | | |
| χ^2 | 426 | | 740 | | | |
| df | 19 | | 38 | | | |

* : $prob < 0.05$; ** : $prob < 0.01$; *** : $prob < 0.001$

^a all economic covariates are measured in log levels

^b at slopes=0

Table A12.3: Coefficients of the hazard rate

| Variable | Model 3 | | | | Model 4 | | | |
|-----------------------|----------|-------|----------|------|----------|------|----------|------|
| | Const. | | Unconst. | | Const. | | Unconst. | |
| | Coef. | t | Coef. | t | Coef. | t | Coef. | t |
| $(CON \times 10^2)^a$ | 0.56** | 2.73 | 0.21 | 0.85 | 0.39* | 1.81 | 0.24 | 0.95 |
| $(INV \times 10^2)^a$ | 0.02 | 0.12 | -0.53*** | 4.54 | -0.05 | 0.41 | -0.49*** | 4.25 |
| $(GOV \times 10^2)^a$ | 0.01 | 0.04 | 0.02 | 0.12 | 0.16 | 1.02 | 0.12 | 0.61 |
| Manner | -0.09 | 0.36 | 0.92*** | 3.86 | 0.01 | 0.02 | 0.91*** | 3.75 |
| Military | -0.42* | 1.98 | -0.32 | 1.26 | -0.38* | 1.75 | -0.41* | 1.77 |
| Entry | 0.25* | 2.03 | 0.41* | 2.10 | 0.23* | 1.84 | 0.53** | 2.67 |
| Date/100 | -3.01*** | 4.14 | -2.44* | 2.28 | -2.87*** | 3.93 | -2.59** | 2.39 |
| Age/10 | 1.54** | 2.46 | 1.12** | 1.76 | 1.23* | 1.92 | 0.99 | 1.56 |
| Age ² /100 | -1.06* | 2.00 | -1.01** | 1.72 | -0.81 | 1.49 | -0.91 | 1.56 |
| Parl. | | | | | 0.77*** | 3.79 | -1.34** | 3.15 |
| Pres. | | | | | 0.68*** | 3.46 | 0.46* | 2.15 |
| D_0 | 6.50*** | 10.23 | 6.14*** | 7.83 | 6.26*** | 9.73 | 6.08*** | 7.68 |
| D_1 | 1.91*** | 3.90 | 1.01 | 1.47 | 1.69*** | 3.37 | 0.97 | 1.38 |
| D_2 | 1.58*** | 3.16 | 1.20** | 1.74 | 1.35** | 2.67 | 1.15 | 1.65 |
| D_3 | 1.51** | 3.00 | 1.29* | 1.87 | 1.30** | 2.54 | 1.23* | 1.77 |
| D_4 | 2.45*** | 5.03 | 1.13 | 1.60 | 2.27*** | 4.58 | 1.09 | 1.52 |
| D_5 | 2.24*** | 4.53 | 1.34** | 1.90 | 2.07*** | 4.11 | 1.36* | 1.91 |
| D_6 | 1.56** | 2.94 | 0.89 | 1.20 | 1.40** | 2.60 | 0.96 | 1.28 |
| D_7 | 1.21* | 2.11 | -0.96 | 0.81 | 1.05* | 1.81 | -0.87 | 0.73 |
| D_8 | 1.57** | 2.83 | 1.14 | 1.52 | 1.40** | 2.50 | 1.22 | 1.63 |
| D_{912} | 0.61 | 1.16 | 0.72 | 1.05 | 0.48 | 0.90 | 0.78 | 1.13 |
| D_{1316} | 0.69 | 1.20 | 0.01 | 1.17 | 0.58 | 1.00 | 0.11 | 0.14 |
| D_{1720} | 0.27 | 0.41 | 0.10 | 0.12 | 0.24 | 0.35 | 0.16 | 0.19 |
| Const. | 12.79** | 1.84 | 18.51** | 1.81 | 13.31* | 1.91 | 18.61* | 1.81 |
| LL | | | -1353 | | | | -1329 | |
| LL ^b | | | -1734 | | | | -1734 | |
| χ^2 | | | 763 | | | | 811 | |
| df | | | 42 | | | | 46 | |

*: $prob < 0.05$; **: $prob < 0.01$; *** : $prob < 0.001$ ^a all economic covariates are measured in log levels^b at slopes=0

Table A12.4: Coefficients of the hazard rate

| Variable | Model 5 (<i>Lag Dev</i>) | | | | Model 5 (<i>Lag FD</i>) | | | |
|----------------------------------|----------------------------|------|----------|------|---------------------------|------|----------|------|
| | Const. | | Unconst. | | Const. | | Unconst. | |
| | Coeff. | t | Coeff. | t | Coeff. | t | Coeff. | t |
| (<i>CON</i> × 10 ²) | 1.36 | 0.86 | 0.63 | 0.38 | -0.09 | 0.09 | 0.40 | 0.39 |
| (<i>INV</i> × 10 ²) | -0.09 | 0.20 | -0.50* | 2.04 | -0.49* | 2.06 | -0.54* | 2.30 |
| (<i>GOV</i> × 10 ²) | -1.06 | 0.87 | 1.13 | 0.93 | -0.94 | 1.25 | 0.55 | 0.70 |
| Manner | -0.15 | 0.64 | 0.94*** | 3.96 | -0.15 | 0.62 | 0.94*** | 3.95 |
| Military | -0.38* | 1.81 | -0.37 | 1.59 | -0.38* | 1.80 | -0.38 | 1.62 |
| Entry | 0.22* | 1.76 | 0.57** | 2.93 | 0.21 | 1.67 | 0.57** | 2.96 |
| Date/100 | -1.85** | 2.71 | -2.49* | 2.40 | -1.97** | 2.88 | -2.53** | 2.41 |
| Age/10 | 1.68** | 2.65 | 0.81 | 1.31 | 1.66** | 2.62 | 0.80 | 1.29 |
| Age ² /100 | -1.17* | 2.17 | -0.81 | 1.42 | -1.15* | 2.14 | -0.80 | 1.40 |
| Parl. | 1.12*** | 6.21 | -1.80*** | 4.50 | 1.15*** | 6.31 | -1.80*** | 4.50 |
| Pres. | 0.71*** | 3.78 | 0.36** | 1.84 | 0.72*** | 3.84 | 0.36*** | 3.95 |
| <i>D</i> ₀ | 6.12*** | 9.55 | 6.16*** | 7.80 | 6.15*** | 9.61 | 6.17*** | 7.81 |
| <i>D</i> ₁ | 1.54** | 3.13 | 1.18* | 1.70 | 1.55** | 3.16 | 1.21* | 1.73 |
| <i>D</i> ₂ | 1.21** | 2.42 | 1.36* | 1.97 | 1.23** | 2.45 | 1.37* | 1.98 |
| <i>D</i> ₃ | 1.19* | 2.37 | 1.40* | 2.02 | 1.20* | 2.38 | 1.43* | 2.06 |
| <i>D</i> ₄ | 2.14*** | 4.37 | 1.27* | 1.78 | 2.17*** | 4.43 | 1.30* | 1.83 |
| <i>D</i> ₅ | 1.93*** | 3.88 | 1.57* | 2.22 | 1.96*** | 3.94 | 1.59* | 2.25 |
| <i>D</i> ₆ | 1.24* | 2.33 | 1.19 | 1.60 | 1.27* | 2.39 | 1.21 | 1.62 |
| <i>D</i> ₇ | 0.88 | 1.53 | -0.61 | 0.52 | 0.92 | 1.60 | -0.57 | 0.48 |
| <i>D</i> ₈ | 1.24* | 2.23 | 1.49* | 2.00 | 1.26* | 2.26 | 1.52* | 2.04 |
| <i>D</i> ₉₁₂ | 0.29 | 0.56 | 1.02 | 1.49 | 0.32 | 0.61 | 1.04 | 1.52 |
| <i>D</i> ₁₃₁₆ | 0.37 | 0.64 | 0.44 | 0.57 | 0.33 | 0.57 | 0.46 | 0.59 |
| <i>D</i> ₁₇₂₀ | 0.08 | 0.12 | 0.32 | 0.39 | 0.12 | 0.17 | 0.35 | 0.41 |
| Const. | 7.96 | 1.19 | 17.27* | 1.74 | 9.18 | 1.37 | 17.55* | 1.78 |
| LL | | | -1353 | | | | -1351 | |
| LL ^a | | | -1734 | | | | -1734 | |
| χ ² | | | 761 | | | | 766 | |
| df | | | 46 | | | | 46 | |

^a at slopes=0*: *prob* < 0.05; **: *prob* < 0.01; ***: *prob* < 0.001

Chapter 13

Concluding Remarks on Knowledge of Science and Society

13.1 Moral Sentiments

It was no accident that the most important cosmologist after Ptolemy of Alexandria was Nicolaus Copernicus (1473 – 1543), born only a decade before Martin Luther. Both attacked orthodoxy in different ways.⁴¹⁸ Copernicus formulated a scientifically based heliocentric cosmology that displaced the Earth from the center of the universe. His book, *De revolutionibus orbium coelestium* (*On the Revolutions of the Celestial Spheres*, 1543), is often regarded as the starting point of the Scientific Revolution. Moreover, in 1526 Copernicus also wrote a study on the value of money, *Monetae cudendae ratio*. In it Copernicus formulated an early version of the theory, now called Gresham's Law, that bad (debased) coinage drives good (non-debased) coinage out of circulation,

Margolis (2002) noted that something very significant occurred in the years after Copernicus. His ideas influenced many scholars: the natural philosopher, William Gilbert, who wrote on magnetism in *De Magnete* (1601); the physicist, mathematician, astronomer, and philosopher, Galileo Galilei (1564 – 1642); the mathematician and astronomer, Johannes Kepler (1571 – 1630).

Philosophiæ Naturalis Principia Mathematica (1687), by the physicist, mathematician, astronomer and natural philosopher, Isaac Newton (1642 – 1726) is considered to be the most influential book in the history of science.⁴¹⁹ Margolis (2002) argues that, from about 1600, scholars learnt to look at scientific and social problems from different angles, and that within the next two hundred years this habit of mind became quite common, and was, in fact, the reason why the technological/ industrial revolution gathered apace in the eighteenth and nineteenth centuries.

⁴¹⁸Weber (1904) speculated that there was a connection between the values of Protestantism and Capitalism. It may be that there are connections between the preference for scientific explanation and protestant belief about the relationship between God and humankind.

⁴¹⁹See Feingold (2004).

After Newton, a few scholars realized that the universe exhibits laws that can be precisely written down in mathematical form. Moreover, we have, for some mysterious reason, the capacity to conceive of exactly those mathematical forms that do indeed govern reality. We believe that this mysterious connection between mind and reality was the basis for Newton's philosophy. While celestial mechanics had been understood by Ptolemy to be the domain most readily governed by these forms, Newton's work suggested that *all* reality was governed by mathematics.

We shall call the underlying hypothesis entertained by these scholars *the universality of mathematics*. Major universal mathematicians include the Scot, James Maxwell (1831–1879), the Frenchman, Henri Poincaré (1854–1912), the German, Albert Einstein (1879–1955), and the Englishman, Stephen Hawking (born 1942).⁴²⁰ Hawking and Mlodonow (2010) argue for this universal principle, citing its origins in Pythagoras (580 BCE to 490 BCE), Euclid (323–283 BCE) and Archimedes (287–212 BCE), and the recent developments in mathematical physics and cosmology. They present a strong form of this principle, called *model-dependent realism*, arguing that it is *only* through a mathematical model that we can properly perceive reality.

Without the application of this universal mathematics, our society would be quite different and much poorer. Jardine (2008) discusses the scientific innovations by Hooke and Huygens in the period round the glorious revolution, while Appleby (2010) discusses the technological changes wrought by Arkwright, Hargreaves, and Crompton soon after. There is still controversy over whether the rapid technological and economic transformations that we experience today are the consequence of the development of science itself, or the result of the institutional changes in the political economy that started in Great Britain in the 1600's.⁴²¹ Ferris (2010) argues that the political and economic innovations of the time were linked to these developments in mathematics and science.

The influence of Newton can perhaps be detected in the work of the philosopher, mathematician, and political scientist, Marie Jean Antoine Nicolas de Caritat, Marquis de Condorcet (1743 – 1794), known as Nicolas de Condorcet. His work in formal social choice theory (Condorcet ([1785], 1994) was discussed in Chapter 1 in connection with the arguments about democracy by Madison and Jefferson. We also noted in Chapter 1 the influence of the work on Moral Sentiment by the Scottish Enlightenment writers, Francis Hutcheson (1694–1746), David Hume (1711–1776), Adam Smith (1723–1790) and Adam Ferguson (1723–1816).

Between Copernicus and Newton, the writings of Thomas Hobbes (1588 – 1679), René Descartes (1596– 1650), John Locke (1632– 1704), Baruch Spinoza (1632– 1677), and Gottfried Leibnitz (1646– 1716) laid down foundations for the modern search for rationality in life.⁴²² Hobbes was more clearly influenced by the scientific method, partic-

⁴²⁰Hawking (1988) writes of being able to read the “Mind of God.”

⁴²¹See for example, Landes (1998) and Warsh (2006).

⁴²²For Hobbes, see Rogow (1986). For Descartes, see Gaukroger (1995). For Spinoza and Leibnitz see Stewart (2006) and Goldstein (2006).

ularly that of Galileo, while Descartes, Locke, Spinoza, and Leibniz were all concerned in one way or another with the imperishability of the soul.⁴²³ Leibniz in particular was concerned with an

[E]xplanation of the relation between the soul and the body, a matter which has been regarded as inexplicable or else as miraculous.

Without the idea of a soul it would seem difficult to form a general scheme of ethics.⁴²⁴ Indeed, the progress of science and the increasing secularization of society over the last century led Ferguson (2003) to note that

[L]oss of faith in [the British Empire] often went hand in hand with loss of faith in God.

13.1.1 Beliefs

In the 1920's and 1930's, after World War I and the devastation wrought by the application of science and technology, a general fear become prominent that civilization would fall, just as the Ottoman, Russian and Habsburg empires had fallen, soon to be followed by the British Empire.⁴²⁵ These fears were exemplified first by Spengler's *Decline of the West* (1918, 1922) and later by Toynbee's *Study of History* (1934).

Ferguson (2006) quotes Spengler's remark that

the masses will accept with resignation the victory of the Caesars.

Mead (2007) suggests, in contrast, that "it is to a dynamic religion rather than secularization that we must look for explanations of the Anglophone ascendancy [of the American empires]."⁴²⁶

Indeed, much recent work substantiates the ideas of the Scottish moral philosophers, and the later suggestions of Darwin (1982,[1871]), proposing that we all have an innate sense of moral values. Ober and Macedo (2006) suggest that moral goodness is something real, and does not need to be based on the notion of a transcendent soul.

As discussed in Chapter 3, the last twenty years has seen a growing literature on a game theoretic analysis of the evolution of social norms to maintain cooperation in prisoners' dilemma like situations. Gintis (2000, 2003), for example, provides evolu-

⁴²³It is of interest that the English word "soul" derives from Old English *sáwol* (first used in the 8th century poem, *Beowulf*).

⁴²⁴Hawking and Mlodinow (2010) assert that God did not create the Universe, perhaps implying that the soul does not exist. However they do say that they understand Isaac Newton's belief that God did "create" and "conserve" order in the universe. See other books by Dawkins (2008) and Hitchens (2007) on the same theme, as well as Wright (2009) on the evolution of the notion of God and Lilla (2007) on political theology.

⁴²⁵See Lieven (2000) for a brief history of these empires and Overy (2009) for the fears about collapse in the interwar years in Britain.

⁴²⁶A recent Gallup poll found that 70% of Americans regarded religion is an important part of their daily lives, compared with 27% of British. See Putnam and Campbell (2010) for a recent study of the importance of religion in the US.

tionary models of the cooperation through strong reciprocity and internalization of social norms.⁴²⁷ The anthropological literature provides much evidence that, from about 500KYBP years ago, the ancestors of *homo sapiens* engaged in cooperative behavior, particularly in hunting and caring for offspring and the elderly.⁴²⁸ On this basis we can infer that we probably do have very deeply ingrained normative mechanisms that were crucial, far back in time, for the maintenance of cooperation, and the fitness and thus survival of early hominids.⁴²⁹ These normative systems will surely have been modified over the long span of our evolution.

A related literature deals with various detailed aspects of how these norms may have evolved.⁴³⁰ Some of this literature is also based on evolutionary theory,⁴³¹ some from neuroscience,⁴³² some from child development,⁴³³ and some from the study of primates.⁴³⁴

Hauser (2006) argues that there is a deep structure to moral values, akin to the notion of a template in language,⁴³⁵ while Deacon (1997) argues instead that language and the brain co-evolve.⁴³⁶

Since language evolves very quickly (McWhorter, 2001; Deutcher, 2006), we might also expect moral values to change fairly rapidly, at least in the period during which language itself was evolving. In fact there is empirical evidence that cooperative behavior as well as notions of fairness vary significantly across different societies.⁴³⁷ While there may be fundamental aspects of morality and “altruism,” in particular, held in common across many societies, there is variation in how these are articulated. Gazzaniga (2008) suggests that moral values can be described in terms of various *modules*: reciprocity, suffering (or empathy), hierarchy, in-group and outgroup coalition, and purity/ disgust. These modules can be combined in different ways with different emphases.

It is interesting that much of this recent work on language and moral sentiment derives in some sense from Adam Smith’s lectures on language in Edinburgh, in 1749-

⁴²⁷Strong reciprocity means the punishment of those who do not cooperate.

⁴²⁸Indeed, White et al. (2009) present evidence of a high degree of cooperation among very early hominids dating back about 4MYBP (million years before the present). The evidence includes anatomical data which allows for inferences about the behavioral characteristics of these early hominids.

⁴²⁹Gintis cites the work of Robson and Kaplan (2003) who use an economic model to estimate the correlation between brain size and life expectancy (a measure of efficiency). In this context, the increase in brain size is driven by the requirement to solve complex cooperative games against nature.

⁴³⁰“Culture” can be thought of as the social context in which these norms are maintained. See Cavalli-Sforza and Feldman, 1981; Wilson (1978); Lumsden and Wilson (1981); Distin (2010).

⁴³¹Gigerenzer 2007; Ridley, 1998; Wright 1994, 2000; Boyd and Richerson, 2005; Richerson and Boyd, 2006; Jablonka and Lamb, 2006.

⁴³²Gazzaniga (2006, 2008) and Harris (2010).

⁴³³Bloom, 2004, 2010.

⁴³⁴De Waal, 1996, 2006.

⁴³⁵This is derived from the work of Chomsky (1972) and Pinker (1997, 1999).

⁴³⁶See also Bowles et al. (2003), Bowles (2006), Choi and Bowles (2007) and Pinker and Bloom (1990) who present models of the co-evolution of language, institutions and cooperation.

⁴³⁷See Henrich et al. (2004, 2005), which reports on experiments in fifteen “small-scale societies,” using the game theoretic tools of the “prisoners’ dilemma,” the “ultimatum game,” etc. See also the review by Samuelson (2005).

1751, where he presented a conjectural mode of reasoning based on the imagination.⁴³⁸ Smith deployed the same mode of reasoning in *Moral Sentiments* and *Wealth of Nations*.⁴³⁹ Indeed, it would seem that both Hume and Smith were searching for an evolutionary human science, without having a theory of evolution to work with. One possible distinction between these two friends was that Hume had a somewhat sceptical theory of knowledge, whereas Smith was much more optimistic about human nature.⁴⁴⁰ Both, however, were searching for an escape from the Hobbesian world with

no knowledge of the face of the earth; no account of time; no arts; no letters; no society; and which is worst of all, continual fear and danger of violent death, and the life of man, solitary, poor, nasty, brutish and short.⁴⁴¹

Smith in particular had a coherent research plan. He first conjectured how language evolved, as in the essay on “Considerations concerning Language” Then he pondered, in *Moral Sentiments* (1759), the general question of how moral sentiments arise, and what we would now call the equilibrium selection problem over the creation of values and institutions. Then in *Wealth of Nations* (1776) he considered the technical question of the economy. Each of these questions involves the others.⁴⁴²

The recent literature, discussed above, attempts the same project as Adam Smith, using the notions derived from evolutionary theory, but to some extent this literature lacks a fundamental unifying theoretical structure. Perhaps the earlier work by George Price (1970, [1971] 1995, 1972a,b) gave a formal stochastic model relating fitness to traits that can be used to study selection in any evolving process, including economic development, and might form the basis for an evolutionary theory of mind, language and morality.⁴⁴³

Binmore (2005, 2008) makes a number of very relevant comments on norms and culturally determined values. The most important point is that norms can be seen as particular kinds of equilibrium selection mechanisms that are generated by the nature of the technology that the society has developed, and the environment in which it is located. So hunter-gatherer societies will tend to exhibit equity or egalitarian share and effort norms.⁴⁴⁴ Agricultural, or limited access societies, of the kind discussed in Chapter 2, will focus on norms associated with hierarchy, power, honor and obedience. Open access societies will focus on norms of freedom, fair play and merit. The industrial development that occurred in Britain and the US in the past brought these equity norms

⁴³⁸See Smith (1980[1762]).

⁴³⁹See also Phillipson (2010) for the influence of Hume on Smith’s thought.

⁴⁴⁰See Chapter 1, where we comment that Condorcet shared Smith’s optimism. Madison was influenced by Hume’s scepticism, but he also accepted Smith’s recognition of virtue as a crucial component of civilization.

⁴⁴¹Hobbes (2009 [1651]).

⁴⁴²There is a literature on the Adam Smith problem (Paganelli, 2008) since it may seem that *Wealth of Nations* depends on self interest, whereas *Moral Sentiments* focuses on altruism. However, this presumption seems ill-founded. See for example McCloskey 2006).

⁴⁴³Price’s work was used by Maynard Smith (1972, 1982) to develop the idea of an evolutionary stable strategy, and by Hamilton 1970) in a model of spite. See Frank (1995), Hamilton (1995) and Harman (2010) for discussion of Price’s work.

⁴⁴⁴Wrangham (2010), for example, argues that the discovery of fire for cooking enhanced sharing norms.

into contest with economic principles of “efficiency”.⁴⁴⁵ As we noted in Chapter 3, the recent technological changes have exacerbated economic inequality, particularly in the US.

These different normative beliefs about the proper balance between efficiency and equity are just as important as preferences in affecting political choice. For example, in the US we find there are two relevant dimensions, one economic (essentially associated with efficiency) and one social (associated with equity or freedom). In Britain we label the axes economic and nationalism (which may be associated with hierarchy).

In any polity the underlying moral beliefs can be fairly heterogenous, reflecting these different emphases on efficiency, equality, freedom, and hierarchy.⁴⁴⁶ There is still no generally accepted theory about how these beliefs are propagated and transformed in a society. It has been suggested that they can be regarded as “memes,” acting like genes, mutating and multiplying under selection pressure.⁴⁴⁷ Indeed scientific notions, such as that of “meme” itself, as well as moral principles can be thought of memes.⁴⁴⁸ Bikchandani et al. (1992) write about *fads* and *information cascades*. Chapter 2 has introduced the notion of belief cascades in an attempt to capture the idea that such changes of political beliefs can be the result of new theories about how the world works, constructed in order to deal with the quandaries that the society faces.⁴⁴⁹

As we have suggested above, political beliefs will be affected by expectations about the future, as well as interpretation of the past. The collapse of the Soviet Empire in 1989 first brought about a sense of relief, as exemplified by the notion of the triumphant “end of history” of Fukayama (1992), and a period of stability and globalization. Below, we refer to this as the *holocene*, lasting most recently from about 1990 until 2001. However, American hegemony was short-lived. The “Clash of Civilizations” (Huntington, 1998) after 2001, the recent recession of 2008/9, and the current fears over the effects of climate change and international disorder, remind us of the earlier fears, in the inter war years, about the over-rapid development of science and the possibility of civilization’s collapse through war. In hindsight, these earlier fears in the 1930’s over future war were entirely justified.

13.2 Uncertainty

Many authors, from Paul Kennedy (1987) on, have discussed the similarities and differences between the Roman, British and American empires in terms of military over-reach

⁴⁴⁵Mokyr (2010) charts the changes in belief that occurred in Britain in the period of industrialization, 1700-1850. David Kennedy (2001) gives a historical account of the beginning of US dominance in the period up to 1945.

⁴⁴⁶Westen (2007) comments on the influence of moral values on political choice.

⁴⁴⁷See Dawkins (1976) and later work by Dennett (1995) and Blackmore (2000).

⁴⁴⁸Dennett (2003).

⁴⁴⁹Indeed, much of the literature cited above can be seen as part of an extensive effort to construct a formal theory of moral values and beliefs based on the mathematical model of game theory.

and hubris.⁴⁵⁰ Indeed, Ferguson (2005) uses an interesting typology of empire, distinguishing between those that are autocratic, aristocratic, oligarchic or democratic, and whether they are based on the principal factors of land, labor or capital. While there are obvious differences between these empires, Ferguson (2010) also suggests that the American empire, like earlier ones, may collapse in a chaotic fashion, possibly bringing about catastrophe.

He notes that the total US federal debt increased from \$5 trillion in 1992 to \$7 trillion (about 70% of GDP) in 2000, to \$17 trillion (about 117% of GDP) in 2010. In fiscal year 2000 there was a federal surplus of \$236 billion, which by 2004 had become a deficit of about \$520 billion, partly because of the Bush tax cuts. The estimated federal deficit for the fiscal year ending Sept. 30, 2010, is \$1.47 trillion, over 10% of GDP. Stiglitz and Bilmes (2008) laid part of the blame for the increasing federal deficit on the Iraq war, citing a total estimated past and future cost of \$3 trillion. As we have noted above, in mid May, 2011, the US Federal debt reached its legal limit of \$14.3 trillion inducing the possibility that the US would be regarded as in default of its obligations.

The Stockholm International Peace Research Institute estimated that the US 2009 military budget was \$663 billion about 4.3% of GDP. An estimate for the Department of Defense budget for fiscal year 2010 is \$685 billion. This expenditure has risen since 1999 when it was about 3%. However, other defense spending on Iraq and Afghanistan brought the total for 2010 to about \$ 1 trillion, about 7.5% of GDP.⁴⁵¹

President Dwight Eisenhower's farewell address on January 17, 1961 appears prophetic. As he said

In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex... We must never let the weight of this combination endanger our liberties or democratic processes.

Bacevich (2010) develops this theme of military over-reach, suggesting that the US has become wedded to permanent war. Like Kennedy and Ferguson, Bacevich (2010) argues that the recent crisis, and the problem of debt, has made this imperial military and economic strategy impossible for the US to maintain. In terms of economic decline, the trade deficit of the United States with China increased from \$103 billion in 2002 to \$268 billion in 2008, though it dropped to \$227 billion in 2009. China now holds about \$1 trillion in U.S. Treasury and government agency bonds, followed by Japan with \$800 billion. Indeed, Weiner (2010) notes that China's central bank, the People's Bank of China, controls over \$3 trillion in foreign exchange reserves mostly in China's sovereign wealth fund. The rest of the US debt is spread between OPEC, Brazil, Hong Kong, Taiwan and Britain,⁴⁵².

⁴⁵⁰See Ferguson (2001, 2002, 2004), Zakaria (2003), James (2006), Murphy (2007), and Bacevich (2008, 2010)

⁴⁵¹See also the discussion in Johnson (2004) on militarism.

