

Modelling Elections in Post-Communist Regimes: Voter Perceptions, Political Leaders and Activists.*

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Abstract

This paper applies a stochastic electoral model to modeling elections in Poland in 1997, 2001 and 2005, in Georgia in 2008, and in Azerbaijan in 2010. We find that in Poland the valence differences are sufficiently large to force low valence parties or candidates to adopt divergent positions.

We argue that this implies a fundamental difference between an electoral system based on plurality rule in contrast to one based on proportional representation.

In addition, in “anocracies” such as Georgia and Azerbaijan, the limited access to the media by the parties in opposition to the president means that their support groups find it difficult to coalesce. As a consequence, they are unable to press successfully for greater democratization. In these countries, the presidential electoral system is highly majoritarian, and the President’s party dominates the political arena, controlling political resources and the media.

We conclude by giving an overview of the empirical results that have been obtained so far for the three plurality democracies of the USA,

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Britain and Canada, three polities with proportional electoral systems, and the three anocracies of Georgia, Azerbaijan and Russia.

Key words: stochastic electoral model, valence, electoral perceptions, local Nash equilibrium.

1 Introduction

Recent work has argued that institutional characteristics of political systems, such as presidentialism versus parliamentarianism, or majoritarianism versus proportionality, will have significant effects on the stability of government and the nature of redistributive politics.¹ These arguments have been based on cross country empirical analyses and relatively simple one dimensional spatial models. The formal underpinning of these models has often been based on the assumption that parties or candidates adopted positions in order to win. This assumption leads to the inference that parties will converge to the electoral median (under deterministic voting in one dimension, as in Downs, 1957, Riker and Ordeshook, 1973) or to the electoral mean in stochastic models (McKelvey and Patty, 2006).

These various spatial models treat vote choice as a function of voters' policy preferences only. Yet, in almost every polity we witness electoral or policy outcomes that are difficult to explain in terms of the pure spatial model. An example would be the apparent increase in "polarization" even in mature democracies such as the United Kingdom and the United States. There has also been evidence of political fragmentation in established democracies such as the Netherlands and Belgium, as well as in Post-Communist East European countries.² These observations suggest that the pure spatial model is missing something fundamental: centrist political equilibrium cannot be a defining property of electoral politics.

The analysis presented here suggests that the differences in political configurations may result from the very different incentives that activist groups face in the various institutional environments. In this paper we contrast electoral models for a proportional electoral system used for parliamentary elections in Poland with the winner take-all-electoral system used for presidential elections in Georgia and Azerbaijan.

To estimate voter positions we use the national election surveys and carry out a factor analysis of this responses. This allows us to construct, for each election, a policy space, X . Using the voter information, we can infer a preferred policy point, x_i , in X , for each voter.

There are a number of ways to estimate party or candidate positions. One can use expert estimates, as in Benoit and Laver (2006), or analysis of party manifestos (Budge et al. 1987, 2001; Ezrow, 2010). A difficulty with these

¹Bawn and Rosenbluth (2006), Persson and Tabellini (2000, 2003), Dow (2001,2011), Ezrow (2010, 2011).

²See Markowski and Tucker (2010a) and de Vries and Edwards (2009) on "extremist" Euroskeptic parties.

methods is to guarantee that the space of voter preferences and the space of party locations is the same.³ Here we estimate party positions using the notion of *partisan constituencies*. The idea here is that party leaders can fairly easily obtain information about the policy positions of their supporters, and each can respond by advocating policies that are close to the mean of the preferences of their respective supporters. This satisfies what Huber and Powell (1994) call ideological congruence between citizens and policy makers. For each party or candidate, we estimate the position by taking the mean of the positions of the voters who actually chose that party or candidate.

On the other hand, 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.

To estimate such opportunistic behavior we model the relationship between electoral response and party positions using a mixed logit stochastic model. On the basis of such an empirical electoral model, we then use the results of a general formal model to determine how changes in party position effect election results. It is then natural to seek the existence of “Nash equilibria” in the empirical model—a set of party positions from which no party may deviate to gain advantage in terms of its vote share. Since the “utility functions” of parties are, in fact unknown, it is possible to use “counterfactual experiments” to make inferences about the political game. That is, after modelling the relationship between party positions and election outcome (for a given electoral distribution), we may make assumptions about the utility functions of leaders and examine the Nash equilibria under these assumptions, to determine whether the Nash equilibria so determined correspond to the actual positions of the parties or candidates.

The technique we use to compare elections in different polities is a formal stochastic model of elections that emphasizes the importance of *valence*. As discussed in Chapter 9, the standard Downsian spatial model is based on the assumption that it is only party *positions* that matter to voters. In the models we employ we utilize the notion of valence of candidates or party leaders. By valence we mean the electoral perception of the *quality* of candidates. Based on the empirical work presented here, we argue that neither the Downsian convergence result nor the “social chaos theorem” (Riker, 1980) gives a complete picture of elections. Both position and valence matter in a fundamental way. We then use this model to suggest that the nature of the electoral system influences the calculations of the leaders of the activist groups who provide the resources that are critical for political success.

We consider an empirical stochastic model, denoted $\mathbb{M}(\boldsymbol{\lambda}, \beta)$, where $\boldsymbol{\lambda}$ is the vector of party valences, and β is the spatial parameter. As shown in Schofield (2007), there exists a “convergence coefficient”, denoted $c(\boldsymbol{\lambda}, \beta)$, defined by $(\boldsymbol{\lambda}, \beta)$ and the covariance matrix of the voter preferred positions. A previous theorem (Schofield, 2007) asserts that if the dimensionless coefficient,

³In Chapter 9 we estimated the candidate positions using the same survey questionnaire.

$c(\boldsymbol{\lambda}, \beta)$, exceeds 2, then according to the pure spatial model, under any vote maximizing Nash equilibrium, all parties should diverge away from the electoral origin.

To illustrate this result, we examine a sequence of elections in the multiparty polity of Poland for 1997, 2001 and 2005. In these three election models, the β coefficients are all highly significant and take values about 1.5. Indeed the convergence coefficients are calculated to lie in the range [5.92, 6.82]. Moreover, the Hessian of the lowest valence party at the joint origin is shown to have both eigenvalues positive in each election. This implies that the origin is a vote *minimizing* position for such a party. As a consequence we infer that any Nash equilibrium under the vote maximizing spatial model is one where *all* parties *diverge* from the origin.⁴ We verified this inference by simulating these models to determine the equilibria in the spatial models, with and without sociodemographic variables, and confirmed their divergent nature. Our estimates of party positions as well as the equilibria suggested that the political system in Poland in these years could be seen to be quite chaotic.