⁴⁵²The U.S. reported that countries other than China had bought over \$700 billion of U.S. Treasury securities in 2010, including over \$350 billion by Britain, over \$120 billion by Japan and \$84 billion by Canada. China

King (2010) emphasizes the extraordinary change that has occurred over the last fifteen years in the monetary relationship that exists between the advanced and developing economies. In 1995, the developed economies held about \$0.9 trillion in foreign exchange reserves, nearly half of which was dollar denominated, and the developing world held \$0.5 trillion, again about half in dollars. In 2008, the advanced economies held \$2.5 trillion (about 6% of their total GDP), with about half in dollars, and the developing economies held \$4.2 trillion (worth about a quarter of their total GDP). As King says, “current and future U.S. taxpayers are enormously in debt to the rest of the world and, in particular to foreign governments.”

We seem to be entering a new type of multipolar world, with no hegemon, and potential conflicts between regional powers such as China, India, Brazil, as well as the oil rich states of the Middle East and Russia.⁴⁵³ Obama’s visit to Asia in November, 2010, was due to the increasing importance of the geopolitics of the area.

The 1990’s may, in the future, seem like an economic holocene, maintained by the economic and military hegemony of the United States. An important aspect of this dominance lay in the belief in the “soft power” of the US, namely the validity of the principles of democracy and capitalism.⁴⁵⁴ The double shock of 2001 and the crisis of 2008/9 has brought this period to an end, and it may well be that without such a hegemon, political *and* economic instability will be exacerbated.

In recent years, fears over an uncertain future have been compounded by changes in our understanding about how the world, and society really work. Hayek (1974) in his Nobel lecture, suggested that we can never really understand economics:

While in the physical sciences it is generally assumed, probably with good reason, that any important factor which determines the observed events will itself be directly observable and measurable, in the study of such complex phenomena as the market, which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process... will hardly ever be fully known or measurable.

For Milton Friedman (1953) on the contrary, it was irrelevant whether economic theory made unrealistic assumptions, as long as it worked. But the recent recession strongly suggests that economic theory just does not work.

The collapse of belief in the logic of economic theory is exemplified by the confession of Alan Greenspan, former chairman of the Federal Reserve, to Congress in 2008, when asked whether his ideology about market equilibrium was right, and working, replied that he was shocked to learn that it was wrong.⁴⁵⁵ He has also commented

seems to be somewhat reducing its exposure.

⁴⁵³See Fishman (2006), Emmott (2009) and Jacques (2009) on the rise of China as a rival to the U.S., and Shapiro (2008) and Kaplan (2010) on the changes in the balance of power as a result of globalization. Karabell (2009) sees China and the U.S. as partners, perhaps unwilling, in maintaining global stability.

⁴⁵⁴As discussed in Chapter 2, it seems that full democracy is far more difficult to build than was originally believed. The economic crisis has also led many to infer that the economic model underlying capitalism is completely wrong.

⁴⁵⁵The comments by von Hayek and Greenspan are cited in Ramo (2009).

that “our current understanding of the future is extremely limited.”

In the face of this uncertainty about the future, we argue that it behoves us to attempt to create an ethical basis for our actions when they have such possibly dire consequences. There may be disagreements about an ethical foundation for society, with a pure free market orientation at one pole, and an extremely egalitarian focus at the other. Almost all people believe in some version of “propinquity”, my family, my neighborhood, my country. On the other hand, there is belief that the future, our children, and future generations, should be protected from our greed. As an illustration, both Jefferson and Condorcet argued that debt or other liabilities should not be incurred if they could not be paid off in a generation. (Their argument was that in about a generation of 20 years, half the population would have changed through birth and death.) This is a version of “intergenerational utilitarianism” proposed by Collier (2010).

This principle asserts that we should be “fair” towards the future, by taking into account the expected overall utility of future generations.⁴⁵⁶ A natural consequence of this principle is that we should avoid destroying the world we live in for short term gain. Note that this is a utility principle, not an income principle. If climate change is expected to have greatest impact on the poor, in Africa say, then this principle implies that costs should be borne in the developed economies to offset the likely enormous utility costs of the poor in the future. One aspect of this calculation is the appropriate discount parameter to use. Collier suggests that if we do choose to burden the future, then we should lay aside assets to cover the anticipated future costs. Relatively risk free assets such as U.S. Treasury bonds give about 3 to 4% return, so this can be used to infer the appropriate transfer to the future. Posner (2005) estimates that the cost of climate change could reach about \$8 trillion a year, so discounted at 3%/annum would give a total cost of about \$65 trillion. If we follow Collier (2010) and do not discount the future then the total cost would be astronomical. An ancillary calculation made by Collier is that when we deplete non-renewable natural resources, oil, minerals etc. then we should also lay aside economic assets, namely investment capital, to cover the fact that these resources will not be available to the future.⁴⁵⁷

Finally, carbon, generated by our own economic activity, is a burden, a negative externality, that will affect the future, through its impact on climate. One way to cover the transfers to the future would be through a carbon tax. Since the developed economies currently produce the bulk of CO₂, a carbon tax would have the beneficial effect of somewhat reducing consumption, in these economies, of carbon based fuels, and this would make non carbon fuels more viable. Collier suggests a tax of \$40/ton of carbon emitted.⁴⁵⁸ Such a tax has the advantage that if estimated costs to the future rise, then the tax

⁴⁵⁶See also the argument in Chichilnisky (1996).

⁴⁵⁷One troubling aspect of this calculation comes from the fact that the world’s population is, on average, getting older (Fishman, 2010). The future is going to be a struggle anyway, with relatively fewer young people to produce for the growing aging population. The old may dominate politically, as they will tend to control capital, and may also discount the future more heavily than the young.

⁴⁵⁸Total US emissions are about 5.6 million metric tons/ annum. One US gallon of gasoline costs \$2.70 and emits about 20lb of CO₂ when combusted. If the USA imposed a tax of \$40 on every quantity of gasoline that would emit one metric tonne of CO₂ during combustion, the carbon tax on this gallon of gasoline would

rate can be adjusted. One further aspect of this way of dealing with the externality is the matter of uncertainty. There is a great deal of uncertainty at present, over the effects of economic activity. Even with the mathematical models of climate change that we discuss below, this uncertainty will persist. If our activities cause even more uncertainty over the consequences of our actions, then we should further compensate the future.

In Chapter 4 we discussed the work of Stern, who has argued that we should be extremely risk averse over climate effects. Since future generations will face the costs of our decisions, we too should be uncertainty averse, and devote resources to the attempt at gauging these costs.⁴⁵⁹ One of the problems with dealing with climate change is that it concerns decision making in what are known as “large worlds.” Models of decision making work well in “small worlds” where probabilities can be estimated. Chilichilnisky (2009, 2010a,b) provides the beginning of a theory of decision-making in such “large worlds” involving uncertain, potentially disastrous “black swan” events.⁴⁶⁰ In our opinion, uncertainty about the future resides in the possibility that the dynamic systems that will determine our future are, in fact, *chaotic*.

From the time of Newton to Laplace, the dominant notion in science was *determinism*. In the developing social sciences and economics, statistics provided a way of interpreting and controlling events. But the efforts to extend the simple Newtonian model of celestial mechanics by Poincaré in the late nineteenth century showed that apparently deterministic physical systems could be deeply chaotic or non-predictable.⁴⁶¹ An essentially mathematical theory that have been developed in the last decade or so is *complexity or chaos* theory, dealing with the essential non-deterministic properties of dynamic systems.⁴⁶² This theory is only a few years old but it already forces us to rethink habits of mind about how the world and society work.

One area where this theory has proved of use is in understanding the complex positive and negative feedback mechanisms that govern climate and its effect on human evolution. Chapter 4 suggested how celestial mechanisms to do the Earth’s orbit interact with geological processes on the planet to affect the CO₂ level. For example, the uplift of the Tibetan plateau has acted to remove CO₂ over the last 40 million years, inducing oscillations between glacial and interglacial periods. The current ice age, the Pliocene-Quaternary glaciation, started about 2.58 million years ago during the late Pliocene. The planet generally became drier during this ice age, and the ancestors of our species, *Homo habilis* (from 2.5 MYBP) and *Homo erectus* (from 1.8 MYBP), adapted to the new savanah conditions in Africa. Remains of *H. erectus* have been found in Java dating to 1.6 MYBP. Above, we mentioned the extensive literature on the evolution of these

be 22 cents, an 8% increase. An average motorist uses about 400 gallons/annum and so emits less than 4 tons of CO₂/ annum.

⁴⁵⁹See Coyle(2011) for example.

⁴⁶⁰In fact, Binmore (2009) argues that decision making in “large worlds” faces epistemic problems resulting from the Gödel-Turing Theorem mentioned in chapter 3.

⁴⁶¹See Mlodinow (2008) for a discussion of chaos and randomness and Thuan (2000) for a discussion of the applicability of the idea of chaos in scientific revolutions.

⁴⁶²See Prigogine (1997) for a philosophical discussion of the general ideas underlying this theory, and Beinbocker (2006) for a wide ranging application of some of these ideas to economics.

early hominids. It has been argued that *Homo erectus* began to eat meat, and used fire, thus increasing the energy available to become an efficient and cooperative predator.⁴⁶³

Mitochondrial analysis from modern humans suggests a common ancestor in Africa about 200KYBP⁴⁶⁴ Equipped with language, a system of moral values, associated with cooperation, and a technology of increasingly sophisticated tools, this early hunter gatherer spread throughout the planet. It is thought that there were two conduits out Africa, about 70KYBP, one from the Horn of Africa and one across the Sinai peninsula into Asia.

As we discussed in Chapter 4, from about 90 to 10 KYBP, climate became highly unstable. Without our ancestors' braininess, language and culture, the uncertainty induced by climatic chaos could have driven *Homo sapiens* to extinction. Indeed, it has been argued that an eruption in Sumatra about 70KYBP induced an instant ice age and almost killed off all *H.sapiens*. It may well have finished off *H. erectus*.⁴⁶⁵ As observed in Chapter 2, the human population grew to a figure between 250,000 and 500,00 in 62KYBP, slowly increasing to about 6 million in 12KYBP, at the end of the ice age.

Climatic amelioration at this beginning of the *Holocene* in 12KYBP meant warm, wet conditions over much of Eurasia allowing for the transformation of hunter gatherer society to agricultural communities in the Middle East.⁴⁶⁶ After the transition, human population increased to about 60 million in 3KYBP (the beginning of the bronze age) and then to about 240 million in 2KYBP. The change from hunter gatherer society to agriculture and "closed access society" was associated not only with a dramatic increase in population and "total economic product," but also in inequality, and the division of society into poorly fed peasants and military and technological elites. The induced Malthusian constraint meant that the "real wage" tended to decline except at catastrophic times when population crashed because of plague, as in the fourteenth century.⁴⁶⁷ Such crashes increase the real wage because of the reduction in the labor supply.⁴⁶⁸

From about 1600 our very braininess triggered a scientific explosion in the development of mathematical languages which allowed for the deeper analysis of the world and society. The beginnings of the agricultural and industrial revolutions in the United Kingdom and then the United States, while stimulating economic and population growth, also initially caused an increase in inequality.⁴⁶⁹ This was reversed from about 1860,

⁴⁶³Wrangham (2009)

⁴⁶⁴Cann et al (1987). As before, we use KYBP to mean thousand years before the present.

⁴⁶⁵Such a catastrophic event would cause a bottleneck in the development of *H.sapiens*, and may have induced a sudden and very rapid transformation in the evolutionary path.

Fagan (2010) argues that this event almost wiped out homo sapiens, leaving maybe 20,000 members. This "bottleneck" induced intense pressure on the remnants, inducing the kind of group competition between small bands as discussed in Richerson and Boyd (2005), and resulting in the cultural co-evolution of language and co-operative behavior.

⁴⁶⁶see Chapter 2.

⁴⁶⁷See Chapter 2.

⁴⁶⁸Fischer (1999).

⁴⁶⁹For Britain, Maddison (2007) estimates that GDP/capita grew from \$1400 in 1700 to \$1750 in 1820, measured in 1990 international Geary Khanis (GK) dollars. The growth over the long period from 1086 to

as a result in a change in the balance between capital and labor during the late nineteenth and early twentieth centuries. In 1860, GDP/capita in both the UK and the US was about \$2800, rising in parallel to about \$5500 by 1914, and staying roughly constant during the times of turmoil until the 1930's.⁴⁷⁰ After World War II, GDP/capita started to rise rapidly from \$9500 in 1950 to \$30K by 2003 in the US, and from \$7K to \$21K in the UK.⁴⁷¹ Until about 1970, this pattern of growth seems to have lessened the degree of inequality in the developed economies.⁴⁷²

We have suggested that the period from 1950 to the onset of the recent recession can be seen as an economic holocene, but one that we have in a sense wasted by extravagance, for which we now have to pay. We may see the previous long periods of growth in these two periods from 1860 to 1914 and from 1950 until the recession as *economic and political holocenes*.

Maddison estimates that world population grew from a billion in 1820 to about 1.8 billion in 1914. For this most recent period from 1950, world population grew from 2.5 billion to 6.8 billion. The population growth rate increased from about 1.5% in 1950 to over 2% in 1971, and has gradually fallen to 1.1% at present. This process of technological and population growth has induced a number of changes in the world political economy.

First, technological development has shifted the balance of economic power both within developed economies and between the developed and less developed economies. Second, the dramatic increase in the amount of global capital to about \$200 trillion (about three times world GDP) has meant that nation states have much less control over economic effects of globalization.⁴⁷³ Third, inequality within the developed polities has tended to increase from about 1970, especially because of the premium put on technological skill and the change in the age distribution of the population.⁴⁷⁴ This has been exacerbated by the transfer of manufacturing comparative advantage from developed to less developed countries, particularly China and India.

As commented on above, these global changes have made political economic conflict much more difficult to resolve, and have suggested similarities between the present and the end of the last holocene in 1914. It is unlikely that we face anything like World War I, but it does now seem that the human world is much more complex than implied by the various social theories that were developed to facilitate growth in the past. It is still unclear what triggered the transition to open access society after 1700, to be followed by the disorder of the interwar period and then the astonishing changes after

1700 had only been about 0.3%.

However, as noted in Chapter 2, Clark (2007) estimates the real wage of building workers in 1700 and 1820 to be identical. This implies inequality increased.

⁴⁷⁰The estimates by Rourke and Williamson (1999) suggest that inequality in the US increased from 1890 to after World War I.

⁴⁷¹These are the estimates by Maddison (2007), measured in 1990 international Geary Khanis dollars.

⁴⁷²Reich (2007) notes that the richest 1% received about 20% of income in 1927 but only 10% in 1970.

⁴⁷³Shapiro (2008).

⁴⁷⁴In the US for example, the real median income, according to the US census was about \$50K in 2009, almost the same at \$45K in 1974.

1950.

13.2.1 The future

As we have discussed in this chapter, the United States currently faces a number of severe political economic quandaries. First is the economic quandary of debt. From 1993 to 2001, the US public debt to GDP ratio fell from 49% to 33% but has since risen to about 100%. Entitlements, due to the aging “baby boom generation” will, in all likelihood, increase this ratio even more. The transformation to the global economy coupled with the internet revolution has changed the international structure of comparative advantage and has had a dramatic effect on employment possibilities and on the income and wealth distribution. China, India and Brazil are growing rapidly, and China’s propensity to save, coupled with its manipulated currency has contributed to the US current account deficit, and has facilitated the extraordinary level US public debt. The “Great Recession” of 2008-2011 was caused by a degree of market irrationality that was induced, in the US at least, by the removal of regulation on the derivatives market in 1999. This pressure for untrammelled market freedom was due to the degree of activist power exercised by the financial sector, and the extent of this power has made it very difficult to deal with the continuing crisis. The resulting uncertainties have induced violent swings in global stock markets. In the background is the fear of the effects of global warming or “weirding” and concerns about how to deal with the US appetite for oil.⁴⁷⁵

Wise government should be able to address these quandaries. Madison’s logic in Federalist X (Madison [1787] 1999) was that a Republic could exhibit a “probability of a fit choice”, suggesting that voters would make their choices on the basis of judgements rather than simply interests.

This book has been titled *Leadership or Chaos* since we depend on strong leadership to guide our choices over how to create a better world.

⁴⁷⁵Too many books to name have addressed these quandaries, but recent works include Friedman and Mandelbaum (2011), Milanovic (2010), Rachman (2011), Lessig (2011) and Alpert, Hockett and Roubini (2011).

Chapter 14

References

References and Further Reading

- Abramovitz A. 2011. *The Disappearing Center*. New Haven: Yale University Press.
- Abramson P., J.Aldrich, and D. Rohde. 2007. *Change and Continuity in the 2004 and 2006 Elections*. New York: Congressional Quarterly Press.
- Abramson P., J.Aldrich, and D. Rohde. 2011. *Change and Continuity in the 2008 and 2010 Elections*. New York: Congressional Quarterly Press.
- Acemoglu, D. 2003. "Why not a Political Coase Theorem? Social Conflict, Commitment, and Politics." *Journal of Comparative Economics*, 31: 620-652.
- Acemoglu, D., 2006. "A Simple Model of Inefficient Institutions." *Scandinavian Journal of Economics*. 108: 515-546.
- Acemoglu, D., 2008. "Oligarchic versus Democratic Societies." *Journal of the European Economic Association* 6: 1-44.
- Acemoglu, D., Johnson, S. 2005. "Unbundling Institutions." *Journal of Political Economy*. 113: 949-995.
- Acemoglu, D., and J.Robinson. 2000. "Why Did the West Extend the Franchise? Growth, Inequality and Democracy in Historical Perspective." *Quarterly Journal of Economics*. 115:1167-1199.
- Acemoglu, D., and J.Robinson. 2001. "A Theory of Political Transitions." *American Economic Review* 91: 938-963.
- Acemoglu, D., and J. Robinson. 2006a. *Economic Origins of Dictatorship and Democracy*. Cambridge: Cambridge University Press.
- Acemoglu, D., and J. Robinson. 2006b. "Economic Backwardness in Political Perspective." *American Political Science Review*. 100: 115-131.
- Acemoglu, D., and J. Robinson. 2008. "Persistence of Power, Elites, and Institutions." *American Economic Review* 98: 267-293.
- Acemoglu, D., and J. Robinson. 2011. *Why Nations Fail*. In press.
- Acemoglu, D, S. Johnson and J.Robinson J .2001. "The Colonial Origins of Comparative Development." *American Economic Review* 91: 1369-1401.
- Acemoglu, D, S. Johnson and J.Robinson J .2002. "Reversal of Fortune." *Quarterly Journal of Economics* 118: 1231-1294.
- Acemoglu, D, S. Johnson and J.Robinson J .2004. "Institutions as the Fundamental Cause of Long-Run Growth." In P. Aghion and S. Durlauf [Eds.] *Handbook of Economic Growth*. Washington: NBER.
- Acemoglu, D, S. Johnson and J.Robinson J .2005. "The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth." *American Economic Review* 95: 546-579.

References

- Acemoglu, D., S.Johnson, J.Robinson and P.Yared. 2008. "Income and Democracy." *American Economic Review* 98: 808-842.
- Acemoglu, D., S.Johnson, J.Robinson and P.Yared. 2009. "Reevaluating the Modernization Hypothesis." *Journal of Monetary Economics* 56: 1043-1058.
- Acemoglu, D., D. Ticchi and A.Vindigni. 2010. "A Theory of Military Dictatorships." *American Economic Journal: Macroeconomics* 2:1-42.
- Acemoglu, D., D. Ticchi and A.Vindigni. 2011 "Emergence and Persistence of Inefficient States." *Journal of the European Economic Association* 9: 177-208.
- Adair, Douglass G. 1974. *Fame and the Founding Fathers*. New York: Norton.
- Adair, Douglass G. 2000. *The Intellectual Origins of Jeffersonian Democracy*. Lanham, MD: Lexington Books.
- Adams, J. 1999a. "Multiparty Spatial Competition with Probabilistic Voting." *Public Choice* 99:259-274.
- Adams, J. 1999b. "Policy Divergence in Multicandidate Probabilistic Spatial Voting." *Public Choice* 100:103-122.
- Adams, J. 2001. *Party Competition and Responsible Party Government*. Ann Arbor: University of Michigan Press.
- Adams, J., M. Clark, L. Ezrow, G. Glasgow. 2006. "Are Niche Parties Fundamentally Different from Mainstream Parties? The Causes and the Electoral Consequences of Western European Parties' Policy Shifts, 1976-1998." *American Journal of Political Science* 50: 513-529.
- Adams, J., and S. Merrill III. 1999a. "Modelling Party Strategies and Policy Representation in Multiparty Elections: Why are Strategies so Extreme?" *American Journal of Political Science* 43:765-781.
- Adams, J., and S. Merrill III. 1999b. "Party Policy Equilibrium for Alternative Spatial Voting Models: An Application to the Norwegian Storting." *European Journal of Political Research* 36:235-255.
- Adams, J. and S.Merrill III. 2000. "Spatial Models of Candidate Competition and the 1988 French Presidential Election: Are Presidential Candidates Vote Maximizers?" *Journal of Politics* 62: 729-756.
- Adams, J., and S.Merrill III. 2001. "Computing Nash Equilibria in Probabilistic Multiparty Spatial Models with Non-policy Components." *Political Analysis* 9: 347-361.
- Adams, J., and S. Merrill III. 2002. "Centrifugal Incentives in Multi-Candidate Elections." *Journal of Theoretical Politics* 14: 275-300.
- Adams, J., and S. Merrill III. 2005. "Candidates' Policy Platforms and Election Outcomes: The Three Faces of Policy Representation." *European Journal of Political Research* 44: 899-918.
- Adams, J., and S. Merrill III. 2006. "Why Small, Centrist Third Parties Motivate Policy Divergence by Major Parties." *American Political Science Review* 100:403-417.
- Adams, J., and S.Merrill III. 2008."Candidate and Party Strategies in two-stage elections beginning with a Primary." *American Journal of Political Science* 52:344-359.
- Adams, J., and S. Merrill, III. 2009."Policy-Seeking Parties in a Parliamentary Democracy with Proportional Representation: A Valence-Uncertainty model" . *British Journal of Political Science*. 39:539-558.

References

- Adams, J., S. Merrill III., and B. Grofman. 2005. *A Unified Theory of Party Competition*. Cambridge: Cambridge University Press.
- Adams, J., S. Merrill III, B. Simas, and W. Stone. 2011. "When Candidates Value Good Government: A Spatial Model with Applications to Congressional Elections." *Journal of Politics* 73:17-30.
- Adams, J., and Z. Somer-Topsco. 2009. "Do Parties Adjust their Policies in Response to Rival Parties' Policy Shifts." *British Journal of Political Science* 39: 825-846.
- Akerlof, G.A. and R. J. Shiller. 2009. *Animal Spirits*. Princeton NJ.: Princeton University Press.
- Akerlof, G.A. and R. Kranton. 2010. *Identity Economics*. Princeton NJ.: Princeton University Press.
- Albornoz, F., S. Galiani, and D. Heymann. 2008. "Investment and Expropriations under Oligarchy and Democracy in a Heckscher-Ohlin World." SSRN Working paper.
- Aldrich, J. H. 1983a. "A Spatial Model with Party Activists: Implications for Electoral Dynamics." *Public Choice* 41:63–100.
- Aldrich, J. H. 1983b. "A Downsian Spatial Model with Party Activists." *American Political Science Review* 77:974–990.
- Aldrich, J. H. 1995. *Why Parties?* Chicago: Chicago University Press.
- Aldrich, J. H. 2011. *Why Parties? A Second Look*. Chicago: Chicago University Press.
- Aldrich, J. H., and M. McGinnis. 1989. "A Model of Party Constraints on Optimal Candidate Positions." *Mathematical and Computer Modelling* 12:437–450.
- Aldrich, J. H., G. J. Miller, C. W. Ostrom Jr., and D. Rohde. 1986. *American Government*. Boston: Houghton Mifflin.
- Aldous, R. 2006. *The Lion and the Unicorn*. New York: Norton.
- Alesina, A., 1998. The Political Economy of Macroeconomic Stabilizations and Income Inequality: Myths and Reality. In: V.Tanzi, K.-Y.Chu (Eds.). *Income Distribution and High-Quality Growth*. Cambridge, MA: MIT Press.
- Alesina, A. and H. Rosenthal (1989). Partisan Cycles in Congressional Elections and the Macroeconomy. *American Political Science Review* 83: 373-398.
- Alesina, A., S.Ozler, N. Roubini and P.Swagel. 1996. "Political Instability and Economic Growth." *Journal of Economic Growth* 1: 189– 211.
- Alesina, A., J. Londregan and H. Rosenthal (1993) A Model of the Political Economy of the United States. *American Political Science Review* 87: 12-33.
- Alesina, A., Rodrik, D. 1994. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109: 465–490.
- Allen, R. 1988. "The Price of Freehold Land and the Interest Rate in the Seventeenth and Eighteenth Centuries." *The Economic History Review*. 41:33–50.
- Allen, R. 2001. "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War." *Explorations in Economic History* 38: 428.
- Allen, R. 2005. "Real Wages in Europe and Asia: A First Look at the Long-Term Patterns." In R. Allen, T. Bengtsson and M. Dribe {Eds.} *Living Standards in the Past: New Perspectives on Well Being in Asia and Europe*. Oxford: Oxford University Press.

References

- Allen, R. 2011. "Agricultural Productivity and Rural Productivity and Rural Incomes in England and the Yangtze Delta circa 1620-1820." *Economic History Review* 62: 525-550.
- Alpert, D., R. Hockett and N. Roubini .2011. *The Way Forward*. The New America Foundation. (www.newamerica.net).
- Alt, J. 1984. "Dealignment and the Dynamics of Partisanship in Britain." In P. Beck, R. Dalton and S. Flanagan [Eds.]. *Electoral Change in Advanced Industrial Societies*. Princeton, NJ: Princeton University Press.
- Alvarez, L., W.Alvarez, F.Asaro, and H.Michael. 1980. "Extraterrestrial Cause of the Cretaceous-Tertiary Extinction." *Science* 208 : 1094-1108.
- Alvarez, M., and J. Nagler. 1998. "When Politics and Models Collide: Estimating Models of Multi-Candidate Elections." *American Journal of Political Science* 42:55–96.
- Alvarez, R. M., and J. Nagler. 2000. "A New Approach for Modeling Strategic Voting in Multi-party Elections." *British Journal of Political Science*. 30:57–75.
- Alvarez, M., J. Nagler, and S. Bowler. 2000. "Issues, Economics, and the Dynamics of Multiparty Elections: The British 1987 General Election." *American Political Science Review* 94:131–150.
- American National Election Studies. 2000, 2004, 2008.*
- Anable, D.. 2006. "The Role of Georgia's Media—and Western Aid—in the Rose Revolution ." *The Harvard International Journal of Press/Politics*. 11: 7-43.
- Ansolabehere, S., and J. Snyder. 2000. "Valence Politics and Equilibrium in Spatial Election Models." *Public Choice*. 103:327–336.
- Ansolabehere, S, J.M. de Figueiredo and J. Snyder. 2003. "Why is there so little Money in U.S.Politics?" *Journal of Economic Perspectives*. 17: 105-130.
- Ansolabehere, S, J.Snyder and J. Rodden, J. 2006. "The Strength of Issues: Using Multiple Measures to Gauge Preference Stability, Ideological Constraint, and Issue Voting." *American Political Science Review* 102: 215–232.
- Anthony, D. W. 2007. *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World*. Princeton, NJ: Princeton University Press.
- Appleby, J. 2010. *The Relentless Revolution*. New York: Norton.
- Aragones, E., and T. Palfrey. 2002. "Mixed Equilibrium in a Downsian Model with a Favored Candidate." *Journal of Economic Theory* 103:131–161.
- Aragones, E., and T. Palfrey. 2005. "Spatial Competition Between Two Candidates of Different Quality: The Effects of Candidate Ideology and Private Information." In D. Austen-Smith and J. Duggan [Eds.]. *Social Choice and Strategic Decisions*. Heidelberg: Springer.
- Argimon, I, Gonzalez-Paramo JM, Alegre JR (1995) Does public investment crowd out private investment? Evidence from a panel of 14 OECD countries. " *Banco de España documento de trabajo* 9523.
- Arian, A., and M. Shamir. 1990. *The Election in Israel: 1988*. Albany: SUNY Press.
- Arian, A., and M. Shamir. 1995. *The Election in Israel: 1992*. Albany: SUNY Press.
- Arian, A., and M. Shamir. 1999. *The Election in Israel: 1996*. Albany: SUNY Press.
- Arnol'd, V. 1963. "Small Denominators and Problems of Stability of Motion in Classical and Celestial Mechanics. " *Russian Mathematical Surveys* 18: 85-191.

References

- Aron, L. 2007. *Russia's Revolution*. Washington D.C.: AEI Press.
- Arrow, K. J. 1950. "A Difficulty in the Concept of Social Welfare." *Journal of Political Economy* 58:328–46.
- Arrow, K. J. 1951. *Social Choice and Individual Values*. New Haven: Yale University Press.
- Arrow, K. J. 1959. "Rational Choice Functions and Orderings." *Economica* 26:121–127.
- Arrow, K. J. 1969. "Tullock and an Existence Theorem." *Public Choice* 6:105–111.
- Arrow, K. 1986. "Rationality of Self and of Others in an Economic System." *Journal of Business* S59: S385–90.
- Arrow, K. 1988. "Workshop on the Economy as an Evolving Complex System: Summary." In P. Anderson, K. Arrow and D. Pines [Eds.]. *The Economy as an Evolving Complex System*. Reading, MA: Addison-Wesley.
- Arrow, K., and G. Debreu. 1954. "Existence of an Equilibrium for a Competitive Economy." *Econometrica* 22:265–90.
- Arrow K.J. and F.Hahn. 1971. *General Competitive Analysis*. San Francisco: Holden Day.
- Arthur, B. 1997. "Beyond Rational Expectations: Indeterminacy in Economic and Financial Markets." In J. N. Drobak and J. V. Nye [Eds.]. *Frontiers of the New Institutional Economics*. San Diego: Academic Press.
- Ashworth, S., and E. Bueno de Mesquita. 2009. "Elections with Platform and Valence Competition." *Games and Economic Behavior* 67: 191–216.
- Asmussen, N. 2010. "Polarized Protestants." Working paper: University of Rochester.
- Aumann, R. 1976. "Agreeing to Disagree." *Annals of Statistics* 4:1236–39.
- Aumann, R. and A. Bradenburger. 1995. "Epistemic Conditions for Nash Equilibrium." *Econometrica* 65:1161-1189.
- Austen-Smith, D., and J. S. Banks. 1988. "Elections, Coalitions and Legislative Outcomes." *American Political Science Review* 82:405–422.
- Austen-Smith, D., and J. S. Banks. 1990. "Stable Portfolio Allocations." *American Political Science Review* 84:891–906.
- Austen-Smith, D., and J. S. Banks. 1999. *Positive Political Theory I: Collective Preferences*. Ann Arbor: University of Michigan Press.
- Austen-Smith, D., and J. S. Banks. 2005. *Positive Political Theory II: Strategy and Structure*. Ann Arbor: University of Michigan Press.
- Austen-Smith, D., and J. R. Wright. 1992. "Competitive Lobbying for a Legislator's Vote." *Social Choice and Welfare* 19:229–257.
- Axelrod, R. 1970. *Conflict of Interest*. Chicago: Markham.
- Axelrod, R. 1984. *The Evolution of Cooperation*. New York: Basic Books.
- Bacevich, A.J. 2008. *The Limits of Power*. New York: Henry Holt.
- Bacevich, A.J. 2010. *Washington Rules*. New York: Metropolitan.
- Bacon, R., and W. Eltis. 1976. *Britain's Economic Problem: Too Few Products*. London: Macmillan.
- Badinter, E., and R. Badinter. 1988. *Condorcet: Un intellectuel en Politique*. Paris: Fayard.

References

- Baker, K. M. 1975. *Condorcet: From Natural Philosophy to Social Mathematics*. Chicago: University of Chicago Press.
- Baker, K. M. 2004. "On Condorcet's Sketch for a Historical Picture of the Progress of the Human Mind." *Daedalus* 133:56–82.
- Baker, S. 2006. *Ancient Rome*. London: BBC Books.
- Baldwin, R.E. 1989. "The Political Economy of Trade Policy." *Journal of Economic Perspectives* 4:119-135.
- Banks, J. S. 1990. "A Model of Electoral Competition with Incomplete Information." *Journal of Economic Theory* 50:309–325.
- Banks, J. S. 1995. "Singularity Theory and Core Existence in the Spatial Model." *Journal of Mathematical Economics* 24:523–536.
- Banks, J. S., and J. Duggan. 2000. "A Bargaining Model of Collective Choice." *American Political Science Review* 94:73–88.
- Banks, J. S., and J. Duggan. 2005. "The Theory of Probabilistic Voting in the Spatial Model of Elections." In D. Austen-Smith and J. Duggan [Eds.]. *Social Choice and Strategic Decisions*. Heidelberg: Springer.
- Banks, J. and R.K. Sundaram. 1993. "Adverse Selection and Moral Hazard in a Repeated Elections model. In: W.A.Barnett, M.J.Hinich and N. Schofield (Eds.). *Political Economy: Institutions, Competition and Representation*. Cambridge: Cambridge University Press.
- Banks, J., G. Bordes, and M. Le Breton. 1991. "Covering Relations, Closest Orderings and Hamiltonian Bypaths in Tournaments." *Social Choice and Welfare* 8:355–363.
- Banks, J., J. Duggan, and M. Le Breton. 2002. "Bounds for Mixed Strategy Equilibria and the Spatial Model of Elections" *Journal of Economic Theory* 103:88–105.
- Banks, J., J. Duggan, and M. Le Breton. 2006. "Social Choice and Electoral Competition in the General Spatial Model." *Journal of Economic Theory* 126:194–234.
- Barbera, R. 2009. *The Cost of Capitalism: Understanding Market Mayhem*. New York: McGraw Hill.
- Barnett, W., M. Hinich, and N. Schofield [Eds.]. 1993. *Political Economy: Institutions, Competition and Representation*. Cambridge: Cambridge University Press.
- Baron, D.P. 1994. "Electoral Competition with Informed and Uninformed Voters." *American Political Science Review*: 88: 33-47.
- Baron, D. P., and J. A. Ferejohn. 1987. "Bargaining and Agenda Formation in Legislatures." *American Economic Review* 77: 303-309.
- Baron, D. P., and J. A. Ferejohn. 1989. "Bargaining in Legislatures." *American Political Science Review* 83:1181–1206.
- Barrett R, Kuzawa C, McDade T, and Armelagos G .1998. "Emerging and Re-emerging Infectious Diseases: The Third Epidemiological Transition." *Annual Review of Anthropology* 27:247-271
- Bartels, L. 2008. *Unequal Democracy*. Princeton: Princeton University Press.
- Basinger, S. J., and T. Hartman. 2006. "Candidate Perception in a Presidential Election." Working paper: SUNY.
- Bass, J., and M. W. Thompson. 1998. *Ol' Strom: An Unauthorized Biography*. Atlanta: Longstreet Press.

References

- Bates, R., R. De Figueiredo, and B. Weingast. 1998 "The Politics of Interpretation, Rationality, Culture and Transition." *Politics and Society* 26:603–642.
- Bates, R. H. *et al.* 2003. *Political Instability Task Force Report (Phase IV Findings)*. McLean, VA: Science Applications International Corporation.
- Baumol, W. J. 1965. *Welfare Economics and the Theory of the State*. Cambridge, MA: Harvard University Press.
- Bayh E. 2010. "Why I am Leaving the Senate." *New York Times*. (February 21).
- Bawn K., F. Rosenbluth. 2005. "Short Versus Long Coalitions: Electoral Accountability and the Size of the Public Sector." *American Journal of Political Science* 50: 251-265
- Beard, C. 1913. *An Economic Interpretation of the Constitution of the United States*. New York: Macmillan.
- Beard, C. 1915. *Economic Consequences of Jeffersonian Democracy*. New York: Macmillan.
- Beck, N. 1982. "Does There Exist a Political Business Cycle: A Box-Tiao Analysis?" *Public Choice* 38:205–209.
- Becker, G. S. 1983. "A Theory of Competition Among Pressure Groups for Political Influence." *The Quarterly Journal of Economics*. 98:371-400.
- Beer, S. H. 1982. *Britain Against Itself*. London: Faber and Faber.
- Beer, S. H. 1993. *To Make a Nation*. Cambridge, MA: Harvard University Press.
- Beinhocker, E.D. 2006. *The Origin of Wealth*. Boston, MA: Harvard Business School Press.
- Belich, J. 2009. *Replenishing the Earth: The Settler Revolution 1783-1939*. Oxford: Oxford University Press.
- Benoit, K, and M. Laver. 2006. *Party Policy in Modern Democracies*. London: Routledge.
- Bentham, J. 1931. *The Theory of Legislation* (ed. C. K. Ogden). London: Routledge & Kegan Paul.
- Benton, M. 2003. *When Life Nearly Died*. London: Hudson.
- Benton, T. 1856. *Thirty Years View*. New York: Appleton.
- Berelson, B. R., P. R. Lazarfield and W. N. McPhee. 1954. *Voting: A Study of Opinion Formation in a Presidential Campaign*. Chicago: Chicago University Press.
- Bergson, A. 1954. "On the Concept of Social Welfare." *Quarterly Journal of Economics* 68:233–253.
- Bernhardt, D, J. Duggan and F. Squintani, F. 2007. "Electoral Competition with Privately Informed Candidates." *Games and Economic Behavior* 58:1-29.
- Bernhardt, D, J. Duggan and F. Squintani, F. 2009a. "Private Polling and Voter Welfare" *Journal of Economic Theory* 144:2021-2056.
- Bernhardt, D., Duggan, J., Squintani, F. 2009b. "A Brief Survey of Rational Choice Models of Polling." In: Aragonés E. *et al.* (Eds.) *The Political Economy of Democracy*. Fundacion BBVA, Bilbao, Spain.
- Bernhardt, D, J. Duggan and F. Squintani, F. 2009c. "The Case for Responsible Parties." *American Political Science Review* 103:570-587
- Besley T. 2006. *Principled Agents?* Princeton NJ.: Princeton University Press

References

- Bianco, W. T., I. Jeliakov and I. Sened. 2004. "The Uncovered Set and the Limits of Legislative Action." *Political Analysis* 12:256–276.
- Bianco, W. T., and I. Sened. 2003. "Uncovering Evidence of Conditional Party Government: Reassessing Majority Party Influence in Congress and State Legislatures." *American Political Science Review* 99:361–371.
- Bianco, W. T., M. S. Lynch, G. Miller and I. Sened. 2006. "A Theory Waiting to be Rediscovered." *Journal of Politics* 68:838–851.
- Bicchieri, C. 1993. *Rationality and Coordination*. Cambridge: Cambridge University Press.
- Bicchieri, C. 2006. *The Grammar of Society*. Cambridge: Cambridge University Press.
- Bienen, H., and N. van de Walle. 1991. *Of Time and Power: Leadership Duration in the Modern World*. Stanford, CA: Stanford University Press.
- Bikchandani, S., D. Hirschleifer and I. Welsh. 1992. "Theory of Fads, Fashion, Custom and Cultural Change as Informational Cascade." *Journal of Political Economy* 100:992–1026.
- Bikhchandani, S., Hirshleifer, D. and Welch, I. 1998. Learning from the Behavior of Others: Conformity, Fads, and Informational Cascades. *Journal of Economic Perspectives* 12, 151-170.
- Binder, S. *Stalemate*. Washington, DC: Brookings.
- Binder, S. and S. Smith. *Politics or Principle: Filibustering in the US Senate*. Washington, DC: Brookings.
- Binmore, K. 1990. "Social Contract: Utilitarianism and Evolution." *Constitutional Political Economy* 1: 1-26.
- Binmore, K. 1992. *Fun and Games*. Lexington, MA: DC Heath.
- Binmore, K. 1993. "De-Bayesian Game Theory." In K. Binmore, A. Kirman and P. Toni [Eds.]. *Frontiers of Game Theory*. Cambridge, MA: MIT Press.
- Binmore, K. 1994. *Game Theory and the Social Contract: Playing Fair*. Cambridge, MA: MIT Press.
- Binmore, K. 1998. *Game Theory and the Social Contract: Just Playing*. Cambridge, MA: MIT Press.
- Binmore, K. 2005. *Natural Justice*. Oxford: Oxford University Press.
- Binmore, K. 2007a. *Does Game Theory Work?* Cambridge, MA: MIT Press.
- Binmore, K. 2007b. *Game Theory: A Very Short Introduction*. Oxford: Oxford University Press.
- Binmore, K. 2009. *Rational Decisions*. Princeton, NJ: Princeton University Press.
- Black, D. 1948a. "On the Rationale of Group Decision Making." *Journal of Political Economy* 56:23–34.
- Black, D. 1948b. "The Decisions of a Committee Using Special Majority." *Econometrica* 16:245–261.
- Black, D. 1958. *The Theory of Committees and Elections*. Cambridge: Cambridge University Press.
- Black, F. and M. Scholes 1973. "The Pricing of Options and Corporate Liabilities." *Journal of Political Economy* 81: 637–654.
- Blackaby, F. [Ed.]. 1979. *De-Industrialization*. London: Heinemann.
- Blackmore, S. 2000. *The Meme Machine*. Oxford: Oxford University Press.

References

- Blair, T. 2010. *A Journey: My Political Life*. New York: Knopf.
- Blais, A., P. Fournier, E. Gidengil, N. Nevitte, and J. Everitt. 2006. "Election 2006: How Big Were the Changes. . . Really?" Working paper: Université de Montréal.
- Block, F. L. 1975. *The Origins of International Economic Disorder*. Berkeley: University of California Press.
- Blondel, J. 1980. *World Leaders: Heads of Government in the Postwar Period*. London: Sage.
- Bloom, P. 2004. *Descartes' Baby: How the Science of Child Development explains what makes us Human*. New York: Basic Books.
- Bloom, P. 2010. *How Pleasure Works: The New Science of why we like what we like*. New York: Norton.
- Bobbitt, P. 2008. *Terror and Consent*. New York: Alfred Knopf.
- Boix C. 2003. *Democracy and Redistribution*. Cambridge: Cambridge University Press.
- Boix, C. 2006. "The Roots of Democracy: Equality, Inequality, and the Choice of Political Institutions." *Policy Review* 135: 3-15.
- Boldrin, M. and M. Woodford 1990. "Equilibrium Models Displaying Endogenous Fluctuations and Chaos: A Survey." *Journal of Monetary Economics* 25:189-222.
- Bordihn, M. R. 2005. *The Falcon of Palermo*. New York: Grove.
- Bowles, S. 2006. "Group Competition, Reproductive Leveling and the Evolution of Human Altruism." *Science* 314: 1569-1572.
- Bowles, S. et al. 2003. "The Co-evolution of Individual Behaviors and Social Institutions." *Journal of Theoretical Biology* 223: 135-147.
- Bowles, S. and J. Gintis. 1982. "The Crisis of Liberal Democratic Capitalism: The Case of the United States." *Politics and Society* 11: 51-1193.
- Boyd, J. and Richerson, P.J. 2005. *The Origin and Evolution of Culture*. Oxford: Oxford University Press.
- Brader, T. A. and J.A. Tucker. 2001. "The Emergence of Mass Partisanship in Russia, 1993-1996." *American Journal of Political Science* 45: 69-83.
- Brader, T. A. and J.A. Tucker. 2007. "Reflective and Unreflective Partisans? Experimental Evidence on the Links between Information, Opinion, and Party Identification." Working paper: NYU.
- Brady, D.W. 1988. *Critical Elections and Congressional Policy Making*. Stanford: Stanford University Press.
- Brady, D.W. and C. Volden. 2005. *Revolving Gridlock: Politics and Policy from Jimmy Carter to George W. Bush*. Denver CO: Westview.
- Brambilla, I., S. Galiani, and G. Porto. 2009. "50 Years of Solitude: Argentina Trade Policies in the 20th Century." Working paper: Washington University in Saint Louis.
- Branch, T. 1988. *Parting the Waters*. New York: Simon & Schuster.
- Branch, T. 1998. *Pillar of Fire*. New York: Simon and Schuster.
- Branch, T. 2006. *At Canaan's Edge*. New York: Simon and Schuster.
- Bratton, M., and N. van de Walle. 1994. Neo-patrimonial Regimes and Political Transitions in Africa. *World Politics* 46: 453-489.

References

- Brawley, M.R. 1998. *Turning Points*. Orchard Park, NY: Broadview.
- Brewer, J. 1976. *Party Ideology and Popular Politics at the Accession of George III*. Cambridge: Cambridge University Press.
- Brewer, J. 1988. *The Sinews of Power*. Cambridge, MA: Harvard University Press.
- British Election Study. 1992. *National Cross-Section Survey Dataset*. University of Essex: ESRC Data Archive.
- British Election Study. 1997. *National Cross-Section Survey Dataset*. University of Essex: ESRC Data Archive.
- British Election Study. 2005. *National Cross-Section Survey Dataset*. University of Essex: ESRC Data Archive.
- British Election Study. 2010. *National Cross-Section Survey Dataset*. University of Essex: ESRC Data Archive.
- Brittan, S. 1978. "Inflation and Democracy." In F. Hirsch and J. H. Goldthorpe [Eds.]. *The Political Economy of Inflation*. London: Martin Robertson.
- Broecker, W.S. 1985. *How to Build a Habitable Planet*. Palisades, NY: Eldigio Press.
- Broecker, W.S. 1997. "Thermohaline Circulation." *Science* 278 (1997): 1582-1588.
- Broecker, W.S. 2010. *The Great Ocean Conveyor*. Princeton: Princeton University Press.
- Broers, L. 2005. "After the 'Revolution': Civil Society and the Challenges of Consolidating Democracy in Georgia." *Central Asian Survey* 24: 333-350.
- Browne, E., and M. Franklin. 1973. "Aspects of Coalition Payoffs in European Parliamentary Democracies." *American Political Science Review* 67:453-469.
- Buchanan, J. 1960. *The Works*. In J. Moore [Ed.]. New York: Antiquarian Press.
- Buchan, J. 2003. *Crowded with Genius: The Scottish Enlightenment*. New York: Harper.
- Buchanan, P. 1998. *The Great Betrayal: How American Sovereignty and Social Justice are Being Sacrificed to the Gods of the Global Economy*. Boston: Little, Brown and Co.
- Buchanan, P. 1999. *A Republic, Not an Empire*. Washington, D.C.: Regnery.
- Buchanan, P. 2006. *State of Emergency*. New York: St.Martin's Press.
- Buchanan, J. M., and R. E. Wagner. 1977. *Democracy in Deficit: The Political Legacy of Lord Keynes*. New York: Academic Press.
- Budge, I., D. Robertson, and D.J. Hearl. (Eds.) 1987. *Ideology, Strategy, and Party Change: Spatial Analyses of Post-War Election Programmes in 19 Democracies*. Cambridge: Cambridge University Press.
- Budge, I., H.-D.Klingemann, A.Volkens, J.Bara and E.Tannenbaum. (Eds.) 2001. *Mapping Policy Preferences-Estimates for Parties, Electors, and Governments 1945-1998*. Oxford: Oxford University Press.
- Bueno de Mesquita, B., J. D. Morrow, R. Siverson, and A. Smith. 2001. "Political Incentives and Political Institutions: When Bad Policy is Good Politics." Paper presented to conference on Preferences, Choice and Uncertainty: Analyzing Choice in Political and Social Settings at UC.Davis, May.
- Bueno de Mesquita, B., J. D. Morrow, R. Siverson, and A. Smith. 2002. "Political Institutions, Policy Choice and the Survival of Leaders." *British Journal of Political Science* 32:559-590.

References

- Bueno de Mesquita, B., J. D. Morrow, R. Siverson, and A. Smith. 2003. *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- Bunce, V. 2000. "Comparative Democratization." *Comparative Political Studies* 33: 703-734.
- Bunce, V. J., and S. L. Wolchik. 2006a. "Youth and Electoral Revolutions in Slovakia, Serbia, and Georgia." *SAIS Review* 26(2): 55-65.
- Bunce, V. J., and S. L. Wolchik, 2006b. "Favorable Conditions and Electoral Revolutions." *Journal of Democracy* 17(4): 5-18.
- Bunce, V. J., and S. L. Wolchik. 2009. "Getting Real About 'Real Causes'." *Journal of Democracy* 20(1): 69-73.
- Bunce, V. and Wolchik, S. 2010. "The Regional Tradition." In Bunce, V. and Wolchik, S. [Eds.] *Democracy and Authoritarianism in the Post Communist World*. Cambridge: Cambridge University Press.
- Bunch, W. 2010. *Backlash*. New York: Harper.
<<http://www.philly.com/philly/blogs/attytood/TheBacklashendnotes.html>>
- Burden, B. C. 1997. "Deterministic and Probabilistic Voting Models." *American Journal of Political Science* 41:1150-1169.
- Burnham, W. 1970. *Critical Elections and the Mainsprings of American Politics*. New York: Norton.
- Burns, 1994. *Barbarians within the Gates of Rome*. Bloomington: Indiana University Press.
- Burton, J. 1978. "Keynes' Legacy to Great Britain: Folly in a Great Kingdom." In J. M. Buchanan [Ed.]. *The Consequences of Mr. Keynes*. London: Institute of Economic Affairs.
- Burt, S. 1992.. *Virtue Transformed*. Cambridge: Cambridge University Press.
- Butler, D., and D. Stokes 1976. "Endogenous Government Behavior: Wagner's Law or Gotteredammerung?" In S. T. Cook and P. M. Jackson [Eds.]. *Current Issues in Fiscal Policy*. Oxford: Oxford University Press.
- Cabrera, E. and M. Murillo 2004. "The 1993 Argentine Election." *Electoral Studies* 13:150-156.
- Calvert, R. L. 1985. "Robustness of the Multidimensional Voting Model: Candidates, Motivations, Uncertainty and Convergence." *American Journal of Political Science* 29:69-85.
- Calvin, W. 1991. *The Ascent of Mind*. New York: Bantam.
- Calvin, W. 2006. *A Brain for All Seasons: Human Evolution and Abrupt Climate Change*. Chicago: Chicago University Press.
- Calvin, W. 2008. *Global Fever: How to Treat Climate Change*. Chicago: Chicago University Press.
- Calvo, E. and M. Murillo. 2004. "Who Delivers? Partisan Clients in the Argentine Electoral Market." *American Journal of Political Science* 48: 742- 757.
- Camerer, C. 1999. "Behavioral Economics: Reunifying Psychology and Economics." *Proceedings of the National Academy of Sciences of the United States of America*. 96:10575-10577.
- Camerer, C. 2003. *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton: Princeton University Press.
- Campbell, A., P. E. Converse, W. E. Miller, and D. E. Stokes. 1960. *The American Voter*. New York: Wiley.

References

- Cann, R.L. et al. 1987. "Mitochondrial DNA and Human Evolution." *Nature* 325, 31-36.
- Cantón, D. 1968. *Materiales para el estudio de la sociología política en la Argentina*. Buenos Aires: Unpublished.
- Cantón, D. and J. R. Jorrat. 2002. "Economic Evaluations, Partisanship, and Social Bases of Presidential Voting in Argentina, 1996 and 1999." *International Journal of Public Opinion* 14:417-427.
- Caplan, B. 2007. *The Myth of the Rational Voter*. Princeton, NJ: Princeton University Press.
- Carey, H.C. 2010 [1856]. *The Harmony of Interests*. New York: Kessinger.
- Carkoğlu A, M. Hinich. 2006. "A Spatial Analysis of Turkish Party Preferences." *Electoral Studies* 25: 369-392
- Carmines, E. G. 1991. "The Logic of Party Alignments." *Journal of Theoretical Politics* 3:65–80.
- Carmines, E. G., and J. A. Stimson. 1989. *Issue Evolution, Race and the Transformation of American Politics*. Princeton: Princeton University Press.
- Caro, R. A. 2002. *The Years of Lyndon Johnson: Master of the Senate*. New York: Knopf.
- Carothers, T. 2002. "The End of the Transition Paradigm." *Journal of Democracy* 13: 5-21.
- Carter, D. T. 2000. *The Politics of Rage: George Wallace and the Origins of the New Conservatism, and the Transformation of American Politics*. 2nd ed. Baton Rouge: Louisiana State University.
- Cartledge P 2004. *Alexander the Great*. Overlook Press: New York
- Cartledge P 2006. *Thermopylae*. Overlook Press: New York
- Cassidy, J. 2009. *How Markets Fail: The Logic of Economic Calamities*. New York: Farrar, Strauss and Giroux.
- Castaneda, J. 2006. "Latin America's Left Turn." *Foreign Affairs* 85: 28-43.
- Cavallo, D. 2004. "Argentina and the IMF during the Two Bush Administrations." *International Finance* 7: 1-14.
- Cavalli-Sforza, L. and M. Feldman. 1981. *Cultural Transmission and Evolution*. Princeton, NJ: Princeton University Press.
- Ceaser, J. W, and A. E. Busch. 2005. *Red over Blue: The 2004 Election and American Politics*. New York: Rowman and Littlefield.
- Ceaser, J. W., and D. Disalvo. 2004. "A New GOP?" *Public Interest*. 157:3–17.
- Charters, D. [Ed.]. 1994. *The Deadly Sin of Terrorism: Its Effect on Democracy and Civil Liberty in Six Countries*. Westport, CT: Greenwood Press.
- Chace, J. 2004. *1912: Wilson, Roosevelt, Taft and Debs*. New York: Simon and Schuster.
- Chauvet, L. and P. Collier. 2008. "Elections and Economic Policy in Developing Countries." Working Paper: University of Oxford.
- Cheterian, V.. 2008. Georgia's Rose Revolution: Change or Repetition? Tension between State-Building and Modernization Projects. *Nationalities Papers*. 36:689-712.
- Chichilnisky, G. 1996. "An Axiomatic Approach to Sustainable Development." *Social Choice and Welfare* 13: 231-257.
- Chichilnisky, G. 2009. "The Topology of Fear." *Journal of Mathematical Economics* 45: 807-816.