As a second example we modelled the 2008 presidential election in Georgia. This post-communist polity has a very powerful president, Mikheil Saakashvili, and a fragmented opposition. It may be regarded as a partial democracy or “anocracy.”⁵ By “anocracy” we mean a polity with some democratic methods in place, but where the media are weak and opposition groups find it difficult to coordinate. As in Poland, the spatial model for Georgia gives two dimensions: westernization and democracy. A positive value in the *West* dimension is taken to mean a strong anti-western attitude. The democracy dimension is defined by voters’ 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, coupled with a demand for a greater democracy. Our analysis obtained a β coefficient of 0.78 but a high value of $c(\boldsymbol{\lambda}, \beta) = 2.39$, implying that the small, low valence parties should diverge from the origin. Our equilibrium analysis indicates that Saakashvili, with very high valence, should locate near the electoral origin. Our estimate of his policy was that his position was very pro-west and opposed to further democratization.

The third example is the election in Azerbaijan in November 2010, where President Ilham Aliyev’s ruling Yeni Azerbaijan Party obtained a majority of 72 out of 125 seats. Other independent candidates, aligned with the government, received 38 seats, and 10 small opposition or quasi-opposition parties won the remaining 13 seats. The survey obtained by the Institute of Strategic Studies of the Caucasus allowed us to infer that the policy space was uni-dimensional. Our analysis obtained a β coefficient of 1.34, and indicated that that the Hessian of the low valence opposition had a single positive eigenvalue, implying divergence away from the origin by all parties. This model is only one dimensional, so the result is not quite compatible with the analysis of Georgia. However, if the model

⁴Similar results have been obtained for Israel and Turkey (Schofield et al. (2011b,e).

⁵See Epstein (2000), Gandhi and Vreeland, (2004), Vreeland (2008), Regan and Bell (2009), Fjelde (2010) for discussion of stability in an anocracy..

were two-dimensional, and symmetric in the sense that voter variances were identical on both axes, then the convergence coefficient would be $c(\lambda, \beta) = 2.89$, very similar to the result for Georgia.

In contrast to these three examples, Schofield et al. (2011a,b) have shown that the unique vote maximizing equilibrium for both the 2000 and 2004 elections in the U.S. had both candidates adopting positions at, or very close to the electoral origin.⁶ The considerable difference between Nash equilibria in elections in Poland, Georgia and Azerbaijan, in contrast to the analysis presented for the United States suggests that that the difference may be due to a very different logic governing the influence of activist groups in these different polities.

Based on a comparison of estimated and simulated equilibrium positions for the three elections in Poland, we argue that the difference between the estimated party positions and the equilibrium positions is much less dramatic than in the U.S., suggesting that the influence of activists is less pronounced in Poland than in the United States. We infer that this is because under the proportional electoral system of Poland small activist groups can still expect to influence policy outcomes, through party membership of coalition government. Thus there is little tendency for activist groups to coalesce under this method of proportional electoral rule. Consequently, political fragmentation will be maintained.

In Georgia and Azerbaijan, on the other hand, because the presidential election is a winner-take-all system, based therefore on plurality rule, coalitions are not the norm. The media play a crucial role in enhancing candidates' valence. Opposition groups, with restricted access to the media, find it very difficult to combine resources behind a single opposition leader. This tends to preserve the dominance of the presidential party coalition.

In the conclusion we discuss results on other polities with proportional electoral systems such as Israel and Turkey, and comment that the models for recent elections in these polities also have high convergence coefficients in the range [4.0, 6.0]. In contrast, parliamentary polities with fairly majoritarian electoral systems, like Canada and the United Kingdom, have convergence coefficients in the medium range of [0.84, 2.5]. Other work (Schofield and Zakharov, 2010) has also obtained a value for the convergence coefficient for the 2007 Duma election in Russia of 1.7. For the anocratic polities of Georgia and Azerbaijan the convergent coefficient, or its analogue, lies in the range [2.3, 3.0]. These values are quite different from the low values for $c(\lambda, \beta)$ obtained for the United States which we found to lie in the range [0.4, 1.1]. We suggest that the convergence coefficient of a polity is a theoretically useful way of classifying the fundamental properties of the electoral system.

⁶ A similar result have been obtained for the 2008 U.S. presidential election (Schofield et al. (2011b)).

2 Elections in Poland 1997-2005

2.1 Background

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 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.

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. Table 1 lists, by election year, the names of the parties and their seat shares while Table 2 gives their vote shares. Usually about five or six parties win seats in the Sejm (lower house).

[Insert Tables 1 and 2 here]

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.

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 dimension (Kitschelt et al. 1999; Markowski 2006). 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; Szczerbiak 1998). Over the years, these social issues have gained increasing prominence in political rhetoric and as determinants of vote choice (Markowski

and Tucker 2010a). 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.

2.2 The Elections

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 analyses is the respondent's vote choice. We use the spatial distance between parties and voters, and voters' socio-demographic characteristics to explain this vote choice. See Appendix 1 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)⁷.

The factor loadings for the two dimensions are given in Appendix 2.

We adopted the notion of *partisan constituencies* 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 uses expert surveys to place parties on a variety of issues. The results of these alternative analyses were substantively similar to the ones presented here. However, the Benoit and Laver 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 may have changed. We therefore decided to use the more time-sensitive measures obtained from the PNES for the final analyses presented here.

Figures 1, 3 and 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

⁷ Respondent'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 Appendix 1 for the exact question wording.

party positions.⁸ Figures 2, 4 and 6 give estimated Nash equilibria for these elections.

[Insert Figures 1-6 here]

These party positions are given below.

$$\mathbf{z}_{1997}^* = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{UP} & \textit{UPR} & \textit{ROP} \\ x & 0.03 & -0.35 & 0.52 & 0.005 & 0.29 & 1.81 & 0.15 \\ y & -0.72 & -0.35 & -0.1 & 0.72 & -0.15 & -0.15 & 0.75 \end{bmatrix}$$

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.

$$\mathbf{z}_{2001}^* = \begin{bmatrix} \textit{Party} & \textit{SLD,UP} & \textit{PSL} & \textit{UW} & \textit{AWS} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & -0.12 & -0.29 & 1.16 & 0.66 & 0.03 & 0.11 & 0.57 & 0.14 \\ y & -0.47 & -0.05 & 0.002 & 0.83 & 0.27 & 0.41 & 0.17 & 0.87 \end{bmatrix}$$

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 seats. In its place several new parties emerged, including the center right LPR, SO, and PiS, and the further right PO. Figures 1 and 3 suggest that the AWS fractured into five factions, a small remnant AWS, and these four new parties.

$$\mathbf{z}_{2005}^* = \begin{bmatrix} \textit{Party} & \textit{SLD} & \textit{PSL} & \textit{DEM} & \textit{SDP} & \textit{SO} & \textit{PiS} & \textit{PO} & \textit{LPR} \\ x & 0.05 & -0.35 & 0.58 & 0.10 & -0.52 & -0.01 & 0.16 & -0.16 \\ y & -0.56 & 0.09 & -0.54 & -0.61 & -0.04 & 0.20 & -0.23 & 0.90 \end{bmatrix}$$

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) and privatization was compounded by a series of corruption scandals,

⁸For 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.

leading to the resignation of the Prime Minister Leszek Miller in May 2004, who was succeeded by Marek Belka.

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 10 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 60% 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 privatisation, 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.⁹ 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 with 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 (SO), 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, Jarosław Kaczyński. Kaczyński then formed a new minority government and was sworn-in on July 14, 2006. finally becoming prime minister. His party, Law and

⁹Lech Kaczyński became President after that election, but died in the airplane crash on April 10, 2010, on his way to Russia to commemorate the Katyn massacre of Polish officers in 1940.

Justice, was defeated in the November 2007 election and Donald Franciszek Tusk, co-founder and chairman of Civic Platform, became Prime Minister.¹⁰

Figure 5 indicates the policy differences that existed between the PiS and the more left-wing Samoobrona, SO, and the centrist LPR on the one hand, and the more right-wing party, the PO, on the other.

As the tables on election results 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 3, 4 and 5 give the party valences for three pure spatial logit models (one for each election year) based on the estimated positions of the parties. We also estimated pure sociodemographic models and joint models, based on the spatial model and including sociodemographic variables. For the sociodemographic 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).¹¹ Table 6 gives the comparison of the log likelihoods for these models for 1997. Indeed, the loglikelihoods for the joint models were superior to the pure spatial and sociodemographic models for all years. For all spatial models, in Tables 3,4 and 5, the β -coefficient is highly significant (at the 0.001 level). The high valence values were also significant in the pure spatial and joint models. Only a few of the sociodemographic variables were found to be significant.

Table 3 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:

$$\nabla_0 = \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix}.$$

As in Chapter 9, the probability, ρ_{UPR} , that a voter chooses the lowest valence party, when all parties are at the joint origin, is given by the model

¹⁰After President Lech Kaczyński's death in the plane crash in April, 2010, his brother, Jarosław Kaczyński, ran against acting president Bronisław Komorowski in the presidential election on 20 June. Kaczyński received 36.46% of votes in the first round, while Komorowski received 41.54%. In the second round, Kaczyński was defeated with 47% of the vote to Komorowski's 53%.

¹¹See Schofield et al. (2010) for full details of these joint models.

$\mathbb{M}(\lambda, \beta)$ as

$$\begin{aligned}
\rho_{UPR} &\simeq \frac{1}{1 + e^{1.92+2.3} + e^{1.4+2.3}} \\
&= \frac{1}{1 + 66 + 40} \simeq 0.01 \\
\text{Thus } 2\beta(1 - 2\rho_{UPR}) &= 2 \times 1.74 \times 0.98 = 3.41 \\
\text{and } C_{UPR} &= (3.41) \begin{bmatrix} 1.0 & 0.0 \\ 0.0 & 1.0 \end{bmatrix} - I \\
&= \begin{bmatrix} 2.41 & 0.0 \\ 0.0 & 2.41 \end{bmatrix}, \\
\text{so } c &= 3.41 \times 2 = 6.82.
\end{aligned}$$

Using the necessary condition for c for convergence from the valence theorem in Chapter 9, we infer that all parties diverge in equilibrium. Similar results for the elections of 2001 and 2005 show divergence for these pure spatial models.

In 2001, we find $\beta = 1.482$, so $c \simeq 5.92$, and in 2005, $\beta = 1.548$, so $c \simeq 6.192$. See Tables 4 and 5.

[Insert Tables 3, 4 and 5 here]

Computation, using a MATLAB 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 2. Figures 4 and 6 give the equilibria in 2001 and 2005.¹²

All parties, in equilibrium, scatter away from the electoral origin. Note that in 1997, the two high valence parties, the AWS and the SLD, have equilibrium positions very close to the electoral origin. 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 origin. The significant drop in the valence of the AWS between 1997 and 2001 should have forced it even further from the origin than the position that it did indeed adopt. A robust inference from these figures is that parties do not locate themselves at positions that maximise 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,

¹²Because 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.

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.

We can see the 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 7 to 9. When these medians do not intersect, then they bound a finite, star shaped set known as the “heart.” Schofield (1999) has suggested that each election heart gives a heuristic estimate of the set of possible coalition policy outcomes.

[Insert Figures 7-9 here]

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 7.

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.

Finally, the complex negotiations involving the PiS and the small parties, the SO and LPR, against the PO in 2005 all refer to the the triangular heart bounded by these party positions in the upper left of Figure 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.¹³ It is interesting to note that according to the spatial model, the PiS could have located itself at the electoral origin, 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. Notice that the three coalitions that formed after these three elections were all minimal winning (Riker, 1962) although the one in 2005 was a minority coalition with support. Obviously coalition formation in a fragmented polity is made very complex by the configuration of party positions.

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 gauge electoral response, coupled with coalition bargaining theory to make sense of the formation of government. In the next two sections we consider elections in the anocracies of Georgia and Azerbaijan where fragmentation is much less pronounced because of the dominance of the president’s party.

¹³We may refer to the logic of these choice as “hunting the heart.”

3 Georgian Presidential Election of 2008

3.1 Background

By the time of the dissolution of Soviet Union in the late 1980's there were sharp political tensions in the Caucasus. 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. In Georgia the National Independence Movement was leading the country towards independence, while separatist movements within Abkhaz and Ossetian ethnic minorities triggered violent conflicts in the regions, which later on developed into civil wars.

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 governed. Elections in Georgia were therefore viewed not just a matter of elite competition, but Instead 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 Zviad Gamsakhurdia) in 1990.

The second was the shift of power from Gamsakhurdia to Eduard Shevardnadze, through the interim government of 1992. 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.

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 election.

By late 1993, struggles over the 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 more than 200,000 Georgians to flee from the Abkhaz and Tskhinvali territories. By 1995, however, 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 *de facto* 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 but 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 the revolution of 2003 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 regime was not only unpopular before the 2003 election, but also weak.

This time the country found new leadership, composed of a young energetic generation 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)

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 initially 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, 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 seemed 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.

3.2 The Election in 2008

The presidential election on 5 January 2008 gave Saakashvili 53.5% of the vote, as shown in Table 7. 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.

[Insert Table 7 here]

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 ceasefire 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.¹⁴

We used a sample survey to construct a formal election model in an attempt to understand the nature of politics in Georgia. Table 8 gives the survey vote shares for the candidates, while Table 9 gives the factor model, based on the survey questions, given in the Appendix 3.