References

- Chichilnisky, G. 2010a. "The Foundations of Statistics with Black Swans." *Mathematical Social Science* 59: 184-192.
- Chichilnisky, G. 2010b. "The Foundations of Probability with Black Swans." *Journal of Probability and Statistics*. DOI 10.1155/838240.
- Choi, J.-K., and S. Bowles. 2007 "The Coevolution of Parochial Altruism and War." *Science* 318: 636-640.
- Chomsky, N. 1972. *Language and Mind*. New York: Harcourt.
- Chrystal, A., and J. Alt 1979. "Endogenous Government Behavior: Wagner's Law or Gotterdammerung?" In S. T. Cook and P. M. Jackson [Eds.]. *Current Issues in Fiscal Policy*. Oxford: Oxford University Press.
- Chua. A. 2003. *World On Fire*. New York: Random House.
- Chua. A. 2007. *Day of Empire*. New York: Random House.
- Clarke, G. 1995. "More Evidence on Income Distribution and Growth." *Journal of Development Economics* 47: 403-427.
- Clark, G. 1996. "The Political Foundations of Modern Economic Growth: England, 1540-1800." *Journal of Interdisciplinary History* 26:563-588.
- Clark, G. 2005. "The Condition of the Working Class in England, 1209-2004." *Journal of Political Economy* 113:1307-1340.
- Clark, G. 2007a. "What made Britannia Great? How much of the Rise of Britain to World Dominance by 1850 does the Industrial Revolution explain?" In K.O'Rourke and A.Taylor [Eds.]. *Comparative Economic History: Essays in Honor of Jeffrey Williamson*. Cambridge: MA: MIT Press.
- Clark, G. 2007b. *A Farewell to Alms*. Princeton, NJ: Princeton University Press.
- Clarke, H., M. Stewart, and P. Whiteley. 1995. "Prime Ministerial Approval and Governing Party Support: Rival Models Reconsidered." *British Journal of Political Science* 25:597-622.
- Clarke, H., M. Stewart, and P. Whiteley. 1997. "Tory Trends, Party Identification and the Dynamics of Conservative Support since 1992." *British Journal of Political Science* 26:299-318.
- Clarke, H. D., and M. Stewart. 1998. "The Decline of Parties in the Minds of Citizens." *Annual Review of Political Science* 1:357-378.
- Clarke, H., M. Stewart, and P. Whiteley. 1998. "New Models for New Labour: The Political Economy of Labour Support, January 1992-April 1997." *American Political Science Review* 92:559-575.
- Clarke, H.D., A.Kornberg, J. MacLeod, and T.J. Scotto. 2005. "Too Close to Call: Political Choice in Canada, 2004." *PS: Political Science and Politics* 38: 247-253.
- Clarke, H., D. Sanders, M. Stewart, and P. Whiteley. 2005. *Political Choice in Britain*. Oxford: Oxford University Press.
- Clarke, H., D. Sanders, M. Stewart, and P. Whiteley. 2006. "Taking the Bloom off New Labour's Rose: Party Choice and Voter Turnout in Britain." *Journal of Elections, Public Opinion, and Parties* 16:3-36.
- Clarke H.D., A.Kornberg A. and T.J.Scotto. 2009. *Making Political Choices*. Toronto: Toronto University Press.

References

- Clarke, H, D.Sanders, M. Stewart , and P.Whiteley.2009. *Performance Politics and the British voter*. Cambridge: Cambridge University Press.
- Clarke, H, A. Kornberg, T.J.Scotto, J.Reifler, D. Sanders , M. Stewart ,and P. Whiteley 2011. “Yes We Can! Valence Politics and Electoral Choice in America 2008.” *Electoral Studies* 30: 450-461.
- Clarke, H, T.J.Scotto, and A.Kornberg 2011. “Valence Politics and Economic Crisis: Electoral Choice in Canada 2008.” *Electoral Studies* 30: 438-449.
- Clarke P. 2008.*The Last Thousand Days of the British Empire: Churchill, Roosevelt, and the Birth of the Pax Americana*. London.: Bloomsbury.
- Cline, W. 2007. *Global Warming and Agriculture Impact Estimates by Country*. Washington DC: Peterson Institute.
- Clymer, A. 2002. “U.S. Attitudes Altered Little By Sept. 11, Pollsters Say.” *New York Times* (20 May).
- Coate, S. 2004. “Political Competition with Campaign Contributions and Informative Advertising.” *Journal of the European Economic Association* 2: 772-804.
- Cochran G. and G.Harpending. 2009. *The 10,000 year Explosion*. New York:Basic.
- Collier, P.2007. *The Bottom Billion* Oxford: Oxford University Press.
- Collier P. 2009. *Wars, Guns and Votes*. New York: Harper.
- Collier P. 2010. *The Plundered Planet*. Oxford: Oxford University Press.
- Collier P. and A. Hoeffler. 2005. “Coup Traps: Why Does Africa have so Many Coup d’états?” Working Paper: University of Oxford.
- Collier P. and A.Venables, 2010. “International Rules for Trade in Natural Resources.” *Journal of Globalization and Development* 1: article 1.
- Colomer, J. M., and R. Puglisi. 2005. “Cleavages, Issues and Parties: A Critical Overview of the Literature.” *European Political Science* 4:502–520.
- Colton, T. J., and H. H. Hale. 2008. “The Putin Vote: The Demand Side of Hybrid Regime Politics.” Working paper: Harvard University.
- Comin, D.,W. Easterly and E. Gong. 2011. “Was the Wealth of Nations Determined in 1000BC?” *American Economic Journal: Macroeconomics* 2: 65-97.
- Commager, H. S. 1977. *The Empire of Reason: How Europe Imagined and America Realized the Enlightenment*. Garden City, NJ: Doubleday.
- Condorcet, N. 1994 [1785]. *Essai sur l’application de l’analyse à la probabilité des décisions rendues à la pluralité des voix*. Paris: Imprimerie Royale. Translated in part in I. McLean and F. Hewitt, *Condorcet: Foundations of Social Choice and Political Theory*. Aldershot, UK: Edward Elgar.
- Condorcet, N. 1955 [1795]. *Esquisse d’un tableau historique des progrès de l’esprit humain: Sketch for an Historical Picture of the Progress of the Human Mind*. London: Weidenfeld.
- Constant, B.1988. *Political Writings*. Cambridge: Cambridge University Press.
- Coram, A. 2003. “The Rise and Fall of Support for Political Parties.” *Electoral Studies* :22: 603-616.
- Coram, A. 2010. “Resource Spending over time in Competitions for Electoral Support.” *Electoral Studies* :29: 497-508.

References

- Coser, L. 1956. *The Functions of Social Conflict*. Glencoe, IL: Free Press.
- Coughlin, P. 1992. *Probabilistic Voting Theory*. Cambridge: Cambridge University Press.
- Cox, G. 1984. "Non-Collegial Simple Games and the Nowhere Denseness of the Set of Preference Profiles Having a Core." *Social Choice and Welfare* 1:159-164.
- Cox, G. 1987. *The Efficient Secret*. Cambridge: Cambridge University Press.
- Cox, G. 1997. *Making Votes Count*. Cambridge: Cambridge University Press.
- Coyle, D. 2011. *The Economics of Enough*. Princeton, NJ: Princeton University Press.
- Crewe, I., B. Sarlvik, and J. Alt. 1977. "Partisan Dealignment in Britain 1964-1974." *British Journal of Political Science* 7:135-168.
- Crouch, C. 1985. "The Conditions for Trade Union Wage Restraint." In L. N. Lindbergh and C. S. Maier [Eds.]. *The Politics and Sociology of Global Inflation*. Washington: Brookings Institution.
- Critchlow, D.T. 2007. *The Conservative Conspiracy*. Cambridge, MA: Harvard University Press.
- Daalder, H. 1984. "In Search of the Center of European Party Systems." *American Political Science Review* 78:92-109.
- Dakhli, S., and J. Nye. 2004. "Tax Britannica: Nineteenth Century Tariffs and British National Income." *Public Choice* 121: 309-333.
- Dal Bo, E. 2007. "Bribing Voters." *American Journal of Political Science* 51: 789-803.
- Dal Bo, E., and P. Dal Bo. 2011. "Workers, Warriors and Criminals: Social Conflict in General Equilibrium." *Journal of the European Economic Association*: in press.
- Danforth, J. 2005. "In the Name of Politics." *New York Times*, March 30.
- Derbshire, J. D., and I. Derbshire. 1989. *Political Systems of the World*. Chambers, London.
- Darwin, C. 1982.[1871]. *The Descent of Man, and Selection in relation to Sex*. Princeton: Princeton University Press.
- Dawkins, R. 1976. *The Selfish Gene*. Oxford: Oxford University Press.
- Dawkins, R. 2008. *The God Illusion*. New York: Mariner.
- De Grouchy, S. 2008.[1798]. *Letters on Sympathy: A Critical Edition* (ed. K. Brown, letters trans. by J. E. McClellan III). Philadelphia: American Philosophical Society.
- De la Cruz, D. 2006. "Kean's Road to GOP Senate Not Complicated." *Associated Press*, April 24.
- De Swaan, A. 1973. *Coalition Theories and Cabinet Formation*. Amsterdam: Elsevier.
- De Waal, F. 1997. *Good Natured: The Origins of Right and Wrong in Humans and Other Animals*. Cambridge, MA: Harvard University Press.
- De Waal, F. 2006. *Primates and Philosophers: How Morality Evolved*. Princeton: Princeton University Press.
- De Vries, M. 1999. *Governing with your Closest Neighbor*. Nijmegen: Ipskamp.
- De Vries, C.E. and E.E. Edwards. 2009. "Taking Europe to its Extremes." *Party Politics*. 15:5-28.
- Deacon, T.W. 1997. *The Symbolic Species*. New York: Norton.
- Dennett, D. 1995. *Darwin's Dangerous Idea*. New York: Simon and Schuster.
- Dennett, D. 2003. *Freedom Evolves*. London: Penguin.

References

- Denzau, A., and D. C. North. 1994. "Shared Mental Models: Ideologies and Institutions." *Kyklos* 47:3–31.
- Descartes, R. [1637]. *Discourse on the Method of Rightly Conducting One's Reason and of Seeking Truth in the Sciences* (trans. J. Veitch). New York: Doubleday.
- Derman E (2007) *My life as a quant*. New York: Wiley.
- Deutscher, G. 2006. *The Unfolding of Language*. New York: Holt.
- Diamond J. 1997. *Guns, Germs and Steel*. New York:Norton.
- Diamond, J. 2005. *Collapse: How Societies Choose to Fail or Succeed*. London: Penguin.
- Diamond, L. 2008a. *The Spirit of Democracy*, New York: Times Books.
- Diamond, L. 2008b. "The Democratic Rollback:The Resurgence of the Predatory State." *Foreign Affairs*, March/April
- Diaz Alejandro, C.F. 1970. *Essays on the Economic History of the Argentine Republic*. New Haven: Yale University Press.
- Diermeier, D., and R. T. Stevenson. 1999. "Cabinet Survival and Competing Risks." *American Journal of Political Science* 43:1051–1068.
- Distin, K. 2010. *Cultural Evolution*. Cambridge: Cambridge University Press.
- Dixon, K., and N. Schofield. 2001. "The Election of Lincoln in 1860." *Homo Oeconomicus* 16: 49–67.
- Dodd, L. C. 1974. "Party Coalitions in Multiparty Parliaments: A Game Theoretic Analysis." *American Political Science Review* 68:1093–1117.
- Dodd, L. C. 1976. *Coalitions in Parliamentary Governments*. Princeton: Princeton University Press.
- Dominguez, J. 1998. "Free Politics and Free Markets in Latin America." *Journal of Democracy* 9: 70-84.
- Dominguez, J. and J.Mc Cann. 1996. *Democratizing Mexico: Public Opinion and Electoral Choices*. Baltimore: John Hopkins University Press.
- Dow, J. K. 2001. "A Comparative Spatial Analysis of Majoritarian and Proportional Elections." *Electoral Studies* 20:109–125.
- Dow J.K. 2011. "Party-System Extremism in Majoritarian and Proportional Electoral Systems." *British Journal of Political Science*: 41:341-361.
- Dow, J. K., and J. Endersby. 2004. "Multinomial Probit and Multinomial Logit: A Comparison of Choice Models for Voting Research." *Electoral Studies* 23:107–122.
- Downs, A. 1957. *An Economic Theory of Democracy*. New York: Harper and Row.
- Duggan, J. 2006. "Candidate Objectives and Electoral Equilibrium." In B. R. Weingast and D.A. Wittman (Eds.). *The Oxford Handbook of Political Economy*. Oxford: Oxford University Press.
- Duggan, J. and Fey, M. 2005. "Electoral Competition with Policy-Motivated Candidates ." *Games and Economic Behavior* 51(2): 490-522.
- Duggan J. and T.Kalandrakis. (2011) "A Newton Collocation Method for solving Dynamic Bargaining Games." *Social Choice and Welfare* 36: 611-641.
- Duverger, M. 1954. *Political Parties: Their Organization and Activity in the Modern State*. New York: Wiley.

References

- Duverger, M. 1984. "Which is the Best Electoral System?" In A. Lijphart and B. Grofman [Eds.]. *Choosing an Electoral System*. New York: Praeger.
- Dworkin R. 2010a. "The Devastating Decision." *New York Review of Books* 57(3):39.
- Dworkin R. 2010b. "The Supreme Court Decision that threatens US Democracy." *New York Review of Books* 57(8):63.
- Easterly, W. 2006. *The White Man's Burden*. New York: Penguin.
- Easterly, W. 2007. "Globalization, Poverty and All That: Factor Endowment versus Productivity Views." In A.Harrison [Ed.]. *Globalization and Poverty*. Chicago: Chicago University Press.
- Edsall, T. B. with M. Edsall. 1991. *Chain Reaction: The Impact of Race, Rights, and Taxes on American Politics*. New York: Norton.
- Edwards, P.N. 2010. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*. Cambridge, MA: MIT Press.
- Edwards S (2011) *Left Behind*. Chicago:University of Chicago Press.
- Egnal, M. 2009. *The Clash of Extremes: the Economic Origins of the Civil War*. New York: Farrar, Strauss and Giroux.
- Eldredge, N. and S. J.Gould. 1972. "Punctuated Equilibrium." In T.Schopf [Ed.]. *Models of Paleobiology*. New York: Norton.
- Elliot, J.H. 2006. *Empires of the Atlantic World*. New Haven: Yale University Press.
- Emmott, W. 2009. *Rivals: How the Power Struggle Between China, India, and Japan Will Shape Our Next Decade*. New York: Mariner.
- Enelow, J.M., and M. J. Hinich. 1982a. "Ideology, Issues, and the Spatial Theory of Elections." *American Political Science Review* 76:493–501.
- Enelow J.M. and M.J. Hinich. 1982b. "Nonspatial Candidate Characteristics and Electoral Competition." *Journal of Politics* 44: 115-131
- Enelow, J.M., and M. J. Hinich. 1984a. *The Spatial Theory of Voting*. Cambridge: Cambridge University Press.
- Enelow, J.M. and M.J. Hinich. 1984b. "Probabilistic Voting and the Importance of Centrist Ideologies in Democratic Elections." *Journal of Politics* 46: 459–478.
- Enelow, J., and M. J. Hinich. 1989a. "A General Probabilistic Spatial Theory of Elections." *Public Choice* 61: 101–114.
- Enelow, J.M., and M. J. Hinich. 1989b. "The Location of American Presidential Candidates." *Mathematical and Computer Modelling* 12:461–470.
- Enelow, J.M., and M. J. Hinich [Eds.]. 1990. *Advances in the Spatial Theory of Voting*. Cambridge: Cambridge University Press.
- Engerman, S.L., and K.L.Sokoloff. 1997. "Factor Endowments, Institutions , and the Differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States." In S.Harber [Ed.]. *How Latin America Fell Behind*. Stanford, CA: Stanford University Press.
- Engerman, S.L., and K.L.Sokoloff. 2002. "Factor Endowments, Inequality and Paths of Development among New World Economies." *Economia* 3:41-88.
- Epstein D., R. Bates , J. Goldstone, I. Kristensen and S.O'Halloran. 2006. "Democratic Transitions." *American Journal of Political Science* 50:551-568

References

- Erikson, R.S. and D.W. Romero. 1990 "Candidate Equilibrium and the Behavioral Model of the Vote." *American Political Science Review* 84: 1103-1126.
- Evans, A.B. Jr. 2008. *Power and Ideology: Vladimir Putin and the Russian Political System*. New York.
- Everitt, A. 2001. *Cicero*. New York: Random House.
- Everitt, A. 2006. *Augustus*. New York: Random House.
- Everitt, A. 2009. *Hadrian and the Triumph of Rome*. New York: Random House.
- Ezrow, L. 2010. *Linking Citizens and Parties*. Oxford: Oxford University Press.
- Ezrow L (2011) "Reply to Dow: Party Positions, Votes and the Mediating Role of Electoral Systems." *British Journal of Political Science* 41:448-452.
- Fagan, B. 1999. *Floods, Famines, and Emperors: El Nino and the Fate of Civilizations*. New York: Perseus.
- Fagan, B. 2001. *The Little Ice Age: How Climate Made History, 1300-1850*. New York: Perseus.
- Fagan, B. 2004. *The Long Summer: How Climate Changed Civilization*. New York: Perseus.
- Fagan, B. 2008. *The Great Warming: Climate Change and the Rise and Fall of Civilizations*. New York: Bloomsbury Press.
- Fagan B. 2011 *Cro-Magnon: How the Ice Age Gave Birth to the First Modern Humans*. New York: Bloomsbury Press.
- Fainsod, M. 1954. *How Russia is Ruled*. Cambridge: Harvard University Press.
- Feingold, M. 2004. *The Newtonian Moment: Isaac Newton and the Making of Modern Culture*. Oxford: Oxford University.
- Fantazzini D, Zakharov A. 2011 "Euclidean or city block? estimation of voter preferences in a multidimensional probabilistic voting model." Working paper: Moscow School of Economics.
- Ferejohn, J., 1986. "Incumbent Performance and Electoral Competition." *Public Choice* 50: 5-25.
- Ferguson, A. 1996.[1767] *An Essay on the History of Civil Society* (ed. F. Oz-Salzberger). Cambridge: Cambridge University Press.
- Ferguson, N. 1998. *The Pity of War*. London: Penguin Books.
- Ferguson, N. 2001. *The Cash Nexus: Money and Power in the Modern World, 1700-2000*. New York: Basic Books.
- Ferguson, N. 2002. *Empire: The Rise and Demise of the British World Order*. London: Penguin Books.
- Ferguson, N. 2003. "British Imperialism Revised." Working paper: Stern School of Business, New York University.
- Ferguson, N. 2004. *Colossus: The Price of America's Empire*. New York: Penguin Books.
- Ferguson, N. 2005. "The Unconscious Colossus." *Daedalus*, Spring:18-33.
- Ferguson, N. 2006. *The War of the Worlds*. New York: Penguin Books.
- Ferguson, N. 2008. *The Ascent of Money*. New York: Penguin.
- Ferguson, N. 2010. "Complexity and Collapse." *Foreign Affairs* 89:18-32.
- Ferguson, N. 2011. *Civilization*. London: Penguin.

References

- Ferris. 2010. *The Science of Liberty*. New York: Harper.
- Fidrmuk, J. 2000a. "Economics of Voting in Post-Communist Countries." *Electoral Studies* 19: 199–217.
- Fidrmuk, J. 2000b. "Political Support for Reforms: Economics of Voting in Transition Countries." *European Economic Review* 44: 1491–1513.
- Filippov, M., P. Ordeshook and O. Shvetsova. 2004. *Designing Federalism*. Cambridge: Cambridge University Press.
- Fiorina, M. 1981. "Short and Long-Term Effects of Economic Conditions in Individual Voting Decisions." In D. A. Hibbs and H. Fassbender [Eds.]. *Contemporary Political Economy*. Amsterdam: North-Holland.
- Fiorina M., S.J. Abrams and J.C.Pope. 2005. *Culture War?: The Myth of a Polarized America*. New York: Pearson Longman.
- Fiorina M., and S.J. Abrams 2009. *Disconnect: The Breakdown of Representation in American Politics*. Norman, OK: University of Oklahoma Press.
- Fiorina, M. and C. Plott. 1978. "Committee Decisions Under Majority Rule: An Experimental Study." *American Political Science Review* 72:125–156.
- Fischer, D.H. 1999. *The Great Wave: Price Revolutions and the Rhythm of History*. Oxford: Oxford University Press.
- Fishman, T. 2006. *China, Inc.: How the Rise of the Next Superpower Challenges America and the World*. New York: Scribner.
- Fishman, T. 2010. *Shock of Grey*. New York: Scribner.
- Fjelde, H. 2010. "Generals, Dictators and Kings." *Conflict Management and Peace Research* 27: 195-218.
- Flannery T. 2005. *The Weather Makers*. New York: Atlantic Monthly Press.
- Flannery T. 2011 *Here on Earth*. New York: Atlantic Monthly Press.
- Floud, R., and D. McCloskey, [Eds.]. 1994. *The Economic History of Britain since 1700, Volume I: 1700-1860*. Cambridge: Cambridge University Press.
- Foster, D. P, and Young, H. P. 2001. "On the Impossibility of Predicting the Behavior of Rational Agents." *Proceedings of the National Academy of Sciences of the USA* 2001: 12848-12853.
- Fox R.L.1973. *Alexander the Great*. London: Allen Lane.
- Fox, J. 2009. *The Myth of the Rational Market*. New York: Harper.
- Frank, S.A. 1995. "George Price's Contributions to Evolutionary Genetics." *Journal of Theoretical Biology* 175: 373-388.
- Frank, T. 2004. *What's the Matter with Kansas? How Conservatives Won the Heart of America*. New York: Henry Holt.
- Fudenberg, D. and J.Tirole. 1992. *Game Theory*. Cambridge, MA: MIT Press.
- Free Internet Press*. 2006. "Senate Immigration Deal Faltering." April 7.
- Freeman, C. 1979. "Technical Innovation and British Trade Performance." In F. Blackaby [Ed.]. *De-Industrialization*. London: Heinemann.
- Frey, B. S. 1978. *Modern Political Economy*. New York: Halstead Press.
- Friedman, G. 2009. *The Next 100 years*. New York: Doubleday.

References

- Friedman, M. 1953. *Essays in Positive Economics*. Chicago: Chicago University Press.
- Friedman T. and Mandelbaum M. (2011) *That Used to be Us*. New York: Farrar, Straus and Giroux.
- Frum, D. 1994. *Dead Right*. New York: Basic Books.
- Fukuyama, F. 1992. *The End of History and the Last Man*. New York: The Free Press.
- Galetovic, A. and R. Sanhueza. 2000. Citizens, Autocrats, and Plotters: A Model and New Evidence on Coups d'état. *Economics and Politics* 12: 183–204.
- Galiani, S., D. Heymann, C. Dabus, and F. Thome. 2008. "On the Emergence of Public Education in Land-Rich Economies." *Journal of Development Economics*, 86:434-446.
- Galiani, S., D. Heymann, and N. Magud, 2009. "On the Distributive Effects of Terms of Trade Shocks: the Role of Non-Tradable Goods." Working paper: Washington University in Saint Louis.
- Galiani, S. and P. Somaini, 2009. "The Labyrinth of Solitude: Import Substitution and Path Dependence in the Recent Economic History of Argentina." Working paper: Washington University in Saint Louis.
- Galiani S., N. Schofield, and G. Torrens. 2011. "Non-Tradeable Goods, Protectionism and Political Divergence." *Journal of Public Economic Theory*: in press.
- Galiani S., G. Torrens. 2011. "Autocracy, Democracy and Trade Policy." Working paper: Washington University in Saint Louis.
- Galilei, G., 1992. [1610]. *The Sidereal Messenger*. (trans. and ed. A. Van Helden). Chicago: University of Chicago Press.
- Galilei, G., 1967., [1632]. *Dialogue Concerning the Two Chief World Systems, Ptolemaic and Copernican* (trans. and ed. S. Drake). Berkeley: University of California Press.
- Galilei, G., 1974. [1638]. *Two New Sciences* (trans. and ed. S. Drake). Madison: University of Wisconsin Press.
- Galilei, G., 2008. *The Essential Galileo* (trans. and ed. M.A. Finocchiaro). Indianapolis, IN: Hackett.
- Galison, P. 2003. *Einstein's Clocks, Poincare's Maps*. New York: Norton..
- Gallego, M. 1996. "Interest Groups, Government Turnover and Political Regimes: An Econometric Analysis." *Canadian Journal of Economics* 29:S633–S638.
- Gallego, M. 1998. "Economic Performance and Leadership Accountability: An Econometric Analysis." *Economics and Politics* 10:249–287.
- Gallego, M., and C. Pitchik. 2004. "An Economic Theory of Leadership Turnover." *Journal of Public Economics* 88:2361–2382.
- Gandhi, J. and A. Przeworski. 2007. "Authoritarian Institutions and the Survival of Autocrats." *Comparative Political Studies* 40: 1279-1301.
- Gandhi, J. and J. Vreeland. 2004. "Political Institutions and Civil War: Unpacking Anocracy." Working Paper: Emory University.
- Garnsey, P. 1988. *Famine and Food Supply in the Graeco-Roman World*. Cambridge: Cambridge University Press.
- Garnsey, P. and R. Saller. 1987. *The Roman Empire: Economy, Society and Culture*. Berkeley: University of California Press.

References

- Garrett, G. 1998. *Partisan Politics in the Global Economy*. Cambridge: Cambridge University Press.
- Gasiorowski, M. 1995. "Economic Crisis and Political Regime Change: An Event History Analysis." *The American Political Science Review* 89: 882–897.
- Gaukroger, S. 1996. *Descartes: An Intellectual Biography*. Oxford: Oxford University Press.
- Gauthier, D.. 1986. *Morals by Agreement*. Oxford: Clarendon Press.
- Gazzaniga, M.S. 2006. *The Ethical Brain*. New York: Harper.
- Gazzaniga, M.S. 2008. *Human*. New York: Harper.
- Geddes, B. 1999. "What do we know about Democratization after Twenty Years?" *Annual Review of Political Science* 2:115–44.
- Gibbon E. 1994.[1781] *The History of the Decline and Fall of the Roman Empire* (ed. D.Womersley). Harmondsworth, UK.:Penguin.
- Gigerenzer, G. 2007. *Gut Feelings*. New York: Viking.
- Gilpin R. 2001. *Global Political Economy: Understanding the International Economic Order*. Princeton NJ Princeton University Press.
- Gintis, H. 2000. "Strong Reciprocity and Human Sociality." *Journal of Theoretical Biology* 206: 169-179.
- Gintis, H. 2003. "The Hitchhiker's Guide to Altruism: Gene-Culture Coevolution, and the Internalization of Norms." *Journal of Theoretical Biology* 220: 407-418.
- Gintis, H. 2009a. *Game Theory Evolving*. Princeton, NJ: Princeton University Press.
- Gintis, H. 2009b. *The Bounds of Reason*. Princeton, NJ: Princeton University Press.
- Gintis, H. et al. (eds.) 2006. *Moral Sentiments and Material Interests*. Cambridge MA: MIT Press.
- Glasgow, G. and M.Alvarez. 2003. "Voting Behavior and the Electoral Context of Government Formation." *Electoral Studies* 24: 245–264.
- Golder, M. 2005. "Democratic Electoral Systems Around the World, 1946–2000." *Electoral Studies* 24: 103–121.
- Gödel K. 1931. "Über formal unentscheidbare Sätze der Principia Mathematica und verwandter Systeme." *Monat für Math Physik* 38: 173–98. Trans. as "On formally undecidable propositions of principia mathematica and related systems. In: Heijenoort Jv (Ed.) *Frege and Gödel: Two Fundamental Texts in Mathematical Logic*. Cambridge, MA.:Harvard University Press.
- Goldstone, L. 2005. *Dark Bargain*. New York: Walker.
- Goldstein, R. 2006. *Betraying Spinoza: The Renegade Jew who gave us Modernity*. New York: Schocken.
- Goldsworthy, A. 2006. *Caesar: Life of a Colossus*. New Haven: Yale University Press.
- Goldstone, J. 2009. *Why Europe?* New York: McGraw Hill.
- Goldsworthy, A. 2009a. *The Punic Wars*. New York: Cassell.
- Goldsworthy, A. 2009b. *How Rome Fell*. New Haven: Yale University Press.
- Goldsworthy, A. 2010. *Antony and Cleopatra*. New Haven: Yale University Press.
- Golub B. and Jackson, M. 2010. "Naive Learning in Social Networks and the Wisdom of Crowds." *American Economic Journal: Microeconomics* 2: 112-149.