[Tables 8 and 9 here]

The first factor dimension, *West*, 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, larger value in the *West* dimension means stronger anti-western attitude. The second dimension, *Democracy*, is defined by 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 electoral 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 10. 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 used to estimate party position we used the mean value of the factor scores of those voters who voted for each candidate. Figure 11 gives the actual voter positions by candidate.

[Insert Figures 10 and 11 here]

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 10 takes the democracy axis as the x-axis and attitudes to the west as the y-axis. The pure spatial model in Table 10 gives

¹⁴See 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.

Thus

$$\begin{aligned}\lambda_S &= 2.48, \lambda_G = 1.34, \lambda_P = 0.51, \lambda_N \equiv 0.0 \\ \beta &= 0.78.\end{aligned}$$

[Insert Table 10 here]

Given these coefficients, the probability that a typical voter chooses Natelashvili when all parties locate at the origin is:

$$\rho_N = \frac{\exp[\lambda_N]}{\sum_{k=1}^4 \exp[\lambda_j]} = \frac{e^0}{e^0 + e^{0.51} + e^{1.34} + e^{2.48}} \simeq 0.05,$$

$$\text{and } (\rho_S, \rho_G, \rho_P, \rho_N) = (0.65, 0.21, 0.09, 0.05)$$

Since $2\beta(1 - 2\rho_n) = 2 \times 0.78 \times 0.9 = 1.4$, we use the formula (from the valence theorem in Chapter 9) 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

$$c \equiv c(\boldsymbol{\lambda}, \beta) = 1.4 \times 1.7 = 2.39.$$

Thus the joint origin is a minimum for Natelashvili.

Appendix 4 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 candidates best response to the given positions in Figure 10, 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 obtain an estimate for 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 12 gives the estimated equilibrium positions.

[Insert Figure 12 here]

As expected, the high valence candidate, Saakashvili, has an equilibrium position very near the origin, followed by Gachechiladze, followed by Patarkatsishevili, with Natelashvili furthest away. The difference between these two estimates is:

$$\begin{aligned}
& \mathbf{z}^* - \mathbf{z}^{el} \\
= & \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix} \\
& - \begin{bmatrix} & S & G & P & N \\ Democracy & -0.01 & 0.08 & -0.52 & 0.38 \\ West & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix} \\
= & \begin{bmatrix} & S & G & P & N \\ Democracy & -0.42 & 0.78 & 1.05 & 0.29 \\ West & -0.8 & -0.05 & 0.71 & -0.59 \end{bmatrix}.
\end{aligned}$$

We infer that activists pull Saakashvili to the lower left while the other candidates respond to their activists in demanding more democracy.

4 The Election in Azerbaijan in 2010

In the 2010 election in Azerbaijanm. 2,500 candidates filed application to run in the election, but only 690 were given permission by the electoral commission.

The parties that competed in the election were:Yeni Azerbaijan Party (the 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 non-transparent financial transactions of state officials.

The opposition alleged irregularities and Musavat declared that the election was illegitimate.It also asserted that the West did not criticize 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 obtained 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 that they had in the previous legislature; the Democratic Reform 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 (AXCP) 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 11 gives the election results and the Appendix 5 gives the survey questions.

[Insert Table 11 here]

Our analysis relies on the pre-election surveys conducted by the International Center for Social Research (ICSR), Baku, Azerbaijan. The survey data include questionnaires 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 dataset 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 who were independent voters (those who answered that they would vote for independent candidates) and 53 who reported that they intended 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).¹⁵ For the parties VHP and AVP, the estimation of party positions was very sensitive to inclusion or exclusion of one respondent. We therefore used only a small subset of voters (149) who completed the factor analysis questions and intended to vote for YAP or AXCP-MP.

Table 12 gives the one-dimensional factor model. Larger values of the resultant factor score were associated with negative evaluation of the current democratic state in Azerbaijan. Specifically, the respondents with larger values tended to be dissatisfied with the current Azerbaijani 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 13 displays the distribution of respondents along the dimension. The electoral variance is 0.93. Figure 13 also shows the estimated party positions (where party positions were estimated using the mean of the party voters' positions. 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 activists 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. Mean activist positions are also shown in Figure 13.

¹⁵ Because of the survey design, AXCP and MP were not differentiated and are regarded as one party block. See question wording in Appendix 5 for vote choice.

[Insert Table 12 and Figure 13 here]

Table 13(i) presents the pure spatial binomial logit model while Table 13(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.¹⁶

[Insert Table 13 here]

Then, $(\rho_{yap}, \rho_{axcp-mp}) = (0.79, 0.21)$ ¹⁷ and,

$$\begin{aligned} C_{axcp-mp} &= 2\beta(1 - 2\rho_{axcp-mp}) \cdot \text{variance} - 1 \\ &= 2 \cdot (1.34) \cdot (1 - 2 \cdot 0.21) \cdot 0.93 - 1 \\ &= 0.45. \end{aligned}$$

Since the single eigenvalue is positive, we expect divergence away from the origin by all parties for the pure spatial model. As before, we infer that the activists pull the two parties further away from the origin. 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 variances were 0.93 on each axis, then the convergence coefficient would be $c = 2.89$, very similar to the result for Georgia.

5 Concluding remarks

Related work suggests the electoral models are very different in a majoritarian political system such the United States and one based on a proportional electoral system such as Poland.

Schofield et al. (2011a, b) show that the convergence coefficients for the United States elections in 2000 and 2004 were only 0.37 and 0.45, respectively. According to our model, this implies that the electoral effect dominates, so that the candidates should converge to the electoral origin.

In contrast, the empirical analyses presented here show that the convergence coefficient for the 1997, 2001 and 2005 elections in Poland were 6.82, 5.92 and 6.19 respectively. Related work has shown that the convergence coefficients were 5.94 for the 2002 election in Turkey (Schofield et al. 2011d) and 3.98 for the 1996 election in Israel (Schofield et al. 2011b). In these polities with electoral systems based on proportional representation (PR), the convergence coefficients are very high because the spatial coefficient (β) and the total variance in the electoral covariance matrix are both large. As a result, under PR, the pure electoral motive is sufficient to pull parties away from the center. We suggest that in the United States, the activist effect dominates over the electoral effect, and activist groups therefore exert a considerable influence on candidate

¹⁶The 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.

¹⁷Among the two parties, the sample voteshare is (0.76, 0.21).

positions. In proportional representative systems, this activist influence can be much weaker.

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*).¹⁸ For example, in Poland in 1997 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 7.0, and in Turkey in 2002 the *env* was about 7.5. The *env* and *ens* are convenient measures, intended to capture the nature of the distribution of electoral preferences and how these are turned into political configurations. We propose that the convergence coefficient is a theoretically consistent way of classifying the degree of political fragmentation, based as it is on the underlying political preferences and political response. These estimates for fragmented polities suggest that high convergence coefficients are associated with high estimates of the *env* and *ens*. Consider the following examples of polities with different electoral systems.

In the winner take-all presidential elections of 2000 and 2004 in the United States, the *env* was about 2.0 and the *ens* can be taken to be 1.0, corresponding to the low convergence coefficients of 0.37 and 0.45 (See Table 14). The convergence coefficients are very low because the two major parties in the US have very similar electoral support.¹⁹

[Insert Table 14 here]

Canada has a Parliamentary polity with a plurality electoral system, giving two large parties, the Conservatives and Liberals. However, small parties, the Bloc Québécois and the New Democratic Party, can survive because of regionalism, so its electoral system is not as majoritarian as the United States. In the elections of 2004 and 2008, the *env* was about 4.0 while the *ens* increased from about 3.1 to 3.5. Schofield et al. (2011d) found that the convergence coefficient for Canada in the 2004 election was 1.94. This estimate is greater than that of the U.S. but less than that of fragmented polities such as Poland, Israel or Turkey.

Similarly, the United Kingdom has two large parties, Labour and Conservative, and three small parties, Liberal Democrats, Scottish Nationalists and Plaid Cymru, as well as small factional parties from Northern Ireland. The results of Schofield et al. (2011c) give convergence coefficients of 0.84 for the 2005 election and 0.98 for the 2010 election in Britain. The difference between Canada and the Britain was the lower β in the election in the Britain. The *env* for these elections in Britain increased from 2.7 to 3.8, while the *ens* increased from 2.5 to 3.3, indicating that the electoral system is slightly more majoritarian than that of Canada.

These observations suggest a variation of the Duverger (1954) and Riker

¹⁸Fragmentation 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.

¹⁹We could of course measure *ens* in terms of party strength in Congress, giving a value close to 2.0.

(1953) hypotheses regarding the difference between plurality and proportional electoral rule. We hypothesize that in an election based on proportional electoral methods, if the convergence coefficient derived from the spatial model is high, then there will be very little motivation for interest groups to coalesce. Consequently, the fragmentation of interest groups will lead to a degree of fragmentation in the polity. Without a dominant centrally located party, there may be coalitional instability resulting from a fragmented polity and a complex configuration of parties.

Indeed, we hypothesize that the difference between these various polities can be summed up as follows:

Under democratic proportional electoral methods, the convergence coefficient will tend to be large (of order >4.0). 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. Consequently, 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.

In Parliamentary systems based on plurality rule, such as Britain and Canada, the convergence coefficient will tend to take low to intermediate values (between 0.8 and 2.0). 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 these parties.

There is a very large literature on category of “partial democracies” or “anocracies”²⁰ These exhibit mixed characteristics of both democratic and autocratic

²⁰See Carothers (2002), Gandhi and Vreeland (2004), Epstein et al. (2006), Vreeland (2008),

regimes. 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 (Schofield and Zakharov, 2010).

The empirical analysis of the 2008 presidential election in Georgia that we have presented here has 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 2.9. Because the presidential election is winner-take-all, we take the *ens* to be 1.0. 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 the dominant party, but Table 14 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 Georgia and Azerbaijan, that we have considered here, as well as in Russia, small opposition parties can exist but their supporting activist groups will find it difficult to coalesce because they cannot obtain support through the media. The opposition parties thus find it almost impossible to present a united front against the regime. 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 his valence will remain high.

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 in order to offer attractive alternatives to the political leader.

We suggest that the convergence coefficient for such polities will tend to lie in the intermediate range. Table suggests 14 that the convergence coefficient in various polities does indeed provide a method of classifying the nature of political competition.

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7 Appendices

7.1 Appendix 1. Question wording for Poland

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 had an additional option (3) "Was too young." We collapsed this with "no" in order to maintain a dichotomous measure.

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.

7.2 Appendix 2 Factor Loadings for Poland

Table A1a Factor loadings from the Polish National Election Survey, 1997.

Question	1.Economic	2.Social
1.Privatization	0.45	0.003
2.Unemployment	0.70	-0.07
3.Income Tax	0.53	-0.04
4. Subsidies	0.65	-0.17
5.Social Welfare	0.76	0.02
6.Church and State	0.07	0.80
7.Decommunization	-0.01	0.52
8.Abortion	0.14	0.80
Eigenvalues	2.00	1.59

Table A1b 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 A1c Factor loadings from the Polish National Election Survey, 2005.

Question	1.Economic	2.Social
1.Privatization	0.59	-0.070
2.Unemployment	0.69	0.03
3.Income Tax	0.58	-0.14
4. Subsidies	0.61	-0.30
5.Social Welfare	0.74	-0.03
6.Church and State	0.28	0.75
8.Abortion	0.12	0.80
Eigenvalues	2.115	1.315

7.3 Appendix 3. Question wording for Georgia

Data: Post-election surveys conducted by GORBI-GALLUP International from March 19 through April 3, 2008. In the original dataset $n = 1000$. 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.

[vote choice]

Please tell me which candidate did you vote for during the presidential elections on the 5th of January 2008? 1 Levan Gachechiladze; 2 Badri Patarkatsishevili; 3 Davit Gamkrelidze; 4 Shalva Natelashvili; 5 Mikheil Saakashvili; 6 Gia Maisashvili; 7 Irina Sarishvili; 8 Against all; 9 NA
(recoded) 1 Saakashvili, 2 Gachechiladze, 3 Patarkatsishevili, 4 Natelashvili, NA:NA

[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, 9 NA.

(3) Tell me your overall opinion of USA.

1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 9 NA

(4) Tell me your overall opinion of EU.

1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 9 NA

(5) Tell me your overall opinion of NATO.

1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 9 NA

(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

[Questions considered but not included in the factor analysis]

The question regarding Iraq was loaded heavily (> 0.5) in the democratic dimension, but it was not include it because it did not seem to be directly related with democratic attitude. The factor loadings of other questions were mostly around 0.1.

As you know, the plebiscite was conducted during the presidential elections

held on the 5th of January. Did you vote for or against that the next parliamentary elections should be held in spring 2008?

1 Yes; 2 No; 9 NA

Did you vote fore or against that Georgia should pursue integration into NATO?

1 Yes; 2 No; 9 NA

To what extent do you approve the Georgian government's decision to send its armed forces to Iraq?

1 Fully approve; 2 approve; 3 Neither approve nor disapprove; 4 disapprove; 5 totally disapprove; 9 NA

Generally democracy is the best system of government for governing the country comparing with other systems.

Georgia should leave the CIS.

Our opposition is in alliance with the National Movement.

Usage of military methods in order to regain Georgian territorial integrity are approved.