References

- Goodfriend, M. 2007. "How the World Achieved Consensus on Monetary Policy." *The Journal of Economic Perspectives* 21: 47-68.
- Goodhart, C. A. E., and R. J. Bhansali. 1970. "Political Economy." *Political Studies*. 18:43-106.
- Gore, A. 2007. *The Assault on Reason*. London: Bloomsbury.
- Gould, L.L. 2008. *Four Hats in the Ring: The 1912 Election*. Lawrence, KS: University Press of Kansas.
- Gould, S.J. and N.Eldredge, 1977. "The Tempo and Mode of Evolution Reconsidered" *Paleobiology* 3: 115-151.
- Gould, S.J. 1980. "Is a New and General Theory of Evolution Emerging?" *Paleobiology* 6: 119-130.
- Gould, S.J. 1989. *Wonderful Life*. New York: Norton.
- Gould, S.J. 2002. *The Structure of Evolutionary Theory*. Cambridge, MA. Harvard University Press.
- Grant M. 1982. *From Alexander to Cleopatra*. New York: Simon and Schuster.
- Grant M. 1998. *From Rome to Byzantium: The Fifth century A.D.* London: Routledge.
- Gray, J. 2007. *Black Mass*. London: Penguin.
- Gray R.D., and Q.D. Atkinson. 2003. "Language-Tree Divergence Times Support the Anatolian Theory of Indo-European Origin." *Nature* 426: 435-439.
- Green, E., and R.H. Porter. 1984. "Noncooperative Collusion under Imperfect Information." *Econometrica* 52: 87-100.
- Greene, J., and D. Villanueva. 1991. "Private Investment in Developing Countries: An Empirical Analysis." *IMF Staff Papers* 38: 33-58.
- Greif A. 2006. *Institutions and the Path to the Modern Economy*. Cambridge: Cambridge University Press.
- Groseclose, T. 2001. "A Model of Candidate Location When One Candidate has Valence Advantage." *American Journal of Political Science* 45:862-886.
- Grossman, G. M., and E. Helpman. 1991. *Innovation and Growth in the Global Economy*. Cambridge, MA.: MIT Press.
- Grossman, G. M., and E. Helpman. 1994. "Protection for Sale." *American Economic Review* 84: 833-50.
- Grossman, G. M., and E. Helpman. 1996. "Electoral Competition and Special Interest Politics." *The Review of Economic Studies* 63: 265-286.
- Grossman, G. M., and E. Helpman. 2001. *Special Interest Groups*. Cambridge, MA.: MIT Press.
- Grzymala-Busse, A. 2002. *Redeeming the Communist Past*. Cambridge: Cambridge University Press.
- Haber S. 2006. "Authoritarian Government." In B. R. Weingast and D.A. Wittman (Eds.). *The Oxford Handbook of Political Economy*. Oxford: Oxford University Press.
- Haber S. 2010. "Rainfall and Democracy." Working paper: Stanford University.
- Hacker, J.S. and P. Pierson. 2006. *Off Center: The Republican Revolution and the Erosion of American Democracy*. New Haven: Yale University Press.

References

- Hacker, J.S. and P. Pierson. 2010. *Winner-Take-All Politics: How Washington Made the Rich Richer—and Turned Its Back on the Middle Class*. New York: Simon and Schuster.
- Haggard, S., and R. Kaufman. 1995. *The Political Economy of Democratic Transitions*. Princeton: Princeton University Press.
- Hahn, F. 1973. *On the Notion of Equilibrium in Economics*. Cambridge: Cambridge University Press.
- Hahn, G. 1980. "General Equilibrium Theory." *The Public Interest: Special Issues on the Crisis in Economic Theory*. 123-128.
- Hall, R.E. and C. I. Jones. (1999) "Why do some countries produce so much more output per worker than others?" *Quarterly Journal of Economics* 114: 83-116.
- Haidt, J., J. Graham, and C. Joseph. 2009. "Above and Below Left-Right: Ideological Narratives and Moral Foundations." *Psychological Inquiry* 20: 110-119.
- Halpern, J.Y. 2003. "Beyond Nash Equilibrium: A Computer Scientist Looks at Game Theory." *Games and Economic Behavior* 45: 114-131.
- Hamilton, W. 1964. "The Genetical Evolution of Social Behavior I and II." *Journal of Theoretical Biology* 7: 1-52.
- Hamilton, W. 1970. "Selfish and Spiteful Behavior in an Evolutionary Model." *Nature* 228: 1218-1220.
- Hamilton, W. 1996. *The Narrow Roads of Geneland, Vol 1. Evolution of Social Behavior*. Oxford: Freeman.
- Hamilton, W. 1996. *The Narrow Roads of Geneland, Vol 2. Evolution of Sex*. Oxford: Freeman.
- Hammond N. 1982. *Ancient Maya Civilization*. New Jersey: Rutgers University Press.
- Hammond, T. H., and G. Miller. 1987. "The Core of the Constitution." *American Political Science Review* 81:1155-1174.
- Han, A. and J. A. Hausman, 1990. "Flexible Parametric Estimation of Duration and Competing Risk Models." *Journal of Applied Econometrics* 5: 1-28.
- Hansen, J. 2009. *Storms of My Grandchildren*. New York: Bloomsbury.
- Harcourt, F. 1980. "Disraeli's Imperialism, 1866-1868: A Question of Timing." *Historical Journal* 23: 87-109.
- Hardin, R. 1982. *Collective Action*. Baltimore: Johns Hopkins University Press.
- Harman, O.S. 2010. *The Price of Altruism*. New York, Norton.
- Harper, M. 2003 *Adventurers and Exiles*. London: Profile Books.
- Harrington, J. 1992 [1656]. *The Commonwealth of Oceana*. Cambridge: Cambridge University Press.
- Harrington, J. 1993. "Economic Policy, Economic Performance, and Elections." *American Economic Review* 83: 27-42.
- Harris, M., 1987. *Dynamic Economic Analysis*. New York: Oxford University Press.
- Harris, S. 2010. *The Moral Landscape: How Science Can Determine Human Values*. New York: Free Press.
- Harris, T. 2005. *Restoration*. London: Allen Lane.
- Harris, T. 2006. *Revolution*. London: Allen Lane.

References

- Harsanyi, J. C. 1977. *Rational Behavior and Bargaining Equilibrium in Games and Social Situations*. Cambridge: Cambridge University Press.
- Hauser, M. 2007. *Moral Minds*. New York: Harper.
- Hawking, S.W. and G. F. R. Ellis. 1973. *The Large Scale Structure of Spacetime*. Cambridge: Cambridge University Press.
- Hawking, S.W. 1988. *A Brief History of Time*. New York: Bantam.
- Hawking, S.W. and L. Mlodinow. 2010. *The Grand Design*. New York: Bantam.
- Hays, J.D., J. Imbrie, and N.J. Shackleton. 1976. "Variations in the Earth's Orbit: Pacemaker of the Ice Ages." *Science*, 194 (4270):1121-1132.
- Heaney, 2000. *Beowulf: A New Verse Translation*. New York: Farrar, Strauss and Giroux.
- Heather, P. 2006. *The Fall of the Roman Empire*. Oxford: Oxford University Press.
- Helpman, E. and P. Krugman. 1989. *Trade Policy and Market Structure*. Cambridge MA: MIT Press.
- Henrich, J. et al. 2004. *Foundations of Human Sociality*. Oxford: Oxford University Press.
- Henrich, J. et al. 2005. "'Economic Man' in Cross-Cultural Perspective: Behavioral Experiments in 15 Small-scale Societies." *Behavioral and Brain Sciences*, 28: 795-855.
- Herman, A. 2001. *How the Scots Invented the Modern World*. New York: Three Rivers Press.
- Herrera H, D.Levine and C.Martinelli. 2005.. "Policy Platforms, Campaign Spending and Voter Participation." *Journal of Public Economics* 92: 501-513.
- Hesli, V. L. and E.Bashkirova. 2001. "The Impact of Time and Economic Circumstances on Popular Evaluations of Russia's President." *International Political Science Review* 22: 379-389.
- Hewett, E. A.1988. *Reforming the Soviet Economy: Equality vs. Efficiency*. Washington DC.: The Brookings Institution.
- Hill, B.W. 1989. *Sir Robert Walpole*. London: Hamish Hamilton.
- Himmelfarb, G. 1966. The Politics of Democracy: The English Reform Act of 1867. *Journal of British Studies* 6: 97-138.
- Hinich, M. J. 1977. "Equilibrium in Spatial Voting: The Median Voter Theorem is an Artifact." *Journal of Economic Theory* 16:208-219.
- Hinich, M. J, and M. Munger. 1994. *Ideology and the Theory of Political Choice*. Ann Arbor: University of Michigan Press.
- Hitchens, C. 2007. *God is not Great*. New York: Hachette.
- Hobbes, T. 2009 [1651]. *Leviathan; or the Matter, Forme, and Power of a Common-wealth, Ecclesiastical and Civil* (ed. J.C.A. Gaskin) Oxford: Oxford University Press.
- Holland, T. 2003. *Rubicon*. New York: Doubleday.
- Hoover, H. 1934. *The Challenge to Liberty*. New York: Charles Scribner.
- Hopenhayn, H. and A. Nuemeyer. 2005. "Explaining Argentina's Great Depression of 1975-1990." In E.Fernandez Arias, R. Manuelli and J. S. Blyde [Eds.] *Sources of Growth in Latin America*. Washington D.C.: Inter-American Development Bank.
- Hopkirk, P. 1994. *The Great Game*. New York: Kodansha.
- Hotelling, H. 1929. "Stability in Competition." *Economic Journal* 39:41-57.

References

- Huber, J., Bingham Powell Jr. G. 1994. "Congruence between Citizens and Policy Makers in Two Visions of Liberal Democracy." *World Politics* 1: 73-111.
- Hough, J.F, and M. Fainsod. 1979. *How the Soviet Union is Governed*. Cambridge MA.: Harvard University Press.
- Huckfeldt, R., and C. Kohfeld. 1989. *Race and the Decline of Class in American Politics*. Urbana-Champaign: University of Illinois Press.
- Hume, D. 1985 [1739]. *A Treatise of Human Nature*. London: Collins.
- Hume, D. 1987 [1742, 1748]. *Essays: Moral, Political and Literary* (ed. E. Miller). Indianapolis, IN: Liberty Fund.
- Hume, D. 1987 [1748]. *Philosophical Essays concerning Human Understanding*. Indianapolis, IN: Liberty Fund.
- Hume, D. 1987 [1758]. *An Enquiry concerning Human Understanding*. Indianapolis, IN: Liberty Fund.
- Humphrey S. 2009. "Constraining the State's ability to Employ Force: The Standing Army Debates, 1697-99." Working paper: University of Mary Washington.
- Hunt, G. 2007. "The Relative Importance of Directional Change, Random Walks, and Stasis in the Evolution of Fossil Lineages." *PNAS*: 104(47): 18404-18408.
- Huntington S.P.1991. *The Third Wave*. Norman OK.:University of Oklahoma Press.
- Huntington, S.P. 1993. "The Clash of Civilizations?" *Foreign Affairs* 72 (3): 22-49
- Huntington, S.P. 1998. *The Clash of Civilizations and the Remaking of World Order*. New York: Simon and Schuster.
- Huntington, S.P. 1999. (ed.) *The Clash of Civilizations? The Debate*. New York: Foreign Affairs.
- Ignatieff, M. 2004. *The Lesser Evil: Political Ethics in an Age of Terror*. Princeton, NJ: Princeton University Press.
- International Monetary Fund, Independent Evaluation Office. 2004. *The IMF and Argentina, 1991-2001*. Washington, D.C.: IMF.
- Irwin, D. A. 2003. "New Estimates of the Average Tariff of the United States, 1790-1820." *Journal of Economic History* 63 506-13.
- Irwin, D. A. 2006a. "Antebellum Tariff Politics: Coalition Formation and Shifting Regional Interests." *NBER Working Paper* No. 12161.
- Irwin, D. A. 2006b. "Historical aspects of U.S. trade policy." *NBER Reporter*.
- Jablonka, E. and M.J. Lamb. 2006. *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life* Cambridge MA: MIT Press.
- Jackson M. (2010) *Social and Economic Networks*. Princeton, NJ.: Princeton University Press.
- Jackson, M. and A. Watts. 2010. "Social Games: Matching and the Play of Finitely Repeated Games." *Games and Economic Behavior* 70: 170-191.
- Jacques, M. 2009. *When China Rules the World: The End of the Western World and the Birth of a New Global Order*. New York: Penguin.
- James, H. 2009. *The Creation and Destruction of Value*. Cambridge, MA: Harvard University Press.
- James, J. 2006. *The Roman Predicament*. Princeton: Princeton University Press.

References

- Jardine, L. 1999. *Ingenious Pursuits*. London: Little Brown.
- Jardine, L. 2008. *Going Dutch: How England Plundered Holland's Glory*. New York: Harper.
- Jeong G-H, G. Miller, C. Schofield and I. Sened. 2011. "Cracks in the Opposition: Immigration as a Wedge Issue for the Reagan Coalition." *American Journal of Political Science* 55: 511-525
- Jessee, S.A. 2009. "Spatial Voting in the 2004 Presidential Election." *American Political Science Review* 103: 59-81.
- Jessee, S.A. 2010. "Partisan Bias, Political Information and Spatial Voting in the 2008 Presidential Election." *Journal of Politics* 72: 327-340.
- Johnson, C. 2004. *The Sorrows of Empire*. New York: Henry Holt.
- Johnson, H. G. 1957. "Factor Endowments, International Trade and Factor Prices." *Manchester School* 25: 270-283.
- Johnson, S. and J.Kwak. 2010. *13 Bankers: The Wall Street Takeover and the Next Financial Meltdown*. New York: Pantheon.
- Jones, C.I. (2002) "Sources of U.S. Economic Growth in a World of Ideas." *American Economic Review* 92: 220-239.
- Jones, C.I. and P. Romer (2009). "The Kaldor Facts: Ideas, Institutions, Population and Human Capital." Cambridge, MA: NBER working paper #15094.
- Jong, A. and R.Pin. 2009. "On the measurement of political instability and its impact on economic growth." *European Journal of Political Economy* 25: 15-29.
- Kahneman D. and A.Tversky A. 1984. Choices, Values and Frames. *American Psychologist* 39:341-350.
- Kaletsky, A. 2010. *Capitalism 4.0*. London: Bloomsbury.
- Kamien, M. I, and N. L. Schwartz 1981. *Market Structure and Innovation*. Cambridge: Cambridge University Press.
- Kaplan, R.D. 2010. *Monsoon: The Indian Ocean and the Future of American Power*. New York: Random House.
- Karabell. 2009. *Superfusion: How China and America Became One Economy and Why the World's Prosperity Depends on It*. New York: Simon and Scuster.
- Karklins, R., and R. Petersen. 1993. "Decision Calculus of Protestors and Regime Change: Eastern Europe 1989." *Journal of Politics* 55:588-614.
- Karl, T. L., 1990. "Dilemmas of Democratization in Latin America." *Comparative Politics* 22: 361-384.
- Karol, D. 1999. "Realignment Without Replacement: Issue Evolution and Ideological Change among Members of Congress." Presented at the Annual Meeting of the Midwest Political Science Association. Chicago.
- Karol, D. 2001. "How and Why Parties Change Position on Issues: Party Policy Change as Coalition Management in American Politics." Presented at the Annual Meeting of the American Political Science Association Meeting, San Francisco.
- Karol, D.. 2009. *Party Position Changes in American Politics: Coalition Management*. Cambridge: Cambridge University Press.
- Kass, R., and A. Raftery. 1995. "Bayes Factors." *Journal of the American Statistical Association* 91:773-795.

References

- Kauffman, S. 1993. *The Origins of Order*. Oxford: Oxford University Press.
- Kazin, M. 2006. *A Godly Hero*. New York: Knopf.
- Keefer, P. 2004. "What does Political Economy tell us about Economic Development-and Vice Versa?" *Annual Review of Political Science* 7: 247-272.
- Keller. 2007. *America's Three Regimes*. Oxford: Oxford University Press.
- Kenneally, C. 2007. *The First Word*. New York: Viking.
- Kennedy, D. 2001. *Freedom from Fear*. Oxford: Oxford University Press.
- Kennedy, H. 1986. *The Prophet and the Age of the Caliphates*. Harlow, UK: Longman.
- Kennedy, P. 1987. *The Rise and Fall of the Great Powers*. New York: Random House.
- Kenski, K., Hardy, B.W., and Jamieson, K.H. 2010. *The Obama Victory*. Oxford: Oxford University Press.
- Kershaw, I. 2007. *Fateful Choices*. New York: Penguin Press.
- Key, V. O. 1955. "A Theory of Critical Elections." *Journal of Politics* 17:3-18.
- Keynes, J. M. 1921. *A Treatise on Probability, Vol.8 of Collected Writings*. London: Macmillan.
- Keynes, J. M. 1933. "National Self-Sufficiency." *Yale Review* 26: 755-69.
- Keynes, J. M. 1936. *The General Theory of Employment, Interest and Money*. London: Macmillan.
- Keynes, J. M. 1937. "The General Theory of Employment." *Quarterly Journal of Economics* 51: 209-223.
- Khalizad, Z. 2010. "Lessons from Afghanistan and Iraq." *Journal of Democracy* 21: 41-49.
- Khanna, P. 2008. *The Second World: Empires and Influence in the New Global Order*. New York: Random House.
- Kiewiet, D. R. 1983. *Macroeconomics and Micro Politics*. Chicago: Chicago University Press.
- Kim, W., and J. Gandhi. 2010. "Coopting Workers under Dictatorship." *The Journal of Politics*. 72: 646-658.
- King, A. [Ed.]. 2002. *Leaders' Personalities and the Outcomes of Democratic Elections*. Oxford: Oxford University Press.
- King, A. and Scultz, N. 2009. *From Poverty to Prosperity* New York: Encounter.
- King, G., 1989. *Unifying Political Methodology: The Likelihood Theory of Statistical Inference*. Cambridge: Cambridge University Press.
- King, G., J. Alt., N. Burns and M. Laver. 1990. "A Unified Model of Cabinet Dissolution in Parliamentary Democracies." *American Journal of Political Science* 34: 846-871.
- King, S. 2010. *Losing Control*. New Haven: Yale University Press.
- Kirkland, Jr., R. I. 1995. "Today's GOP: The Party's Over for Big Business." *Fortune* (February 6).
- Kirkpatrick, D. D. 2006. "Demonstrations on Immigration Harden a Divide." *New York Times* (April 17).
- Kirman, A. 1989. "The Intrinsic limits of Modern Economic Theory: The Emperor has no Clothes." *Economic Journal* 99: 126-139.
- Kirman A (2011). "The Crisis in Economic Theory." *Rivista Italiana degli Economisti*. 16: 9-36.

References

- Kirman, A. 2011. *Complex Economics*. London: Routledge.
- Kishlansky, M. 1996. *A Monarchy Transformed*. London: Penguin.
- Kitschelt, H., Z. Mansfeldova, R. Markowski and G. Toka. 1999. *Post-Communist Party Systems*. Cambridge: Cambridge University Press.
- Koger, G. 2010. *Filibustering*. Chicago: University of Chicago Press.
- Kramer, G. H. 1978. "Existence of Electoral Equilibrium." In P. Ordeshook [Ed.]. *Game Theory and Political Science*. New York: New York University Press.
- Kramnick, I. 1990. *Republicanism and Bourgeois Radicalism*. Ithaca, NY: Cornell University Press.
- Kramnick, I. 1992.[1968]. *Bolingbroke and his Circle*. Ithaca, NY: Cornell University Press.
- Kremer M (1993) "Population Growth and Technological Change: One million BC to 1990." *Quarterly Journal of Economics* 108: 681-716.
- Kreps, D., P. Milgrom, J. Roberts, and R. Wilson. 1982. "Rational Cooperation in the Finitely Repeated Prisoner's Dilemma." *Journal of Economic Theory* 27:245–52.
- Kristof, N. D. 2002. "Security and Freedom." *New York Times*, (10 September).
- Krugman, P. 2009. "How Did Economists get it so Wrong?" *New York Times* (September 6).
- Krugman P (2011) "Droughts, Floods and Food." *New York Times* (February 6)
- Kuran, T. 2010. *The Long Divergence: How Islamic Law Held Back the Middle East*. Princeton, NJ: Princeton University Press.
- Kurzwell, R. 2006. *The Singularity is Near*. New York: Penguin.
- Kuznets S. 1965. *Towards a Theory of Economic Growth*. New York: Norton.
- Laakso, M., and R. Taagepera. 1979. "Effective Number of Parties: A Measure with Applications to West Europe." *Comparative Political Science* 12:3–27.
- Ladha, K. 1992. "Condorcet's Jury Theorem, Free Speech and Correlated Votes." *American Journal of Political Science* 36: 617–74.
- Ladha, K. 1993. "Condorcet's Jury Theorem in the Light of de Finetti's Theorem: Majority Rule with Correlated Votes." *Social Choice and Welfare* 10: 69–86.
- Ladha, K. and G. Miller. 1996. "Political Discourse, Factions and the General Will: Correlated Voting and Condorcet's Jury Theorem." In N. Schofield [Ed.]. *Collective Decision Making*. Boston: Kluwer.
- Laing, J. D. and S. Olmstead. 1978. "An Experimental and Game-Theoretic Study of Committees." In P. Ordeshook [Ed.]. *Game Theory and Political Science*. New York: New York University Press.
- Lancaster, T. 1990. *The Econometric Analysis of Transition Data*. Cambridge: Cambridge University Press.
- Landes, D.S. 1998. *The Wealth and Poverty of Nations*. New York: Norton.
- Lange, O. 1938. "On the Economic Theory of the State." In O. Lange and F. Taylor [Eds.]. *The Economic Theory of Socialism*. Minneapolis: University of Minnesota Press.
- Laplace, P.-S. [1798-1825]. *Traité de mécanique céleste* (5 volumes). Paris: Gauthiers-Villars.
- Laplace, P.- S. 1951 [1814]. *Essai philosophique sur les probabilités*. Paris: Gauthiers-Villars. *A Philosophical Essay on Probabilities* (trans. F. Truscott and F. Emory, with an introduction by E. Bell). New York: Dover.

References

- Lasch C. 1991 *The True and Only Heaven*. New York: Norton.
- Laver, M. 1998. "Models of Government Formation." *Annual Review of Political Science* 1:1–25.
- Laver, M., and N. Schofield. 1990. *Multiparty Government: The Politics of Coalition in Europe*. Oxford: Oxford University Press. Reprinted 1998, Ann Arbor: University of Michigan Press.
- Laver, M., and M. Taylor. 1973. "Government Coalitions in Western Europe." *European Journal of Political Research* 1:205–248.
- Layman, G.C. et al. 2006. Party Polarization in American Politics. *Annual Review of Political Science* 9: 83-110.
- Layman, G.C. et al. 2010. Activists and Conflict Extension in American Party Politics. *American Political Science Review* 104:324–346.
- Lears, J.2009. *The Rebirth of the Nation*. New York: Harper.
- Lecaillon, J., F. Paukert, C. Morisson, and D. Germidis. 1984. *Income Differentials and Economic Development. An Analytical Survey*. Geneva: International Labour Office.
- Ledyard, J. O. 1981."The Paradox of Voting and Candidate Competition: A General Equilibrium Analysis." In A. L. Roth and J.Kagel [Eds.] *The Handbook of Experimental Economics*, Princeton, N.J.: Princeton University Press.
- Ledyard, J. O. 1984. "The Pure Theory of Large Two-Candidate Elections." *Public Choice*. 44:7-41.
- Lehmbruch, G. 1980. "Consociational Democracy, Class Conflict and the New Corporation." In P. C. Schmitter and G. Lehmbruch [Eds.]. *Trends Towards Corporatist Intermediation*. London and Beverly Hills: Sage.
- London, J.E.2005. *Soldiers and Ghosts*. New Haven: Yale University Press.
- Lessig, L. 2011. *Republic, Lost*. New York: Twelve.
- Levitsky, S. 2003. *Transforming Labor-Based Parties in Latin America: Argentine Peronism in Comparative Perspective*. Cambridge :Cambridge University Press.
- Levitsky, S., and L.A. Way. 2002. "The Rise of Competitive Authoritarianism." *Journal of Democracy* 13: 51-65.
- Lewis-Beck, M. 1988. *Economics and Elections: The Major Western Democracies*. Ann Arbor: University of Michigan Press.
- Liebniz, G. [1686]. *Discourse on Metaphysics*. (trans. G. Montgomery). New York: Doubleday.
- Lieven, D.2000. *Empire*. New Haven: Yale University Press.
- Lijphart, A. 1976. *The Politics of Consociational Democracies*. Berkeley: University of California Press.
- Lilla M. (2007). *The Stillborn God*. New York: Random House.
- Lin, T., M. J. Enelow, and H. Dorussen. 1999. "Equilibrium in Multicandidate Probabilistic Spatial Voting." *Public Choice* 98:59–82.
- Lipset, S. M. 1963. *Political Man: The Social Bases of Politics*. New York: Anchor Books.
- Listhaug, O., S. E. Macdonald, and G. Rabinowitz. 1994, "Ideology and Party Support in Comparative Perspective." *European Journal of Political Research* 25:111–149.
- Lizzeri, A. and N. Persico. 2004. "Why Did the Elites Extend the Suffrage? Democracy and the Scope of Government, With an Application to Britain's Age of Reform." *The Quarterly Journal of Economics*. 119:705–763.