1 strongly agree; 2 somewhat agree; 3 somewhat disagree; 4 strongly disagree; 9 DK; 0 NA

Tell me your overall opinion of Russia. 1 very favorable; 2 somewhat favorable; 3 somewhat unfavorable; 4 very unfavorable; 99 NA

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 (recoded NA:NA)

Please tell me to what extent do you agree or disagree with the following statement: If I could I would go back to Shevardnadze's Georgia.

1 strongly agree; 2 somewhat agree; 3 neither agree nor disagree; 4 disagree; 5 strongly disagree; 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

7.4 Appendix 4

Spatial Sociodemographic Model for Georgia (Natelashvili as baseline)

	Variable	Coef	Std. Error	t value
	Spatial 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
	n	399		
	log likelihood	-298.23		

* $prob < 0.05$ *** $prob < 0.001$

7.5 Appendix 5. Question Wording for the Azerbaijan Election

Survey Items:

[Vote Choice]

[Q23] 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

[Q24] 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. AXCP; 2. YAP; 3. ALDP; 4. SOCIAL DEMOKRAT; 5. DADP; 6. ANA VATAN; 7. MILLI DEMOKRAT; 8. MMP; 9. AMIP

[Activist]

[Q14] 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]

[Q2] 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

[Q3] 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

[Q6] 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

[Q10.1] 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

[Q29] 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

[Demographics]

Type of location: 1. Capital city; 2. Large city; 3. Small city; 4. Village; 5. Camp for IDPs

[Q31] Gender: 1. male; 2. female

[Q32] Age group: 1. 18-24; 2. 25-34; 3. 35-44; 4. 45-54; 5. 55-64; 6. 65+

[Q35] Education: 1. Without any education; 2. Primary school; 3. Incomplete secondary; 4. Complete secondary; 5. Secondary technical; 6. Incomplete higher; 7. Higher

[Q44] 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

7.6 Tables

Table 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

Table 2. Vote shares in Polish Sejm elections

Party	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

Table 3. Poland 1997 Pure Spatial Model (Base=ROP)

Variable	Party	Coefficient	Std.Error	t-value
Spatial β		1.739***	0.116	15.04
Valence λ	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		

*.*prob*<0.05; **.*prob*<0.01; ***.*prob*<0.001; LL=loglikelihood.

Table 4. Poland 2001 Pure Spatial Model (Base=LPR)

Variable	Party	Coefficient	Std.Error	t-value
Spatial β		1.48***	0.118	12.61
Valence λ	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	

LL=log likelihood

*.*prob*<0.05; **.*prob*<0.01; ***.*prob*<0.001.

Table 5 Poland 2005 Pure Spatial Model (Base=LPR)

Variable	Party	Coefficient	Std.Error	t-value
Spatial β		1.55***	0.115	13.41
Valence λ	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		

LL=log likelihood

*.*prob*<0.5; **.*prob*<0.01; ***.*prob*<0.001.

Table 6. Comparisons of LL for Poland in 1997

	M_2	Joint	Spatial	Socio-Dem.
	Joint	na	34	629
M_1	Spatial	-34	na	595
	Socio-Dem.	-595	-629	na

Table 7. Georgian Presidential Election 2008

Candidate	Party	vote share
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 8. 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

Table 9 Factor Loadings

($n=399$)	<i>West</i>	<i>Dem</i>
1.General direction	0.12	0.77
2.Democracy	0.15	0.85
3.Next election fair	0.20	0.66
4.Opinion USA	0.63	0.26
5.Opinion EU	0.78	
6.Opinion NATO	0.91	0.15
% variance	0.32	0.30
Cumulative % variance	0.32	0.62

Table 10. Pure Spatial Model for Georgia (Natelashvili as baseline)

Variable	Coef.	Std.Error	t value
Spatial β	0.78***	0.07	11.15
Valence λ_S	2.48***	0.24	10.41
Valence λ_G	1.34***	0.24	5.59
Valence λ_P	0.51	0.26	1.94
n	388		
Log likelihood	-305.97		

*** $prob < 0.001$

Table 11. Summary of the 7 November 2010 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

Table 12. 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
% var	0.584
<i>n</i>	149

Table 13. Pure Spatial and Sociodemographic models for Azerbaijan

(baseline AXCP-MP)

	Coef. (t-value)	Coef. (t-value)
distance	1.34 *** (4.62)	1.65 *** (3.38)
λ_{YAP}	1.30 * (2.14)	-4.57 (0.99)
city		1.40 (0.94)
gender (female)		-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

* $prob < 0.05$, *** $prob < 0.001$

Table 14 Convergence coefficients and Fragmentation

Variable	Country		
	US	Britain	Canada
Conv. Coef.	[0.40,1.1] (2000-08)	[0.84,0.98] (2005-2010)	1.94 (2004)
Political system	Pres. ^a PL. ^b	Parl. ^a PL. ^b	Parl. ^a PL. ^b
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 ^c (2010)
Political system	Anoc Pres. ^d PL. ^b	Anoc Pres. ^d PL. ^b	Anoc Pres. ^d PL. ^b
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. ^e PR ^b	Frag. ^e , PR ^b , cut off	Frag. ^e PR ^b
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)

^a Parl= parliamentary; Pres.= presidential. ^b PL=plurality; PR= proportional representation.

^c Convergence coefficient modified for two dim ^d Anoc.Pres=Anocratic presidential.

^e Frag. = fragmented

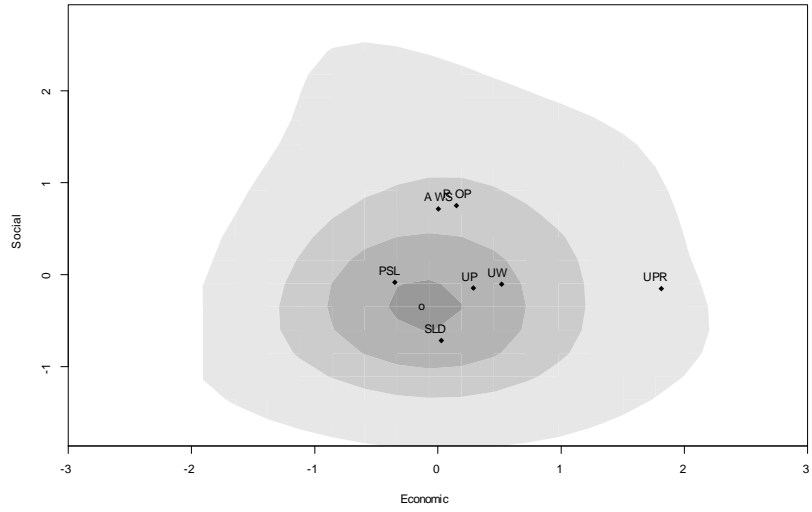


Figure 1: Voter distribution and party positions in Poland in 1997

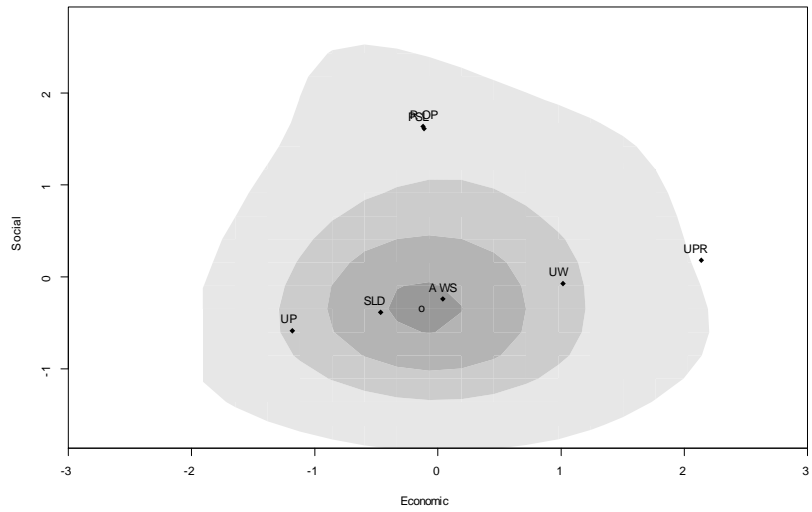


Figure 2: Equilibrium positions under the joint model in Poland in 1997

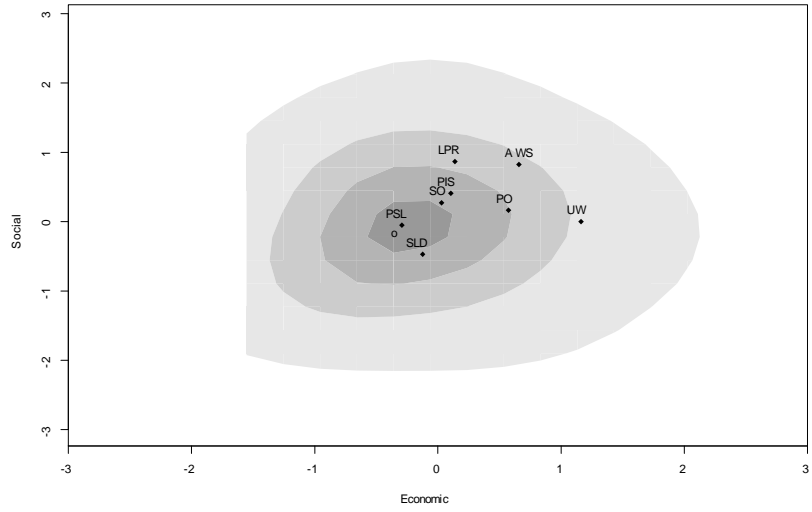


Figure 3: Estimated party positions in Poland in 2001

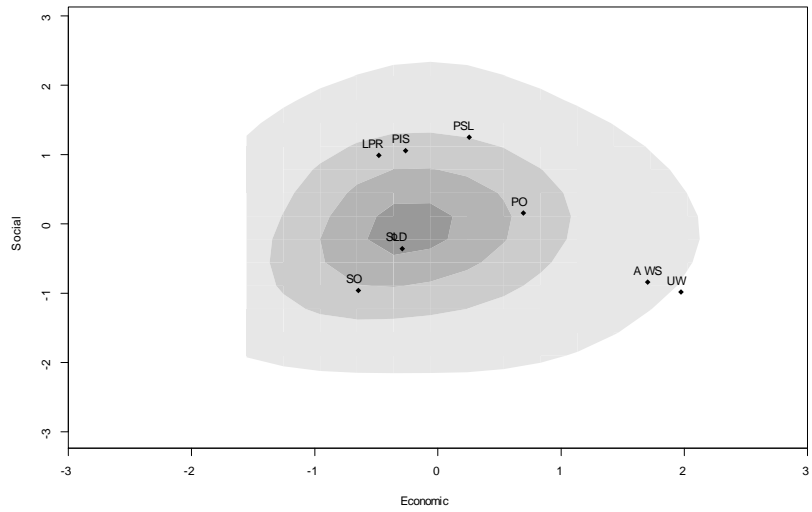


Figure 4: Equilibrium positions under the joint model in Poland in 2001

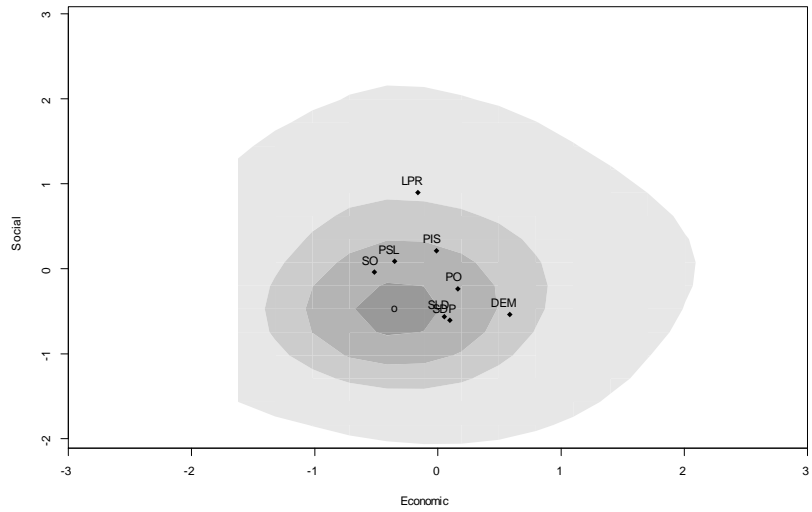


Figure 5: Estimated party positions in Poland in 2005

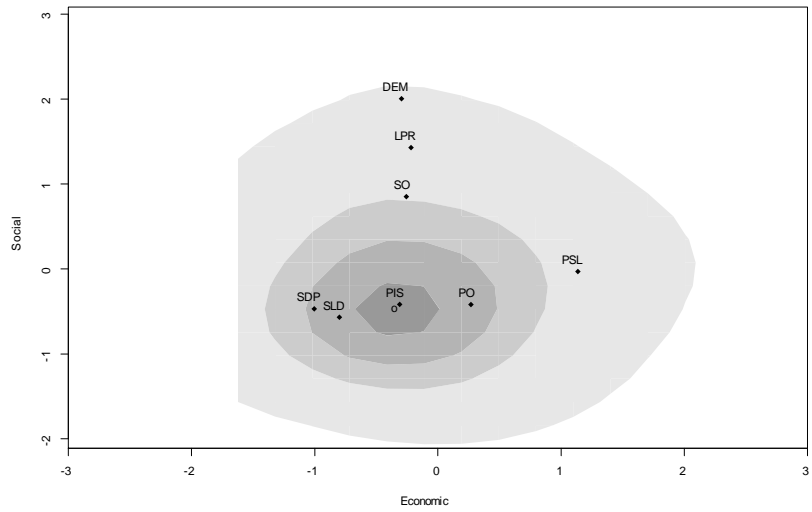