References

- Locke, D. 1959 [1690]. *An Essay concerning Human Understanding* (collated and annotated by A.C.Fraser). New York: Dover.
- Lohmann, S. 1994. "The Dynamics of Informational Cascades: The Monday Demonstrations in Leipzig, East Germany 1989-1991." *World Politics* 47: 42-101.
- Londregan, J.B., and K.T. Poole. 1990. "Poverty, the Coup Trap, and the Seizure of Executive Power." *World Politics* 42: 151– 183.
- Londregan, J.B., H. Bienen, and N. van de Walle. 1995. "Ethnicity and Leadership Succession in Africa." *International Quarterly Studies* 39: 1 – 25.
- Lorenz, E.N. 1963. "The Statistical Prediction of Solutions of Dynamical Equations." *Proceedings of the International Symposium on Numerical Weather Prediction*.Tokyo.
- Lorenz, E.N. 1993. *The Essence of Chaos*. Seattle: University of Washington Press.
- Löwenhardt, J., J. R. Ozinga and E. van Ree. 1992. *The Rise and Fall of the Soviet Politburo*. New York: St. Martin's Press.
- Lucas, E. 2009 [2008]. *The New Cold War*. Basingstoke, UK: Macmillan.
- Lucas, R. E. 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics* 22: 3-42.
- Lucas, R.E. 2010. "Some Macroeconomics for the 21st Century. *Journal of Economic Perspectives* 14: 159-168.
- Lumsden, C.J. and E.O.Wilson.1981. *Genes, Mind, and Culture: The Coevolutionary Process*. Cambridge MA : Harvard University Press.
- Lupu, N. and S. Stokes. 2009. "The Social Bases of Political Parties in Argentina, 1912-2003." *Latin American Research Review* 44: 58-87.
- Luttwak, E. N. 1976. *The Grand Strategy of the Roman Empire*. Baltimore: The John Hopkins University Press.
- Luttwak, E. N., 1979. *Coup d'état: a Practical Handbook*. Cambridge, MA: Harvard University Press.
- Luttwak, E. N. 2009. *The Grand Strategy of the Byzantine Empire*. Cambridge MA: Harvard University Press.
- Macdougall, D. 2004. *Frozen Earth*. Berkeley: University of California Press.
- Mackie, G. 2003. *Democracy Defended*. Cambridge: Cambridge University Press.
- MacRae, C. D. 1976. "A Political Model of the Business Cycle." *Journal of Political Economy*. 85:239–263.
- MacMillan, M. (2003). *Paris 1919: Six Months That Changed the World*. New York: Random House.
- Madison, J. [1787]. 1999. *Federalist X*. In J. Rakove [Ed.]. *Madison: Writings*. New York: Library Classics.
- Maddicott, J.R. 2010. *The Origins of the English Parliament 924-1327*. Oxford: Oxford University Press.
- Maddison A. 2007. *Contours of the World Economy 1-2030 AD: Essays in Macro-Economic History*. Oxford: Oxford University Press.
- Magaloni, B. 2008. "Credible Power-Sharing and the Longevity of Authoritarian Rule." *Comparative Political Studies* 41: 715-741.

References

- Malthus, T. [1798], [1830], 1970. *An Essay on the Principle of Population and a Summary View of the Principle of Population* (ed. and with an introduction by Anthony Flew). Harmondsworth, UK: Penguin.
- Man, J. 2004. *Genghis Khan: Life, Death and Resurrection*. New York: Bantam.
- Mandelbaum, M. 2002. *The Ideas that Conquered the World*. New York: Public Affairs.
- Mandelbaum, M. 2010. *The Frugal Superpower*. New York: Public Affairs.
- Mandelbrot, B. and R. Hudson. 2004. *The (Mis)behavior of Markets*. New York: Perseus.
- Mann, R. 1996. *The Walls of Jericho*. New York: Harcourt Brace.
- Mann, T. E. and N. J. Ornstein. 2008. *The Broken Branch: How Congress Is Failing America and How to Get It Back on Track*. Oxford: Oxford University Press.
- Margolis, H. 1987. *Patterns, Thinking and Cognition: A Theory of Judgement*. Chicago: University of Chicago Press.
- Margolis, H. 1993. *Paradigms and Barriers: How Habits of Mind Govern Scientific Beliefs*. Chicago: University of Chicago Press.
- Margolis H. 2002. *It started with Copernicus: How Turning the World inside out Led to the Scientific Revolution*. New York: McGraw Hill.
- Markowski, R. 2006. "Polish Elections of 2005: Pure Chaos or Restructuring of the Party System." *West European Politics* 29: 814-832.
- Markowski, R, and J.Tucker. 2010a. "Euroskepticism and the Emergence of Political Parties in Poland." *Party Politics*:16: 523-548.
- Markowski, R, and J.Tucker. 2010b. "Subjective vs. Objective Proximity in Poland: New Directions for the Empirical Study of Political Representation." Working paper: NYU.
- Marshall, A. 1890. *Principles of Economics*. London: Macmillan.
- Marshall F. and E.Hildebrand. 2002. "Cattle before Crops." *Journal of World Prehistory* 16: 99-143.
- Marx, K. [1867], 1930. *Capital* (trans. E. and C. Paul). London: Dent.
- Mattern, S.P. 1999. *Rome and the Enemy*. Berkeley: University of California Press.
- Matthew D. 1992. *The Norman Kingdom of Sicily*. Cambridge: Cambridge University Press.
- Matyszak P. 2008. *Chronicle of the Roman Republic*. New York: Thames and Hudson.
- Mawdsley, E, and S. White. 2000. *The Soviet Elite From Lenin to Gorbachev: The Central Committee and its Members, 1917-1991*. Oxford: Oxford University Press.
- May, T. 2007. *The Mongol Art of War*. Yardley, PA.: Westholme.
- Mayda, A. M. and D. Rodrik. 2005. "Why are Some people (and Countries) More Protectionist than Others?" *European Economic Review* 49: 1393-1430.
- Mayhew, D. 2000. "Electoral Realignment." *Annual Review of Political Science* 3:449-474.
- Mayhew, D. 2002. *Electoral Realignments*. New Haven: Yale University Press.
- Maynard Smith, J. 1972. *On Evolution*. Edinburgh: Edinburgh University Press.
- Maynard Smith, J. 1982. *Evolution and the Theory of Games*. Cambridge: Cambridge University Press.
- Maynard Smith, J. and G. Price. 1972. "The Logic of Animal Conflicts." *Nature* 246: 15-18.

References

- McCarty, N., K. Poole, and H. Rosenthal. 2006. *Polarized America*. Cambridge, MA.: MIT Press.
- McCloskey, D. 2006. *Bourgeois Virtues: Ethics for an Age of Commerce*. Chicago: University Of Chicago Press.
- McCloskey, D. 2010. *Bourgeois Dignity: Why Economics Can't Explain the Modern World*. Chicago: University Of Chicago Press.
- McCracken, P. 1977. [Ed.]. *Towards Full Employment and Price Stability*. Paris: OECD.
- McFaul, M. 2002. "The Fourth Wave of Democracy and Dictatorship: Noncooperative Transitions in the Postcommunist World." *World Politics*. 54: 212-244.
- McGann, A. 2006. *The Logic of Democracy*. Ann Arbor: University of Michigan Press.
- McGuire, M.C., and M. Olson. 1996. "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force." *Journal of Economic Literature* 34: 72– 96.
- McKelvey, R. D. 1976. "Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control." *Journal of Economic Theory* 12:472–482.
- McKelvey, R. D. 1979. "General Conditions for Global Intransitivities in Formal Voting Models." *Econometrica* 47:1085–1112.
- McKelvey, R. D. 1986. "Covering, Dominance and Institution Free Properties of Social Choice." *American Journal of Political Science* 30:283–314.
- McKelvey, R. D, and P. C. Ordeshook. 1990. "A Decade of Experimental Research on Spatial Models of Elections and Committees." In J. Enelow and M. J. Hinich [Eds.]. *Advances in the Spatial Theory of Voting*. Cambridge: Cambridge University Press.
- McKelvey, R. D, and T. Palfrey. 1995. "Quantal Response Equilibria for Normal Form Games." *Games and Economic Behavior* 10:6-38.
- McKelvey, R. D., and J. W. Patty. 2006. "A Theory of Voting in Large Elections." *Games and Economic Behavior*. 57:155–180.
- McKelvey, R. D and T. Page. 1986. "Common Knowledge, Consensus, and Aggregate Information." *Econometrica* 54:109–127.
- McKelvey, R. D., and N. Schofield. 1986. "Structural Instability of the Core." *Journal of Mathematical Economics* 15:179–198.
- McKelvey, R. D., and N. Schofield. 1987. "Generalized Symmetry Conditions at a Core Point." *Econometrica*. 55:923–933.
- McKenzie, L. 1959. "On the Existence of a General Equilibrium for a Competitive Economy." *Econometrica* 27:54–71.
- McKibben, B. 1989. *The End of Nature*. London: Random House.
- McLean, I. 2001a. *Rational Choice and British Politics*. Oxford: Oxford University Press.
- McLean, I. 2001b. "Irish Potatoes, Indian Corn and British politics: Interests, Ideology, Heresetic and the Repeal of the Corn Laws." In F.McGillivray et al. [Eds.] *International Trade and Political Institutions*. Cheltenham,UK: Edward Elgar.
- McLean, I. 2002. "W.H.Riker and the Invention of Heresetic(s)." *British Journal of Political Science* 32: 298-310.
- McLean, I. 2003. "Before and After Publius: The Sources and Influences of Madison's Political Thought." In: S. Kernell [Ed.]. *James Madison: The Theory and Practise of Republican Government*. Stanford : Stanford University Press.

References

- McLean, I. 2004. "Thomas Jefferson, John Adams, and the Déclaration des Droits de l'Homme et du Citoyen." In R. Fattouh Jr. and R. K. Ramazani [Eds.]. *The Future of Liberal Democracy: Thomas Jefferson and the Contemporary World*. New York: Palgrave Macmillan.
- McLean, I. 2006a. *Adam Smith, Radical and Egalitarian: An Interpretation for the 21st Century*. Edinburgh: Edinburgh University Press.
- McLean, I. 2006b. "The Eighteenth Century Revolution in Social Science and the Dawn of Political Science in America." *European Political Science* 5: 112-123.
- McLean, I. 2009a. "In Riker's Footsteps: Review Article." *British Journal of Political Science* 39: 195-210.
- McLean, I. 2009b. "Thomas Jefferson, James Madison, Probability and Constitutions: at the Intersection of the Scottish, American, and French Enlightenments." *Electronic Journal for History of Probability and Statistics*. 5.
- McLean, I, and A. B. Urken. 1992. "Did Jefferson or Madison Understand Condorcet's Theory of Social Choice?" *Public Choice* 73: 445-457.
- McLennan, A. 1998. "Consequences of the Condorcet Jury Theorem for Beneficial Information Aggregation by Rational Agents." *American Political Science Review* 92: 413-418.
- McWhorter, J. 2001. *The Power of Babel*. New York: Holt.
- Mead, W. R. 2007. *God and Gold*. New York: Knopf.
- Mellars P. 2006. "Going East: New Genetic and Archaeological Perspectives on the Modern Human Colonization of Eurasia." *Science* 313: 796-800.
- Meirowitz, A. 2008. "Electoral Contests, Incumbency Advantages and Campaign Finance." *Journal of Politics* 70: 681-699.
- Merrill III, S., and J. Adams. 2001. "Computing Nash Equilibria in Probabilistic, Multiparty Spatial Models with Nonpolicy Components." *Political Analysis* 9:347-361.
- Merrill III, S., and B. Grofman. 1999. *A Unified Theory of Voting*. Cambridge: Cambridge University Press.
- Merrill III, S., B. Grofman, and J. Adams. 2001. "Assimilation and Contrast Effects in Voter Projections of Party Locations: Evidence from Norway, France, and the USA." *European Journal of Political Research* 40:199-221.
- Merrill III, S., B. Grofman, and S. Feld. 1999. "Nash Equilibrium Strategies in Directional Models of Two-Candidate Spatial Competition." *Public Choice* 98:369-383.
- Merrill III, S. B. Grofman, and T.L. Brunell. 2008. "Cycles in American National Electoral Politics." *American Political Science Review* 102:1-17.
- Merrit, E. 1982. *World Out of Work*. London: Collins.
- Message, P.J. 1984. "The Stability of Our Solar System." *Celestial Mechanics and Dynamical Astronomy* 34:155-163.
- Meyer, B. D. 1986. "Semiparametric Estimation of Hazard Models." Working paper: MIT.
- Meyer, K.E. and S. B. Brysac. 1999. *Tournament of Shadows*. Washington DC.: Counterpoint.
- Micklethwait, J., and A. Wooldridge. 2004. *The Right Nation: Conservative Power in America*. New York: Penguin.
- Miguel, E., S. Satyanath and E. Sergenti. 2004. "Economic Shocks and Civil Conflict: An Instrumental Variables approach." *Journal of Political Economy* 112: 725-753.

References

- Milanovic, B. 2011. *The Haves and the Have Nots*. New York: Basic.
- Milburn, J. 2006. "Former G.O.P Chairman Parkinson Switches Affiliation to Democrat." *Kansas City Star*. (May 30).
- Miles, W. F. S. 1995. "Tragic Tradeoffs: Democracy and Security in Chad." *The Journal of Modern African Studies* 33:53–65.
- Milgrom P.R., D.C. North, B.W. Weingast. 1990. The Role of Institutions in the Revival of Trade: The Law Merchants, Private Judges, and the Champagne Fairs." *Economics and Politics* 2: 1-23.
- Mill, J. S. 1910. *Utilitarianism, Liberty and Representative Government*. New York: Dutton.
- Miller, G., and N. Schofield. 2003. "Activists and Partisan Realignment in the U.S." *American Political Science Review* 97:245–260.
- Miller, G., and N. Schofield, N. 2008. "The Transformation of the Republican and Democratic Party Coalitions in the United States." *Perspectives on Politics*: 6:433-450.
- Miller, N. 1980. "A New Solution Set for Tournaments and Majority Voting." *American Journal of Political Science* 24:68–96.
- Minsky, H. 1975. *John Maynard Keynes*. New York: Columbia University Press.
- Minsky, H. 1986. *Stabilizing an Unstable Economy*. New Haven: Yale University Press.
- Mitchell L. 2008. "Democracy Bound." *The National Interest*. 95:70-76.
- Mishel, L., J. Bernstein, and J. Schmitt. 2007. *The State of Working America: 2000-2001*. Washington D. C.: EPI Press.
- Mishler, W., and R. Rose. 2007. Generation, Age, and Time: The Dynamics of Political Learning during Russia's Transformation." *American Journal of Political Science* 51: 822–834.
- Mishler, W., and J.P. Willerton. 2003. "The Dynamics of Presidential Popularity in Post-Communist Russia: Cultural Imperative versus Neo-Institutional Choice?" *Journal of Politics* 65: 111–141.
- Mlodinow, L. 2009. *Drunkard's Walk*. New York: Vintage.
- Mokyr J. 2002. *The Gifts of Athena: Historical Origins of the Knowledge Economy*. Princeton NJ.: Princeton University Press.
- Mokyr J. 2005. "The Intellectual Origins of Modern Economic Growth." *Journal of Economic History* 65:285-351.
- Mokyr J. 2010. *The Enlightened Economy: An Economic History of Britain 1700-1850*. New Haven: Yale University Press.
- Mokyr J. and V.C. Nye 2007. "Distributional Coalitions, the Industrial Revolution, and the Origins of Economic Growth in Britain." *Southern Economic Journal* 74: 50-70.
- Montgomery, J. 2010. "The Why and How of Party Movement." Working Paper: Duke University.
- Morgan, J. and Gang Tian. 2007. *Ricci Flow and the Poincare Conjecture*. Providence, RI: American Mathematical Society.
- Morris, E. 2001. *Theodore Rex*. New York: Random.
- Morris, I. 2010. *Why the West Rules*. New York: Farrar, Strauss and Giroux.
- Morris, J. 1990. *The Venetian Empire*. London: Penguin.
- Moslem, M. 2002. *Factional Politics in Post-Khomeini Iran*. Syracuse, NY: Syracuse University Press.

References

- Moyo, D. 2011. *How the West Was Lost*. New York: Farrar, Strauss and Giroux.
- Mueller, D. C. 1982. "Redistribution, Growth and Political Stability." *The American Economic Review: Papers and Proceedings* 72:155–159.
- Mueller, D.C. 2003. *Public Choice III*. Cambridge: Cambridge University Press.
- Mummert A, E. Esche , J.Robinson , G.Armelagos. 2011. "Stature and Robusticity during the Agricultural Transition: Evidence from the Bioarchaeological Record." *Economic Human Biology* 9: 284-301.
- Munck, R. 1985. "The Modern Military Dictatorship in Latin America: The Case of Argentina: 1976-1982." *Latin American Perspectives* 12.
- Murphy, 2007. *Are We Rome?* New York: Houghton Mifflin.
- Muskhelishvili, M. et al. 2009. Georgia's Ongoing Struggle for a Better Future Continued: Democracy Promotion through Civil Society Development. *Democratization* 16, 682-708.
- Muskhelishvili, M. 2010. "Georgia in a New Wave of Transformation." *Journal of Political and Economic Studies*. 4: 35-41.
- Myagkov, M., P.Ordeshook and D.Shakin. 2005. "Fraud of Fairytales? Russian and Ukrainian Electoral Experience." *Post-Soviet Affairs* 21: 91–131.
- Nachbar J. 1997. "Prediction, optimization, and learning in repeated games." *Econometrica* 65: 275–309.
- Nachbar J. 2001. "Bayesian learning in repeated games of incomplete information." *Social Choice and Welfare* 18: 303–326.
- Nachbar J. 2005. "Beliefs in repeated games." *Econometrica* 73: 459-480.
- Nagel, J.H. and C. Wiezien. 2010. "Centre-Party Strength and Major Party-Divergence in Britain, 1945-2005." *British Journal of Political Science* 40: 279-304.
- Nardulli, P. F. 1995 "The Concept of a Critical Realignment, Electoral Behavior and Political Change." *American Political Science Review* 89:10–22.
- Nasar, S. 2011. *Grand Pursuit*. New York: Simon and Schuster.
- Nash, J. 1950a. "The Bargaining Problem." *Econometrica* 18:155–162.
- Nash, J. 1950b. "Equilibrium Points in n -Person Games." *Proceedings of the National Academy of Science, USA*. 36:48–49.
- Nash, J. 1951. "Non-Cooperative Games." *Annals of Mathematics* 54:286–295.
- Nash, J. 1953. "Two Person Cooperative Games." *Econometrica* 21:128–140.
- Nelson J.L. 2010. *George Washington's Great Gamble*. New York: McGraw Hill.
- New York Times*. 2006. "Stem Cell Proposal Splits Missouri G.O.P." (12 March).
- Newton, I., 1984 [1672]. "New Theory about Light and Colours." In A. Shapiro [Ed.]. *The Optical Papers of Isaac Newton*. Cambridge, Cambridge University Press.
- Newton, I. 1995 [1687]. *Philosophiae Naturalis Principia Mathematica*. (translated and edited, with an introduction by A. Motte). Amherst, NY: Prometheus Books.
- Newton, I. [1704]. *Opticks: Or, a Treatise of the Reflexions, Refractions, Inflexions and Colours of Light*. London: Smith and Walford.
- Nichols, D. 2007. *A Matter of Justice*. New York: Simon and Schuster.

References

- Norden, D. L. 1996. *Military Rebellion in Argentina: Between Coups and Consolidation*. Lincoln: University of Nebraska Press.
- Nordhaus, W. D. 1975. "The Political Business Cycle." *Review of Economic Studies* 42:167-190.
- North, D. C. 1961. *The Economic Growth of the United States*. New York: Norton.
- North, D. C. 1981. *Structure and Change in Economic History*. New York: Norton.
- North, D. C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- North, D. C. 1993. "Institutions and Credible Commitment." *Journal of Institutional Theoretical Economics* 149: 11–23.
- North, D. C. 1994. "Economic Performance through Time." *American Economic Review* 84: 359–68.
- North, D. C. 2005. *Understanding the Process of Economic Change*. Princeton, NJ: Princeton University Press.
- North, D. and A. Ruten. 1987. "The Northwest Ordinance in Historical Perspective." In D. Klingamen and R. Vedder [Eds.]. *Essays on the Economy of the Old Northwest*. Athens, OH: Ohio University Press.
- North, D. C., and R. Thomas. 1970. "An Economic Theory of Growth of the Western World." *Economic History Review* 23:1–17.
- North, D. C., and R. Thomas. 1973. *The Rise of the Western World: A New Economic History*. Cambridge, UK: Cambridge University Press.
- North, D. C., and R. Thomas. 1977. "The First Economic Revolution." *Economic History Review* 30: 229–41.
- North, D. C., and B. R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth Century England." *Journal of Economic History* 49: 803–32.
- North, D. C., B. R. Wallis and B. R. Weingast. 2007. *A Conceptual Framework for Interpreting Recorded Human History*. Typescript: Washington DC: NBER.
- North, D. C., B. R. Wallis and B. R. Weingast. 2009. "Violence and the Rise of Open-Access Orders." *Journal of Democracy* 20: 55-68.
- North, D. C., B. R. Wallis and B. R. Weingast. 2009. *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*. Cambridge: Cambridge University Press.
- Nourzard, F. and M. D. Vrieze. 1995. "Public Capital Formation and Productivity Growth: Some International Evidence." *Journal of Productivity Analysis* 6: 283–95.
- Nozick, R. 1974. *Anarchy, State and Utopia*. Oxford: Basil Blackwell.
- Nyarko, Y. "Convergence in Economic Models with Bayesian Hierarchies of Beliefs." *Journal of Economic Theory* 74: 266–296.
- Nunn, N. 2008. "The Long Term Effects of Africa's Slave Trades" *Quarterly Journal of Economics* 123:139-176.
- Nye, J. V. C. 1992. "Guerre, Commerce, Guerre Commercial: L'économie Politiques des échanges Franco-Anglais." *Annales: Economics, Societes, Civilisations* 3:613–32.
- Nye, J. V. C. 2007. *War, Wine and Taxes*. Princeton, NJ: Princeton University Press.

References

- O'Brien, P. K. 1988. "The Political Economy of British Taxation, 1660-1815." *The Economic History Review*. 41:1-32.
- O'Donnell, G. 1973. *Modernization and Bureaucratic Authoritarianism: Studies in South American Politics*. Berkeley: University of California Press.
- O'Donnell, G. 1978. "Reflections on the Patterns of Change in the Bureaucratic-Authoritarian State." *Latin American Research Review* 13: 3-38.
- O'Donnell. 1994. "Delegative Democracy." *Journal of Democracy* 5: 55-69.
- O'Donnell, G and P. Schmitter 1986. *Transitions from Authoritarian Rule: Tentative Conclusions about Uncertain Democracies*. Baltimore, MD: The Johns Hopkins University Press.
- O'Flaherty, B. 1991. "How to be a Dictator: The Advantages of Incumbency." Working paper: Columbia University, Department of Economics.
- O'Kane, R.H.T., 1987. *The Likelihood of Coups*. Ashgate, Aldershot, UK: Avebury Books
- O'Rourke, K. H., and A. M. Taylor. 2006. "Democracy and Protectionism." Washington D.C. NBER Working paper 12250.
- O'Rourke, K. H., and J. G. Williamson. 1999. *Globalization and History*. Cambridge, MA: MIT Press.
- O'Shaughnessy, A. 2000. *An Empire Divided: The American Revolution and the British Caribbean*. Philadelphia: University of Pennsylvania Press.
- O'Shea, D. 2007. *The Poincare Conjecture: In Search of the Shape of the Universe*. New York: Walker.
- Ober, J., and S. Macedo, S. 2006. "Introduction," to *Primates and Philosophers: How Morality Evolved*. Princeton: Princeton University Press.
- Olmert E. 2008. "The Time has Come to Say These Things." *New York Review of Books*. 55 (19):6-8
- Olson, M. 1965. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press.
- Olson, M. 1982a. "The Political Economy of Comparative Growth Rates." In D. C. Mueller [Ed.], *The Political Economy of Growth*. New Haven: Yale University Press.
- Olson, M. 1982b. *The Rise and Decline of Nations*. New Haven, CT: Yale University Press.
- Olson, M. 1982c. "Stagflation and the Political Economy of the Decline in Productivity." *The American Economic Review: Papers and Proceedings*. 72:143- 148.
- Olson, M. 1993. "Dictatorship, Democracy, and Development." *American Political Science Review* 87: 567- 576.
- Olson, M. 2000. *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships*. New York: Basic.
- Ordeshook, P, and Shepsle, K. [Eds.], 1982. *Political Equilibrium*. Boston: Kluwer.
- Ornstein, N. 2010. "A Filibuster Fix." *New York Times* (August, 28).
- Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Ostroy, J. 1980. "The No-Surplus Condition as a Characteristic of Perfectly Competitive Equilibrium." *Journal of Economic Theory*. 22:183-207.
- Overy, R. 2009. *The Twilight Years*. New York: Penguin.

References

- Owen, A., and J.A.Tucker. 2008. "Conventional versus Transitional Economic Voting in Poland, 1997-2005." Working paper: NYU.
- Özler, S., and D. Rodrik. 1992. "External Shocks, Politics, and Private Investment." *Journal of Development Economics* 39: 141–162.
- Owen, A., and J.A.Tucker. 2010. Past is Still Present: Micro-level Comparisons of Conventional vs. Transitional Economic Voting in Three Polish Elections." *Electoral Studies* 29: 25-39.
- Paganelli, M.P. 2008. "The Adam Smith Problem in Reverse." *History of Political Economy*. 40:365-382.
- Pagden, A. 2008. *Worlds at War*. New York: Random House.
- Paldam, M. 1979. "Is There an Electoral Cycle? A Comparative Study of National Accounts." *Scandinavian Journal of Economics*. 81:323-342.
- Paldam, M. 1981a. "An Essay on the Rationality of Economic Policy: The Test Case of the Electional Cycle." *Public Choice*. 37:287- 305.
- Paldam, M. 1981b. "A Preliminary Survey of the Theories and Findings on Vote and Popularity Functions." *European Journal of Political Research* 9:181-199.
- Palfrey, T. R., and H. Rosenthal. 1985. "Voter Participation and Strategic Uncertainty." *The American Political Science Review*. 79:62–78.
- Parker G. 1998. *The Grand Strategy of Philip II of Spain*. New Haven: Yale University Press.
- Patterson S. 2011. *The Quants: How a New Breed of Math Whizzes Conquered Wall Street and Nearly Destroyed It*. New York: Crown.
- Pattie, C., P. Seyd, and P. Whiteley. 2004. *Citizenship in Britain: Values, Participation and Democracy*. Cambridge: Cambridge University Press.
- Patty, J. 2002. "Equivalence of Objectives in Two-Candidate Elections." *Public Choice* 112: 151-166.
- Patty, J. (2007). "Generic Difference of Expected Vote Share Maximization and Probability of Victory Maximization in Simple Plurality Elections with Probabilistic Voters." *Social Choice and Welfare* 29: 149-173.
- Patty, J., J.M.Snyder and M.Ting. 2009. "Two's Company, Three's An Equilibrium: Strategic Voting and Multicandidate Elections." *Quarterly Journal of Political Science* 4:251-278.
- Peacock, A. T., and J. Wiseman 1961. *The Growth of Public Expenditure in the United Kingdom*. Oxford: Oxford University Press.
- Penn E. 2009 "A Model of Far-Sighted Voting." *American Journal of Political Science* 53:36-54.
- Penrose R. 1994. *Shadows of the Mind*. Oxford: Oxford University Press.
- Penrose, R. 2003. "The Problem of Space-Time Singularities." In G.W.Gibbons et al. [Eds.] *The Future of Theoretical Physics and Cosmology*. Cambridge: Cambridge University Press.
- Penrose, R. 2011. *Cycles of Time*. London: The Bodney Head.
- Peress, M. 2005. "Securing the Base: Electoral Competition under Variable Turnout." Working paper: University of Rochester.
- Perotti, R., 1994. "Income Distribution and Investment." *European Economic Review*, 38: 827–835.
- Peress M. 2010. "The Spatial Model with Non-Policy Factors: A Theory of Policy Motivated Candidates." *Social Choice and Welfare* 34:265-294.

References

- Persson, T. and G. Tabellini, 1992. "Growth, Distribution and Politics" *European Economic Review* 36: 593–602.
- Persson, T. and G. Tabellini. 1999. *Political Economics: Explaining Economic Policy* Cambridge MA.: MIT Press.
- Persson T. and G.Tabellini. 2003. *The Economic Effect of Constitutions*. Cambridge MA.: MIT Press
- Peruzzoti, E. 2001. "The Nature of the New Argentine Democracy. The Delegative Democracy Argument Revisited." *Journal of Latin American Studies* 33: 133-155.
- Phillips, K. 1969. *The Emerging Republican Majority*. New Rochelle: Arlington House.
- Phillips, K. 2006. *American Theocracy*. London: Penguin.
- Phillips, K. 2008. *Bad Money*. New York: Viking.
- Phillipson, N. 2010. *Adam Smith*. New Haven: Yale University Press.
- Pierson, P. and T. Skocpol. [Eds.] 2007. *The Transformation of American Politics: Activist Government and the Rise of Conservatism*. Princeton, NJ: Princeton University Press.
- Pincus, S. 2009. *1688: The First Modern Revolution*. New Haven: Yale University Press.
- Pinker, S. 1997. *How the Mind Works*. New York: Norton.
- Pinker, S. 1999. *Words and Rules*. New York: Basic.
- Pinker, S. and P. Bloom. 1990. "Natural Language and Natural Selection." *Behavioral and Brain Sciences* 13: 707–784.
- Pirenne H. 1939. *Mohammed and Charlemagne*. London: Allen and Unwin.
- Plane, D. L. and J.Gershtenson. 2004. "Candidate's Ideological Locations, Abstention, and Turnout in US midterm Senate elections." *Political Behavior* 26: 69–93.
- Plott, C. R. 1967. "A Notion of Equilibrium and its Possibility Under Majority Rule." *American Economic Review* 57:787-806.
- Pocock J.G.A. 1971. *Politics, Language and Time*. London: Methuen.
- Poincaré, H. 1912. *Calcul des Probabilités*. Paris: Gauthier-Villars.
- Poincaré, H. 1993. *New Methods of Celestial Mechanics* (trans. and ed. by D. Goroff). New York: American Institute of Physics.
- Poincaré, H. 2007, [1908]. *Science and Method*. London: Cosimo Classics.
- Polsby, N. 2005. *How Congress Evolves*. Oxford: Oxford University Press.
- Poole, K., and H. Rosenthal. 1984a. "U.S. Presidential Elections 1968–1980: A Spatial Analysis." *American Journal of Political Science*. 28:283–312.
- Poole, K., and H. Rosenthal. 1984b. "The Polarization of American Politics." *Journal of Politics* 46: 1062-1079.
- Poole, K. and H. Rosenthal. 1997. *Congress: A Political Economic History of Roll Call Voting*. New York: Oxford University Press.
- Popper, K. 1945. *The Open Society and its Enemies*. London: Routledge and Kegan Paul.
- Popper, K. 1959. *The Poverty of Historicism*. London: Routledge and Kegan Paul.
- Popper, K. 1972. *Objective Knowledge: An Evolutionary Approach*. Oxford: Oxford University Press.

References

- Popper, K. 1988. "The Open Society and its Enemies Revisited." *The Economist* 307:19–22.
- Popper, K. 1992 [1934]. *The Logic of Scientific Discovery*. London: Routledge and Kegan Paul.
- Porter, B. *The Absent-Minded Imperialists*. Oxford: Oxford University Press.
- Posner, E.A. and A. Vermeule. 2011. *The Executive Unbound*. Oxford: Oxford University Press.
- Posner, R. A. 2005. *Catastrophe: Risk and Response*. Oxford: Oxford University Press.
- Posner, R. A. 2006. *Not a Suicide Pact: The Constitution in a Time of National Emergency*. Oxford: Oxford University Press.
- Powell, E. 1977. *Wrestling with the Angel*. London: Sheldon Press.
- Powers, D. V. and J. H. Cox 1997. "Echoes from the Past: The Relationship between Satisfaction with Economic Reforms and Voting Behavior in Poland." *American Political Science Review* 91: 617–33.
- Price, G. (1970). "Selection and Covariance." *Nature* 227, 520-521.
- Price, G. [1971], 1995. "The Nature of Selection." *Journal of Theoretical Biology* 175, 389-396.
- Price, G. (1972a). "Extension of Covariance Selection Mathematics." *Annals of Human Genetics* 35: 485-490.
- Price, G. (1972b). "Fisher's Fundamental Theorem made Clear." *Annals of Human Genetics* 36: 129-140.
- Prigogine, I. 1997. *The End of Certainty*. New York: Free Press.
- Prunier G. 2009. *Africa's World War*. Oxford: Oxford University Press.
- Przeworski, A. 1986. "Some Problems in the Study of the Transition to Democracy." In G. O'Donnell, P. C. Schmitter, and L. Whitehead [Eds.] *Transitions from Authoritarian Rule: Comparative Perspective*, Baltimore: The Johns Hopkins University Press.
- Przeworski, A. 1991. *Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America*. Cambridge: Cambridge University Press.
- Przeworski, A. 2006. "Democracy and Economic Development." In E. Mansfield and R. Sisson [Eds.], *Political Science and the Public Interest*. Columbus OH.: Ohio State University Press.
- Przeworski, A. and C. Curvale. 2006. "Does Politics Explain the Economic Gap between the United States and Latin America?" In F. Fukuyama (Ed.). *La Brecha entre America Latina y los Estados Unidos*, Fondo de Cultura Economica.
- Przeworski, A., M. E. Alvarez, J. A. Cheibub, and F. Limongi. 1996. "What Makes Democracy Endure?" *Journal of Democracy* 7: 39-55.
- Przeworski, A., M. E. Alvarez, J. A. Cheibub, and F. Limongi. 2000. *Democracy and Development: Political Institutions and Well-Being in the World, 1950–1990*. Cambridge: Cambridge University Press.
- Pugh, C. 2002. *Real Mathematical Analysis*. Heidelberg: Springer.
- Puhle, H.-J. 1986. "Lords and Peasants in the Kaiserreich." In: R.G. Moeller [Ed.] *Peasants and Lords in Modern Germany*. Winchester UK: Allen and Unwin.
- Putnam, R.D. and D.E. Campbell. 2010. *American Grace: How Religion Divides and Unites Us*. New York: Simon and Schuster.
- Quinn, S. 2001. "The Glorious Revolution's Effect on English Private Finance: A Microhistory, 1680-1705." *The Journal of Economic History*. 61:593–615.

References

- Quinn, K., and A. Martin. 2002. "An Integrated Computational Model of Multiparty Electoral Competition." *Statistical Science* 17:405–419.
- Quinn, K., A. Martin, and A. Whitford. 1999. "Voter Choice in Multiparty Democracies." *American Journal of Political Science* 43:1231–1247.
- Rabinowitz, G., and MacDonald, S. E. 1986. "The Power of the States in U.S. Presidential Elections." *The American Political Science Review* 80:65–87.
- Rachman, G. 2011. *Zero-Sum Future*. New York: Simon and Schuster.
- Rae, D. 1967. *The Political Consequences of Electoral Laws*. New Haven: Yale University Press.
- Rae, D. 1969. "Decision Rules and Individual Values in Constitutional Choice." *American Political Science Review* 63: 40–56.
- Rae, D. W, and M. Taylor. 1970. *The Analysis of Political Cleavages*. New Haven: Yale University Press.
- Rakove, J. [Ed.]. 1999. *James Madison: Writings*. New York: Library of America.
- Rakove, J. 2010. *Revolutionaries*. New York: Houghton Mifflin Harcourt.
- Rakove, J., A. Rutten and B. Weingast. 1999. "Ideas, Interests and Credible Commitments in the American Revolution." Working paper: Stanford University.
- Ramo, J.C. 2009. *Age of the Unthinkable*. New York: Little Brown.
- Ransom, R. 1989. *Conflict and Compromise*. Cambridge : Cambridge University Press.
- Rashid, A. 2001. *The Taliban*. New Haven: Yale University Press.
- Rashid, A. 2008. *Descent into Chaos*. New York: Viking.
- Rashid, A. 2009. "Pakistan on the Brink." *New York Review of Books* 56(10):12-16.
- Rawls J. 1970. *A Theory of Justice*. Cambridge, MA.: Harvard University Press.
- Rasmussen, S. and D. Schoen. 2010. *Mad As Hell: How the Tea Party Movement Is Fundamentally Remaking Our Two-Party System*. New York: Harper.
- Regan, P.M. and S. R. Bell. 2010. "Changing Lanes or Stuck in the Middle: Why Are Anocracies More Prone to Civil Wars?" *Political Research Quarterly* 63: 747-759.
- Reich, R. B. 2007 *Supercapitalism*. New York: Knopf.
- Reich, R. B. 2010a. "How to End the Great Recession." *New York Times* (September 3).
- Reich, R. B. 2010b. *Aftershock: The Next Economy and America's Future*. New York: Knopf.
- Reinganum J. F. 1981. "Dynamic Games of Innovation." *Journal of Economic Theory* 25:21–41.
- Reinhart, C. M. and K. Rogoff. 2009. *This time is Different*. Princeton, NJ: Princeton University Press.
- Remmer, K. 1991. "The Political Impact of Economic Crisis in Latin America in the 1980s." *American Political Science Review* 85: 777-800.
- Remmer, K. 2000. "Economic and Referendum Voting in Argentina, 1983-1999." *Comparative Political Studies* 36: 801-821.
- Reston, J. 2001. *The Warriors of God*. New York: Random House.
- Reston, J. 2009. *Defenders of the Faith*. London: Penguin.
- Rhodehamel, J. [Ed.]. 1997. *Washington: Writings*. New York: Library of America.
- Richards, D. 1990. "Is Strategic Decision Making Chaotic?" *Behavioral Science* 35: 219–32.

References

- Richerson, P. and R. Boyd. 2005. *Not by Genes Alone*. Chicago: Chicago University Press.
- Richerson, P., R. Boyd and R.L. Bettinger. 2001. "Was Agriculture Impossible During the Pleistocene but Mandatory During the Holocene? A Climate Change Hypothesis." *American Antiquity* 66: 387-411.
- Richter, K. 2006. "Wage Arrears and Economic Voting in Russia." *American Political Science Review* 100: 133-145.
- Ridley, M. 1998. *The Origins of Virtue: Human Instincts and the Evolution of Cooperation*. New York: Penguin.
- Ridley, M. 2010. *The Rational Optimist*. New York: Harper.
- Riker, W. H. 1953. *Democracy in the United States*. New York: Macmillan.
- Riker, W. H. 1962. *The Theory of Political Coalitions*. New Haven: Yale University Press.
- Riker, W. H. 1964. *Federalism: Origin, Operation, Maintenance*. Boston, MA: Little Brown.
- Riker, W. H. 1965. "Theory and Science in the Study of Politics." *Journal of Conflict Resolution* 56:375-379.
- Riker, W. H. 1980. "Implications from the Disequilibrium of Majority Rule for the Study of Institutions." *American Political Science Review* 74:432-446.
- Riker, W. H. 1982a. *Liberalism against Populism: A Confrontation Between the Theory of Democracy and the Theory of Social Choice*. San Francisco: Freeman.
- Riker, W. H. 1982b. "The Two Party System and Duverger's Law: An Essay on the History of Political Science." *American Political Science Review* 76:753-766.
- Riker, W. H. 1986. *The Art of Political Manipulation*. New Haven: Yale University Press.
- Riker, W. H. 1987. *The Development of American Federalism*. Boston, MA: Kluwer.
- Riker, W. H., and P. C. Ordeshook. 1973. *An Introduction to Positive Political Theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Robbins, L. 1932. *An Essay on the Nature and Significance of Economic Science*. London: Macmillan.
- Roberts, K. M. and E. Wibbels. 1999. "Party Systems and Electoral Volatility in Latin America: A Test of Economic, Institutional, and Structural Explanations." *American Political Science Review* 93: 575-590.
- Robson, A. and Kaplan, H. 2003. "The Evolution of Human Life Expectancy and Intelligence in Hunter Gatherer Societies." *American Economic Review* 93: 150-169.
- Rock, D. 1985. *Argentina, 1516-1982: From Spanish Colonization to the Falklands War*. Berkeley: University of California Press.
- Rockstrom, J.W. et al 2009. "A Safe Operating Space for Humanity." *Nature* 461: 472-475.
- Roemer, J. E. 2001. *Political Competition: Theory and Applications*. Cambridge, MA: Harvard University Press.
- Roemer, J. E. 2011. "A Theory of Income Taxation where Politicians Focus upon Core and Swing Voters." *Social Choice and Welfare* 36(3-4): 383-422.
- Rogow, A.A. 1986. *Thomas Hobbes: Radical in the Service of Reaction*. New York: Norton.
- Rogowski, R. 1987. "Political Cleavages and Changing Exposure to Trade." *The American Political Science Review* 81:1121-1137.

References

- Rogowski, R. 1989. *Commerce and Coalitions*. Princeton, NJ: Princeton University Press.
- Rokkan, S. 1970. *Citizens, Elections, Parties: Approaches to the Comparative Study of the Processes of Development*. Oslo: Universitetsforlaget.
- Romer, Paul M. 1986. "Increasing Returns and Long-Run Growth." *Journal of Political Economy* 94: 1002-1037.
- Rosen, W. 2007. *Justinian's Flea*. New York: Viking.
- Rosenthal, H., and E. Voeten. 2004. "Analyzing Roll Calls with Perfect Spatial Voting." *American Journal of Political Science* 48:620–632.
- Ross, I.S. 1995. *The Life of Adam Smith*. Oxford: Clarendon Press.
- Rothschild, E. 2001. *Economic Sentiments: Adam Smith, Condorcet and the Enlightenment*. Cambridge, MA: Harvard University Press.
- Rousseau, J.-J. 1993. *The Social Contract and Discourses*. London: Everyman.
- Roubini, N. and Mihm, S. 2010. *Crisis Economics*. New York: Penguin.
- Rubinstein, A. 1979. "A Note About the Nowhere Denseness of Societies Having an Equilibrium Under Majority Rule." *Econometrica* 47:511–514.
- Rubinstein, A. 1991. "Comments on the Interpretation of Game Theory." *Econometrica* 59: 909-924.
- Saari, D. 1985. "A Chaotic Exploration of Aggregation Paradoxes." *SIAM Review* 37:37-52.
- Saari, D. 1997. "The Generic Existence of a Core for q -Rules." *Economic Theory* 9:219–260.
- Saari, D. and Xia, Z. 1985. "The Existence of Oscillatory and Superhyperbolic Motion in Newtonian systems." *Journal of Differential Equations* 82: 342-355.
- Sachs, J.D. 2008. *Commonwealth*. New York: Penguin.
- Sammon, W. 2007. *The Evangelical President*. Washington, D.C.:Regnery.
- Samuelson, P. A. 1954. "The Pure Theory of Public Expenditure." *Review of Economics and Statistics*. 36: 387-389.
- Samuelson, L. 2005. "Foundations of Human Sociality: A Review Essay." *Journal of Economic Literature* 43: 488-497.
- Sanders, D., H.D. Clarke, M.C. Stewart, P. Whiteley. 2011. "Downs, Stokes and the Dynamics of Electoral Choice." *British Journal of Political Science* 41: 287-314
- Sartori, G. 1976. *Parties and Party Systems: A Framework of Analysis*. Cambridge: Cambridge University Press.
- Savage, L. 1954. *The Foundations of Statistics*. New York: Dover.
- Schaller, T. 2006. *Whistling Past Dixie*. New York: Simon and Schuster.
- Schattschneider, E. E. 1960. *The Semi-Sovereign People*. New York: Holt, Rinehart and Winston.
- Schele L. and M.E.Miller.1986. *The Blood of Kings: Dynasty and Ritual in Mayan Art*. New York: George Braziller.
- Schiff, S. 2010. *Cleopatra: A Life*. New York: Little Brown.
- Schlesinger, Sr. A. M. 1939. "Tides of American Politics." *Yale Review*. 29: 220.
- Schlesinger, Jr. A. M. 1957. *The Crisis of the Old Order*. New York: Houghton Mifflin.
- Schlesinger, Jr. A. M. 1958. *The Coming of the New Deal*. New York: Houghton Mifflin.

References

- Schlesinger, Jr. A. M. 1960. *The Politics of Upheaval*. New York: Houghton Mifflin.
- Schlesinger, Jr. A. M. 1973. *The Imperial Presidency*. New York: Houghton Mifflin.
- Schlesinger, Jr. A. M. 1986. *The Cycles of American History*. New York: Houghton Mifflin.
- Schlesinger, Jr. A. M. 1994. *Political Parties and the Winning of Office*. Ann Arbor: University of Michigan Press.
- Schmitter, P. C. 1981. "Interest Intermediation and Regime Governability in Contemporary Western Europe and North America." In S. Berger [Ed.]. *Organizing Interest in Western Europe*. Cambridge: Cambridge University Press.
- Schnidman, E. and N. Schofield. 2011. "Non-Convergence in U.S. Electoral Politics." Working paper: Washington University in St. Louis. At http://polisci.wustl.edu/norman_schofield
- Schofield, N., 1972a. "Is Majority Rule Special?" In R. G. Niemi and H. F. Weisberg [Eds.]. *Probability Models of Collective Decision-making*. Columbus, OH: Charles E. Merrill Publishing Co.
- Schofield, N., 1972b. "Ethical Decision Rules for Uncertain Voters." *British Journal of Political Science* 2: 193–207.
- Schofield, N. 1975. "A Game Theoretic Analysis of Olson's Game of Collective Action." *Journal of Conflict Resolution*. 19:441–461.
- Schofield, N., 1977a. "Transitivity of Preferences on a Smooth Manifold." *Journal of Economic Theory* 14:149–172.
- Schofield, N. 1977b. "Dynamic Games of Collective Action." *Public Choice* 30:77–105.
- Schofield, N. 1978. "Instability of Simple Dynamic Games." *Review of Economic Studies*. 45:575–594.
- Schofield, N. 1980. "Generic Properties of Simple Bergson–Samuelson Welfare Functions." *Journal of Mathematical Economics* 7:175–192.
- Schofield, N. 1981. "The Relationship between Voting and Party Strength in an Electoral System." In M. J. Holler [Ed.] *Power, Voting and Voting Power*. Wurzburg: Physica Verlag.
- Schofield, N. 1983. "Generic Instability of Majority Rule." *Review of Economic Studies*. 50:695–705.
- Schofield, N. 1984a. "Social Equilibrium and Cycles on Compact Sets," *Journal of Economic Theory* 33: 59–71.
- Schofield, N. 1984b. "Existence of Equilibrium on a Manifold." *Mathematics of Operations Research* 9:545–557.
- Schofield, N. 1984c. "Classification Theorem for Smooth Social Choice on a Manifold." *Social Choice and Welfare* 1:187–210.
- Schofield, N. and M. Laver. 1985. "Bargaining Theory and Portfolio Payoffs in European Coalition Governments 1945–1983." *British Journal of Political Science* 15:143–164.
- Schofield, N. 1986d. "Permutation Cycles and Manipulation of Choice Functions." *Social Choice and Welfare* 3:107–117.
- Schofield, N. 1986e. "Existence of a Structurally Stable Equilibrium for a Non-Collegial Voting Rule." *Public Choice* 51:267–284.
- Schofield, N. 1984f. "Political Fragmentation and the Stability of Coalition Governments in Western Europe." In M. J. Holler [Ed.] *Coalitions and Collective Action*. Wurzburg: Physica Verlag.

References

- Schofield, N. 1985a. *Social Choice and Democracy*. Heidelberg: Springer.
- Schofield, N. 1985b. "Anarchy, Altruism and Cooperation." *Social Choice and Welfare* 2: 207–19.
- Schofield, N. 1987. "The Stability of Coalition Governments in Western Europe: 1945-1986." *European Journal of Political Economy* 3:555–591.
- Schofield, N., B. Grofman, and S. Feld. 1989. "The Core and Stability in Spatial Voting Games." *American Political Science Review* 82:195–211.
- Schofield, N. 1992. "Democratic Stability." In J. Knight and I. Sened [Eds.]. *Explaining Institutions*. Cambridge: Cambridge University Press.
- Schofield, N. 1993a. "Party Competition in a Spatial Model of Coalition Formation." In W. Barnett, M. Hinich and N. Schofield [Eds.] *Political Economy: Institutions, Competition and Representation*. Cambridge: Cambridge University Press.
- Schofield, N. 1993b. "Political Competition and Multiparty Coalition Governments." *European Journal of Political Research*. 23:1–33.
- Schofield, N. 1995a. "Rational Choice and Political Economy." *Critical Review* 9: 189-211.
- Schofield, N. 1995b. "Coalition Politics: A Formal Model and Empirical Analysis." *Journal of Theoretical Politics* 7:245–281.
- Schofield, N. 1997. "Multiparty Electoral Politics." In D. Mueller [Ed.]. *Perspectives on Public Choice*. Cambridge: Cambridge University Press.
- Schofield, N. 1998. "Aggregation of Smooth Preferences." *Social Choice and Welfare* 15:161–185.
- Schofield, N., A. Martin, K. Quinn, and A. Whitford. 1998. "Multiparty Electoral Competition in the Netherlands and Germany: A Model based on Multinomial Probit." *Public Choice* 97:257–293.
- Schofield, N., I. Sened, and D. Nixon. 1998. "Nash Equilibria in Multiparty Competition with Stochastic Voters." *Annals of Operations Research* 84:3–27.
- Schofield, N. 1999a. "The Heart of the Atlantic Constitution: International Economic Stability, 1919-1998." *Politics and Society* 27: 173–215.
- Schofield, N. 1999b. "Equilibrium or Chaos in Preference and Belief Aggregation." In J. Alt, M. Levi, and E. Ostrom [Eds.]. *Competition and Cooperation*. New York: Russell Sage Foundation.
- Schofield, N. 1999c. "The Heart and the Uncovered Set." *Journal of Economics* Suppl 8:79–113.
- Schofield, N. 1999d. "A Smooth Social Choice Method of Preference Aggregation." In M. Wooders [Ed.]. *Topics in Mathematical Economics and Game Theory: Essays in Honor of R. Aumann*. Fields Institute, Providence, RI.: American Mathematical Society.
- Schofield, N. 1999e. "The C^1 -topology on the Space of Smooth Preferences." *Social Choice and Welfare* 16: 445-470.
- Schofield, N. 2000. "Core Beliefs and the Founding of the American Republic." *Homo Oeconomicus* 16: 433–462.
- Schofield, N. 2000. "Institutional Innovation, Contingency and War: A Review." *Social Choice and Welfare* 17: 463-479.
- Schofield, N., and R. Parks. 2000. "Nash Equilibrium in a Spatial Model of Coalition Bargaining." *Mathematical Social Science* 39:133–174.

References

- Schofield, N. 2001a. "Generic Existence of Local Political Equilibrium." In M. Lassonde [Ed.]. *Approximation, Optimization and Mathematical Economics*. Heidelberg: Springer.
- Schofield, N. 2001b. "Constitutions, Voting and Democracy." *Social Choice and Welfare* 18: 571-600.
- Schofield, N. 2002a. "Evolution of the Constitution." *The British Journal of Political Science* 32:1-20.
- Schofield, N. 2002b. "Representative Democracy as Social Choice." In: K.Arrow , A.Sen, K.Suzumura [Eds.] *The Handbook of Social Choice and Welfare*. New York:North Holland.
- Schofield, N., and I. Sened. 2002. "Local Nash Equilibrium in Multiparty Politics." *Annals of Operations Research* 109:193-210.
- Schofield, N. 2003a. "The Founding of the American Agrarian Empire and the Conflict of Land and Capital." *Homo Oeconomicus* 19: 471-505.
- Schofield, N. 2003b. "Power, Prosperity and Social Choice: A Review." *Social Choice and Welfare* 20: 85-118.
- Schofield, N. 2003c. "Constitutional Quandaries and Critical Elections." *Politics, Philosophy and Economics* 2:5-36.
- Schofield, N. 2003d. "Madison and the Founding of the Two Party System in the US." In: S. Kernell [Ed.] *James Madison: The Theory and Practise of Republican Government*. Stanford : Stanford University Press.
- Schofield, N. 2003e. "Valence Competition in the Spatial Stochastic Model." *Journal of Theoretical Politics* 15:371-383.
- Schofield, N. 2003f. *Mathematical Methods in Economics and Social Choice*. Heidelberg: Springer.
- Schofield, N., G. Miller, and A. Martin. 2003. "Critical Elections and Political Realignment in the U.S.: 1860-2000." *Political Studies* 51:217-240.
- Schofield, N. 2004. "Equilibrium in the Spatial Valence Model of Politics." *Journal of Theoretical Politics* 16:447-481.
- Schofield N. 2005a. "The Intellectual Contribution of Condorcet to the Founding of the US Republic." *Social Choice and Welfare* 25: 303-318.
- Schofield, N. 2005b. "A Valence Model of Political Competition in Britain: 1992-1997." *Electoral Studies* 24:347-370.
- Schofield, N. 2005c. "Local Political Equilibria." In D. Austen-Smith and J. Duggan [Eds.]. *Social Choice and Strategic Decisions*. Heidelberg: Springer.
- Schofield, N. and I. Sened. 2005a. "Modelling the Interaction of Parties, Activists and Voters: Why is the Political Center so Empty?" *European Journal of Political Research* 44: 355-390.
- Schofield, N. and I. Sened. 2005b. "Multiparty Competition in Israel: 1988-1996." *British Journal of Political Science* 35:635-663.
- Schofield, N. 2006a. *Architects of Political Change: Constitutional Quandaries and Social Choice Theory*. Cambridge: Cambridge University Press.
- Schofield, N. 2006b. "Equilibria in the Spatial Stochastic Model with Party Activists." *Review of Economic Design* 10:183-203.

References

- Schofield, N., and I. Sened. 2006. *Multiparty Democracy: Elections and Legislative Politics*. Cambridge: Cambridge University Press.
- Schofield, N. 2007a. "The Mean Voter Theorem: Necessary and Sufficient Conditions for Convergent Equilibrium." *Review of Economic Studies* 74:965–980.
- Schofield, N. 2007b. "Political Equilibrium with Electoral Uncertainty." *Social Choice and Welfare* 28:461–490.
- Schofield, N. and G.Cataife. 2007. "A Model of Political Competition with Activists with an Application to the Elections of 1989 and 1995 in Argentina." *Mathematical Social Science* 53: 213-231.
- Schofield, N., and G. Miller. 2007. "Elections and Activist Coalitions in the United States." *American Journal of Political Science* 51:518–531.
- Schofield, N. 2008a. "Modelling Political Economy." *Homo Oeconomicus* 25: 1-32.
- Schofield, N. 2008b. *The Spatial Model of Politics*. London: Routledge.
- Schofield, N. 2008c "Divergence in the Spatial Stochastic Model of Voting." In M. Braham and F. Steffen [Eds.]. *Power, Freedom and Voting*. Heidelberg: Springer.
- Schofield, N., and M. Levinson. 2008. "The Collapse of Authoritarian Regimes." *Politics, Philosophy and Economics* 7: 243-283.
- Schofield, N. 2009a. *The Political Economy of Democracy and Tyranny*. Munich:Oldenbourg.
- Schofield, N. 2009b."An Activist Model of Democracy." In E. Aragones, C. Bevia, H. Llavador and N. Schofield [Eds.]. *The Political Economy of Democracy*. Barcelona: BBVA Foundation.
- Schofield, N. 2009c."Switching Equilibria." In W. Heller and C. Mershon [Eds.]. *Legislative Party Switching and the Foundation of Political Parties*. London:Macmillan Palgrave.
- Schofield, N., and U. Ozdemir. 2009. "A Formal Model of Elections and Bargaining." *Czech Economic Review* 3: 207-242.
- Schofield, N. 2010. "Social Orders." *Social Choice and Welfare* 34: 503-536.
- Schofield, N., C. Claassen, U. Ozdemir, and A. V. Zakharov. 2010a. "Application of a Theorem in Stochastic Models of Elections." *International Journal of Mathematics and Mathematical Sciences* doi:10.1155/2010/562813.
- Schofield N., U. Ozdemir, and M. Tavits. 2010b. "Modeling Elections in Poland." Working paper: Washington University in St.Louis.
At http://polisci.wustl.edu/norman_schofield.
- Schofield, N. and A.V. Zakharov. 2010. "A Stochastic Model of the 2007 Russian Duma Election." *Public Choice* 142: 177-194.
- Schofield, N. 2011a. "Is the Political Economy Stable or Chaotic?" *The Czech Economic Review* 5: 76-93.
- Schofield, N. 2011b."Structural Stability of the Political Economy." *The International Journal of Business and Social Science* 2(9) : 214-234.
- Schofield, N. 2011c."Topology and Social Choice." *Aeterna Mathematica* 1(2):79-122.
- Schofield, N. 2011d."Moral Sentiments and Climate Change." *Harvard College Economics Review* (Spring) IV (2):7-13.
- Schofield, N., C. Claassen, M. Gallego and U. Ozdemir. 2011a. "Empirical and Formal Models of the United States Presidential Elections in 2000 and 2004." In N.Schofield and G.Caballero [Eds.] *Political Economy of Institutions, Democracy and Voting*. Heidelberg: Springer.

References

- Schofield, N., C. Claassen, U. Ozdemir, and A. V. Zakharov. 2011b. "Estimating the Effects of Activists in Two-party and Multi-party Systems: A Comparison of the United States in 2008 and Israel in 1996." *Social Choice and Welfare*: 36 (3-4): 483-518.
- Schofield, N., M.Gallego, and J. Jeon. 2011c. Leaders, Voters and Activists in the Elections in Great Britain in 2005 and 2010." Working paper: Washington University in Saint Louis. At http://polisci.wustl.edu/norman_schofield. *Electoral Studies* 30 (3):484-496.
- Schofield, N., M.Gallego, J. Jeon, and U.Ozdemir. 2011d. "The Convergence Coefficient and the Heart: An Application to the Election in Canada in 2004." Working paper: Washington University in Saint Louis.
At http://polisci.wustl.edu/norman_schofield
- Schofield, N., M. Gallego, U. Ozdemir, and A. V. Zakharov. 2011e. "Competition for Popular Support: A Valence Model of Elections in Turkey." *Social Choice and Welfare*, 36 (3-4): 451-482.
- Schofield N., J. S. Jeon, M. Muskhelishvili, U. Ozdemir, and M. Tavits. 2011f. "Modelling Elections in Post-Communist Regimes: Voter Perceptions, Political Leaders and Activists." In N.Schofield and G.Caballero [Eds.] *Political Economy of Institutions, Democracy and Voting*. Heidelberg: Springer.
- Schofield, N. and E. Schmidman. 2011. "Support for Political Leaders." *Homo Oeconomicus* 28: 7-47.
- Schofield, N., and M. Gallego. 2012. "Anocracies and Autocracies." Forthcoming in G. Caballero [Ed.] *Institutions, Economic Governance and Public Policies* (in spanish) Madrid.
- Schonhardt-Bailey, C. 1991. "Specific Factors, Capital Markets, Porfolio Divesification and Free Trade." *World Politics* 43: 345-369.
- Schonhardt-Bailey, C. 1998. "Parties and Interests in the 'Marriage of Iron and Rye'." *British Journal of Political Science* 28:291-330.
- Schonhardt-Bailey, C. 2001. "The Strategic Use of Ideas: Nationalizing the Interest in the Ninetweenth Century." In F.McGillivray et al. [Eds.] *International Trade and Political Institutions*. Cheltenham,UK: Edward Elgar.
- Schonhardt-Bailey, C. 2006. *From the Corn Laws to Free Trade: Interests, Ideas, and Institutions in Historical Perspective*. Cambridge, MA: The MIT Press.
- Schumpeter, J.A. 1939 [1961]. *The Theory of Economic Development : An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. New York: Oxford University Press.
- Schumpeter, J. 1942. *Capitalism, Socialism, and Democracy*. New York: Harper.
- Scotto, T.J., H.D. Clarke, A. Kornberg, J. Reifler, D. Sanders, M.C. Stewart, and P. Whiteley. 2010. "The Dynamic Political Economy of Support for Barack Obama during the 2008 Presidential Election Campaign." *Electoral Studies* 29: 545-556.
- Seligson, A. L. 2003. "Disentangling the Roles of Ideology and Issue Positions in the Rise of Third Parties." *Political Research Quarterly* 56:465-475.
- Serra, G. 2010. "Polarization of What? A Model of Elections with Endogenous Valence." *Journal of Politics* 72: 426-427.
- Seyd, P., and P. Whiteley. 1992. *Labour's Grassroots*. Oxford: Clarendon Press.
- Seyd, P., and P. Whiteley. 2002. *New Labour's Grassroots*. Basingstoke, UK: Macmillan.

References

- Shaw-Taylor, L. 2001. "Parliamentary Enclosure and the Emergence of an English Agricultural Proletariat." *The Journal of Economic History*. 61:640–662.
- Shapiro, R. 2008. *Futurecast*. London: St.Martins Press.
- Shepsle, K. A. 1989. "Studying Institutions: Some Lessons from the Rational Choice Approach." *Journal of Theoretical Politics* 1: 131-148.
- Shepsle, K. A. 1991. *Models of Multiparty Electoral Competition*. Chur: Harwood Academic Press.
- Shepsle, K. A, and B. R. Weingast 1981. "Political Preferences for the Pork Barrel: A Generalization." *American Journal of Political Science*. 25:96–111.
- Shikano, S, and E. Linhart. 2007. "Government Formation after the Dutch General Election." Working paper: University of Mannheim.
- Shiller, R. 2003. *The New Financial Order: Risk in the 21st Century*. Princeton: Princeton University Press.
- Shiller, R. 2005. *Irrational Exuberance*. Princeton: Princeton University Press.
- Shiller, R. 2008. *The Subprime Solution: How Today's Global Financial Crisis Happened, and What to Do about It*. Princeton: Princeton University Press.
- Sigelman, L., and W. D. Berry. 1982. Cost and the Calculus of Voting." *Political Behavior* 4:419–428.
- Simms, B. 2008. *Three Victories and a Defeat: The Rise and Fall of the First British Empire*. New York: Basic.
- Simon, C. P., and C. Titus. 1975. "Characterization of Optima in Smooth Pareto Systems." *Journal of Mathematical Economics* 2:297–330.
- Simon, H. A. 1959. "Theories of Decision-making in Economics and Behavioral Science." *The American Economic Review* 49(3), 253-283.
- Skidelsky, R. 2000. *John Maynard Keynes: Fighting for Britain, 1937-1946*. London: Macmillan.
- Skidmore, T. E and P. H. Smith. 1997. *Modern Latin America*. 4th ed. Oxford: Oxford University Press.
- Skocpol, T. and V. Williamson. 2010. "The Tea Party and the Rebirth of Republican Conservatism." Working Paper, presented at the Harvard Center for American Political Studies seminar.
- Skyrms, B. 1996. *Evolution of the Social Contract*. Cambridge: Cambridge University Press.
- Smale, S. 1966. "Structurally Stable Systems Are Not Dense." *American Journal of Mathematics* 88: 491–96.
- Smith, A. 1980.[1795]. *Essays on Philosophical Subjects*. Indianapolis, IN: Liberty Fund.
- Smith, A. 1981 [1776]. *An Inquiry into the Nature and Causes of the Wealth of Nations*. Indianapolis, IN: Liberty Fund.
- Smith, A. 1984 [1759]. *The Theory of Moral Sentiments*. Indianapolis, IN: Liberty Fund.
- Smith, A. 1985 [1762]. "Considerations Concerning the First Formation of Language," in *Lectures On Rhetoric and Belles Lettres*, Ed, J. C. Bryce, vol. IV of the *Glasgow Edition of the Works and Correspondence of Adam Smith*, Indianapolis, IN: Liberty Fund.
- Smith, J. 2005. "Trading Places: The Two Parties in the Electorate from 1975-2004." Unpublished Ph.D. Dissertation: Washington University in St. Louis.

References

- Smith, J. M. [Ed]. 1995. *The Republic of Letters* (3 volumes). New York: Norton.
- Smith, L. 2009. *The Strong Horse: Power, Politics and the Clash of Civilizations*. New York: Doubleday.
- Smith, L.C. 2010. *The World in 2050: Four Forces Shaping Civilization's Northern Future*. New York: Dutton.
- Smith, P. H. 2005. *Democracy in Latin America: Political Change in Comparative Perspective*. Oxford : Oxford University Press.
- Smithies, A. 1941. "Optimum Location in Spatial Competition." *Journal of Political Economy* 49: 423–439.
- Snyder, J. and M.Ting. 2008."Interest Groups and the Electoral Control of Politicians." *Journal of Public Economics* 92:482–500.
- Snyder, J., M.Ting and S.Ansolabehere. 2005 "Legislative Bargaining under Weighted Voting." *American Economic Review* 95: 981-1004.
- Snyder, T. 2011. "Hitler vs. Stalin: Who Killed More?" *New York Book Review* 58 (4) March 10.
- Sokoloff, K. L. and S.L.Engerman. 2000. "Institutions , Factor endowments and the Paths of Development in the New World." *Journal of Economic Perspectives* 14: 217-232.
- Spengler, O. 1961. *The Decline of the West: Vol.1. The Downfall of the Occident* [1918]. Vol.2. *Perspectives of World History* [1923] (ed. H.Werner, trans. and abridged, C.F. Atkinson). London: Vintage.
- Spinoza, B. [1677]. *Ethics*. (trans. R. Elwes). New York: Doubleday.
- Stasavage, D. 2002. "Credible Commitment in Early Modern Europe: North and Weingast Revisited." *Journal of Law, Economics and Organization* 18: 155–86.
- Stasavage, D. 2003. *Public Debt and the Birth of the Democratic State*. Cambridge: Cambridge University Press.
- Stasavage, D. 2007. "Partisan Politics and Public Debt: The Importance of the Whig Supremacy for Britain's Financial Revolution." *European Review of Economic History*. II: 123-153.
- Stasavage, D. 2010."When Distance Mattered: Geographic Scale and the Development of European Representative Assemblies. *The American Political Science Review*.104:625-643.
- Stasavage, D. 2011. *States of Credit: Size, Power, and the Development of European Polities*. Princeton: Princeton University Press.
- Stephan A. and C.Skach. 1993. "Constitutional Frameworks and Democratic Consolidation: Parliamentarism versus Presidentialism. *World Politics* 46:1-22.
- Stern N. 2007. *The Economics of Climate Change*. Cambridge: Cambridge University Press.
- Stern N. 2009. *The Global Deal*. New York:Public Affairs.
- Stewart I (2003) "Self-organization in evolution: a mathematical perspective." *Phil. Trans. R. Soc. Lond. A* 361:1101-1123.
- Steyn, M. (2011) *After America*. New York: Regnery.
- Stewart I, Elmhirst, T, and Cohen J (2003) "Symmetry-breaking as an origin of species." In: Buescu J, Castro S, Dias A P S, and Labouriau I (eds) *Bifurcations, symmetry, and patterns*. Birkhäuser, Basel, 3-54.
- Stewart, M. 2006. *The Courtier and the Heretic: Leibniz, Spinoza and the Fate of God in the Modern World*. New York: Norton.

References

- Stiglitz, J. 2010. *Freefall: America and the Sinking of the World Economy*. New York: Norton.
- Stiglitz, J. and L.J. Bilmes. 2008. *The Three Trillion Dollar War*. New York: Norton.
- Stokes, D. 1963. "Spatial Models and Party Competition." *American Political Science Review* 57:368–377.
- Stokes, D. 1992. "Valence Politics." In D. Kavanagh [Ed.]. *Electoral Politics*. Oxford: Clarendon Press.
- Stokes, S. 2001. *Mandates and Democracies. Neoliberalism by Surprise in Latin America*. Cambridge: Cambridge University Press.
- Stokes, S. 2005. "Perverse Accountability: A Formal Model of Machine Politics with Evidence from Argentina." *The American Political Science Review* 99:315-325.
- Stokey, N.L., Lucas, R.E., 1989. *Recursive Methods in Economics Dynamics*. Harvard Univ. Press, Cambridge, MA.
- Stolper, W. and P. A. Samuelson. 1941. "Protection and Real Wages." *Review of Economic Studies* 9: 58-73.
- Sugden, R. 1980. *The Economics of Rights, Cooperation and Welfare*. Oxford: Blackwell.
- Sumbadze, N.. 2009. "Saakashvili in the Public Eye: What Public Opinion Polls Tell Us." *Central Asian Survey* 28: 2, 185-197.
- Summers R. and A. Heston. 1991. "The Penn World Table (Mark 5): An Expanded set of International Comparisons, 1950-1988." *Quarterly Journal of Economics* 106: 327-368.
- Sundquist, J. L. 1973. *Dynamics of the Party System: Alignment and Realignment of Political Parties in the United States*. Washington, D.C: Brookings Institution.
- Syrquin, M. 1988. "Patterns of Structural Change." In C.Hollis and T.N. Srinivasan [Eds.] *Handbook of Development Economics Vol. 1*. Amsterdam: North-Holland.
- Szczerbiak, A. 1998.. "Electoral Politics in Poland: The Parliamentary Elections of 1997." *Journal of Communist Studies and Transition Politics* 14(3): 58-83.
- Taagepera, R., and M. S. Shugart. 1989. *Seats and Voters: The Effects and Determinants of Electoral Systems*. New Haven: Yale University Press.
- Takeyh, R. 2006. *Hidden Iran: Paradox and Power in the Islamic Republic*. New York:Times Books.
- Taleb, N. 2004. *Foiled by Randomness*. New York: Thomson.
- Taleb, N. 2007. *The Black Swan*. New York: Random.
- Taussig, F.W. 1888. *The History of the Present Tariff, 1860-1883*. New York:Putnam.
- Tavits, M. and N.Letki. 2009. "When Left is Right: Party Ideology and Policy in Post-Communist Europe." *American Political Science Review*, 103 (4): 555-569.
- Taylor, M. 1976. *Anarchy and Cooperation*. London: Wiley.
- Taylor, M. 1982. *Community, Anarchy, and Liberty*. Cambridge: Cambridge University Press.
- Taylor M., and Herman V.M. 1971. "Party Systems and Government Stability." *American Political Science Review* 65:28–37.
- Tett, G. 2009. *Fool's Gold*. New York: Free Press.
- Thom, R., 1994. [1966]. *Structural Stability and Morphogenesis*. Boulder, CO.:Westview.

References

- Thuan, T.X. 2000. *Chaos and Harmony*. Oxford:Oxford University Press.
- Thurder, P., and A.Eymann. 2000. "Policy-Specific Alienation and Indifference in the Calculus of Voting: A Simultaneous Model of Party Choice and Abstention." *Public Choice* 102: 51–77.
- Thurow, L. C. 1980. *The Zero-Sum Society*. New York: Basic Books
- Tomasky M. 2010. "The Money Fighting Health Care Reform." *New York Review of Books* 57(6):10-14.
- Toynbee, A.J. 1934-1961. *A Study of History*. (12 volumes). Oxford: Oxford University Press.
- Train, K. 2003. *Discrete Choice Methods for Simulation*. Cambridge: Cambridge University Press.
- Treisman, D. and V.Gimpelson. 2001. "Political Business Cycles and Russian Elections: or the Manipulation of 'Chudar'." *British Journal of Political Science* 31: 225–246.
- Treisman, D. 2008. "The Popularity of Russian Presidents. Working paper: UCLA.
- Triffin, R. 1960.. *Gold and Dollar Crisis*. New Haven: Yale University Press.
- Trivers, R. 1971. "The Evolution of Reciprocal Altruism." *Quarterly Review of Biology* 46: 35-56.
- Trivers, R. 1985. *Social Evolution*. Menlo Park: Cummings.
- Tucker, J.A. 2006.. *Regional Economic Voting: Russia, Poland, Hungary, Slovakia and the Czech Republic*. Cambridge: Cambridge University Press.
- Tudge, C. 1995. *The Day Before Yesterday*. New York: Touchstone.
- Tufte, E. R. 1978. *Political Control of the Economy*. Princeton: Princeton University Press.
- Tullock, G. 1967. "The General Irrelevance of the General Impossibility Theorem." *Quarterly Journal of Economics* 81:256–270
- Tullock, G. 1981. "Why So Much Stability?" *Public Choice* 37: 189–205.
- Tullock, G., 1987. *Autocracy*. Boston, MA: Kluwer.
- Turgot, A.-R.-J. 1773 [1766]. "Reflections on the Formation and Distribution of Wealth." In R. Meek [Ed.]. *Turgot on Progress, Sociology and Economics*, Cambridge: Cambridge University Press.
- Turing A. 1937. "On Computable Numbers with an Application to the Entscheidungs Problem." *Proceedings of the London Mathematical Society* 42: 230–265. Reprinted in J. Copeland (Ed.) *The Essential Turing*, Oxford: The Clarendon Press.
- Urken, A. 1991. "The Condorcet-Jefferson Connection and the Origins of Social Theory." *Public Choice* 72: 213–36.
- Usher, D. 1981. *The Economic Prerequisite to Democracy*. New York: Columbia University Press.
- Vargas Llosa, A. 2005. *Liberty for Latin America: How to Undo 500 Years of State Oppression*. New York: Farrar, Straus and Giroux.
- Voltaire, F. [1738]. *The Elements of Sir Isaac Newton's Philosophy* (trans. J. Hanna). London: Stephen Austen.
- Von Hayek, F. 2007.[1944]. *The Road to Serfdom* (ed B.Caldwell). Chicago: The University of Chicago Press and London: Routledge & Kegan Paul.

References

- Von Hayek, F. 1945. "The Use of Knowledge in Society." *American Economic Review* 35: 519-530.
- Von Hayek, F. 1974. "Pretense of Knowledge." Lecture to the memory of Alfred Noble. (http://nobelprize.org/nobel_prizes/economics/laureates/1974/hayek-or.html).
- Von Hayek, F. 1976 [1948]. *Individualism and Economic Order*. Chicago: The University of Chicago Press.
- Von Mises, L. 1935 [1920]. "Economic Calculation in the Socialist Commonwealth." In F. von Hayek [Ed.]. *Collectivist Economic Planning*. London: Routledge & Kegan Paul.
- Von Mises, L. 1949 [1940]. *Nationalökonomie: Theorie Des Handelns und Wirtschaftens*. Trans. as *Human Action*. New Haven: Yale University Press.
- Von Mises, L. 1944. *Omnipotent Government*. New Haven: Yale University Press.
- Von Neumann, J. 1945 [1932]. "A Model of General Economic Equilibrium." *Review of Economic Studies* 13:1-9.
- Von Neumann, J, and O. Morgenstern. 1944. *Theory of Games and Economic Behavior*. Princeton, NJ: Princeton University Press.
- Vreeland, J. 2008. "The Effect of Political Regime on Civil War." *Journal of Conflict Resolution* 52: 401-425.
- Vrettos T. 2001. *Alexandria*. New York: Free Press.
- Wade, L., P.Lavelle and A.J. Groth. 1995. "Searching for Voting Patterns in Post-Communist Poland's Sejm Elections." *Communist and Post-Communist Studies* 28: 411-425.
- Waldron, J. 2003. "Security and Liberty: The Image of Balance." *The Journal of Political Philosophy* 11:191-210.
- Wallis, J. 2005. *God's Politics: Why the Right Gets It Wrong and the Left Doesn't Get It*. New York: Harper.
- Wang H. 1987. *Reflections on Kurt Gödel*. Cambridge MA.:MIT Press.
- Wantchekon, L. 2004. "The Paradox of Warlord Democracy: A Theoretical Investigation." *American Political Science Review* 98: 17-33.
- Ward, P.D. and Brownlee, D. 2000. *Rare Earth*. New York: Springer.
- Warsh, D. 2006. *Knowledge and the Wealth of Nations*. New York: Norton.
- Warwick, P. 1979. "The Durability of Coalition Governments in Parliamentary Democracies." *Comparative Political Studies* 11:464-498.
- Warwick, P. 1992. "Rising Hazards: An Underlying Dynamic of Parliamentary Government." *American Journal of Political Science* 36: 857-876.
- Warwick, P. 1994. *Government Survival in Parliamentary Democracies*. Cambridge: Cambridge University Press.
- Watson, J.D. and F.H.C.Crick. 1953. "Molecular Structure of Nucleic Acid." *Nature* 171: 737-738.
- Weatherford, J. 2004. *Genghis Khan*. New York: Crown.
- Weber, M. 1958. [1904]. *The Protestant Ethic and the Spirit of Capitalism*. New York:Scribners.
- Weiner, E.J. 2010. *The Shadow Market: How a Group of Wealthy Nations and Powerful Investors Secretly Dominate the World*. New York: Scribners.

References

- Weingast, B. R. 1979. "A Rational Choice Perspective on Congressional Norms." *American Journal of Political Science*. 23:345-363.
- Weingast, B. 1997a. "The Political Foundations of Democracy and the Rule of Law." *American Political Science Review* 2: 245-263.
- Weingast, B. 1997b. "The Political Foundations of Limited Government: Parliament and Sovereign Debt in 17th and 18th Century England." In J. Drobak and J. Nye [Eds.]. *The Frontiers of the New Institutional Economics*. New York: Academic Press.
- Weingast, B. 1998. "Political Stability and Civil War." In R. Bates, A. Grief, M. Levi, J.-L. Rosenthal, and B. Weingast [Eds.]. *Analytical Narratives*. Princeton, NJ: Princeton University Press.
- Weingast, B. R., K. A. Shepsle, and C. Johnsen. 1981. "The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics." *Journal of Political Economy*. 89:642-664.
- Weintraub, S. 1993. *Disraeli: A Biography*. New York: Penguin.
- Welt, C. 2010. "Georgia's Rose Revolution." In Bunce, V. and Wolchik, S. [Eds. *Democracy and Authoritarianism in the Post Communist World*. Cambridge: Cambridge University Press.
- Wergen, S. K. and A. Konitzer. 2006. "The 2003 Russian Duma Election and the Decline in Rural Support for the Communist Party." *Electoral Studies* 25: 677-695.
- Westen, D. 2007. *The Political Brain*. New York: Perseus Books.
- Wheatcroft. 2005. *Infidels*. New York: Random House.
- White, T. et al. 2009. "Ardipithecus Ramidus and the Paleobiology of Early Hominids." *Science* 326:65-86.
- White, S., S. Oates and I. MacAllister. 2001. "Media Effects and Russian Elections, 1999-2000." *British Journal of Political Science* 35: 191-208.
- Whiteley, P. 1979. "Electoral Forecasting from Poll Data: The British Case." *British Journal of Political Science* 9:219-236.
- Whiteley, P. 1980. "Politico-Econometric Estimation in Britain: An Alternative Interpretation." In P. Whiteley [Ed.]. *Models of Political Economy*. London and Beverly Hills: Sage.
- Whiteley, P. 1983. *The Labour Party in Crisis*. New York: Methuen.
- Whiteley, P. 1984. "Inflation, Unemployment and Government Popularity." *Electoral Studies* 3:3-24.
- Whiteley, P., and P. Seyd, 2002. *High Intensity Participation*. Ann Arbor: University of Michigan Press.
- Whiteley, P., P. Seyd, and A. Billinghamurst. 2006. *Third Force Politics*. Oxford: Oxford University Press.
- Williams, D. 2007. *Condorcet and Modernity*. Cambridge: Cambridge University Press.
- Williams, H. 2007. *The Sun Kings*. London: Quercus.
- Wills, G. 20010. *The Bomb Presidency*. London: Penguin.
- Wilson, E.O. 1978. *On Human Nature*. Cambridge MA : Harvard University Press.
- Winik, J. 2007. *The Great Upheaval*. New York: Harper.

References

- Wintrobe, R. 1990. The Tinpot and the Totalitarian: An Economic Theory of Dictatorship. *American Political Science Review* 84:849– 872.
- Wintrobe, R., 1998. *The Political Economy of Dictatorship*. Cambridge: Cambridge University Press.
- Wittman, D. 1977. “Candidates with Policy Preferences: A Dynamic Model.” *Journal of Economic Theory* 14:180-189.
- Wittman, D. 1995. *The Myth of Democratic Failure*. Chicago: University of Chicago Press.
- Wolman, P. 1992. *Most Favored Nation: The Republican Revisionists and U.S. Tariff Policy*. Chapel Hill, NC: University of North Carolina Press.
- Wood, G. S. 1998 [1969]. *The Creation of the American Republic*. Chapel Hill, NC: University of North Carolina Press.
- Wood, G. S. 1991. *The Radicalism of the American Revolution*. New York: Knopf.
- Wood, G. S. 2002. *The American Revolution*. New York: Random House.
- Wood, G.S. 2006. *Revolutionary Characters*. New York: Penguin.
- Wood, G.S. 2008. *The Purpose of the Past*. New York: Penguin.
- Wood, G.S. 2009. *The Empire of Liberty*. Oxford: Oxford University Press.
- Wood M. 2000. *Conquistadores*. Berkeley: University of California Press.
- World Development Report. 1994. *Infrastructure for Development*.
- Worden, 2010. “An Election gone Awry.” *Journal of Democracy* 21: 11-25.
- Wrangham, R. 2010. *Catching Fire: How Cooking made us Human*. New York: Basic.
- Wright, J. 2008. “Do Authoritarian Institutions Constrain? How Legislatures Affect Economic Growth and Investment.” *American Journal of Political Science* 52: 322–343.
- Wright, R. 1994. *The Moral Animal*. New York: Pantheon.
- Wright, R. 2000. *Non-Zero*. New York: Pantheon.
- Wright, R. 2009. *The Evolution of God*. New York: Little Brown.
- Wynia, G. W. 1986. *Argentina: Illusions and Realities*. New York: Holmes & Meier.
- Yotopoulos, P. A. 1989. “Distribution of Real Income: Within Countries and by World Income Classes.” *Review of Income and Wealth*, 35: 357–376.
- Young, P. 1998. *Individual Strategy and Social Structure: An Evolutionary Theory of Institutions*. Princeton, NJ: Princeton University Press.
- Zakaria, F. 2004. *The Future of Freedom*. New York: Norton.
- Zakaria, F. 2008. *The Post-American World*. New York: Norton.
- Zakharov A.V. 2009. “A Model of Candidate Location with Endogenous Valence.” *Public Choice* 138: 347-366.
- Zakharov A.V. and D. Fantazzini. 2008. A Model of Candidate Location with Endogenous Valence. Working paper: Moscow School of Economics.
- Zeeman, E.C.1977. *Catastrophe Theory: Selected Papers, 1972-77*. New York: Addison Wesley.