Figure 6: Equilibrium positions under the joint model in Poland in 2005

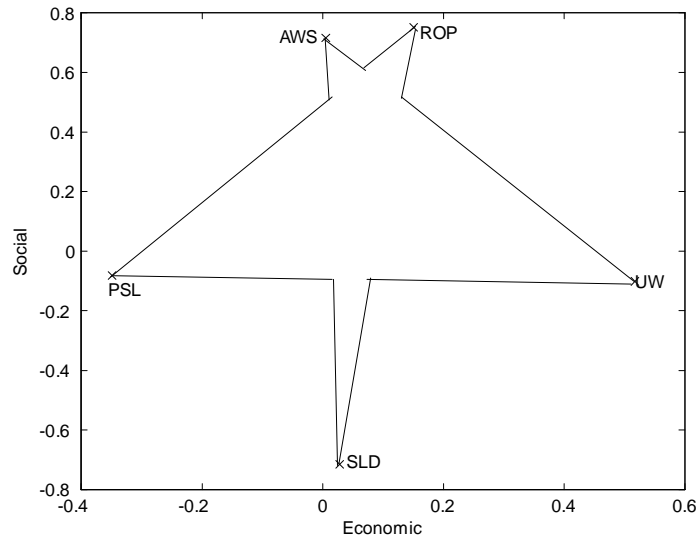


Figure 7: Estimate of the heart in 1997 in Poland

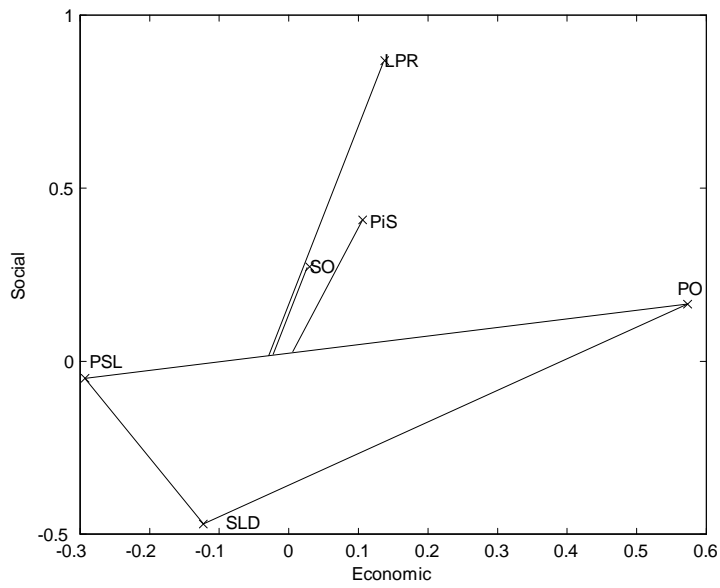


Figure 8: Estimate of the heart in 2001 in Poland

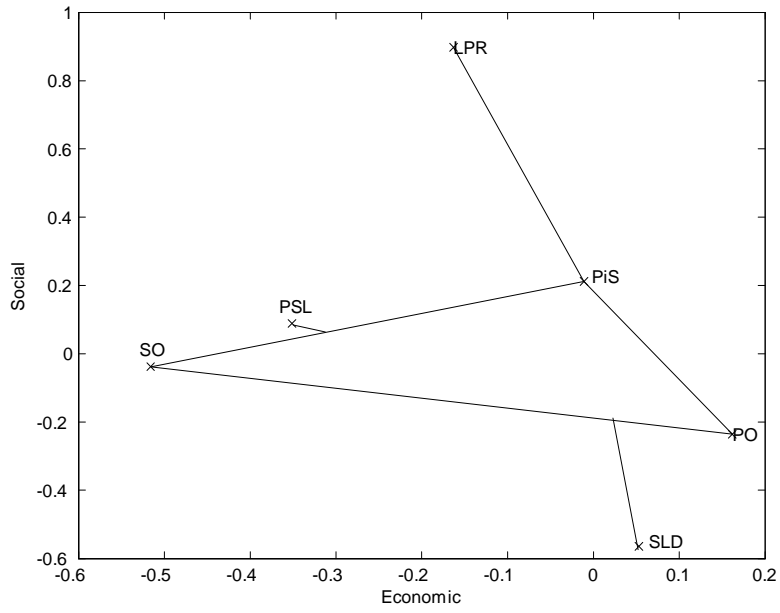


Figure 9: Estimate of the heart in 2005 in Poland

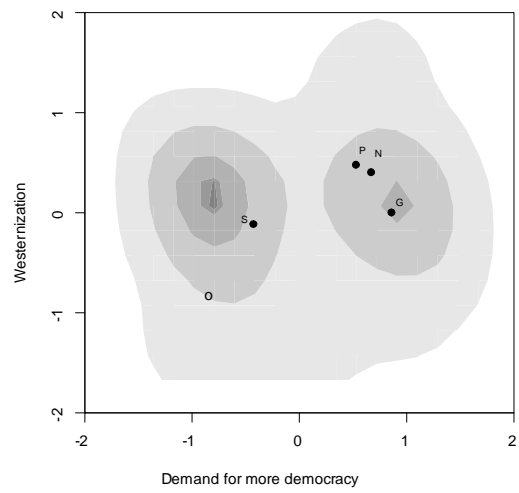


Figure 10: Estimated party positions and voter distribution in Georgia in 2008

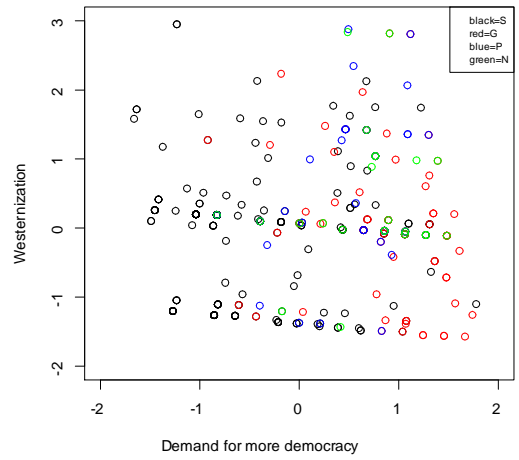


Figure 11: Voter positions by candidate choice in Georgia in 2008

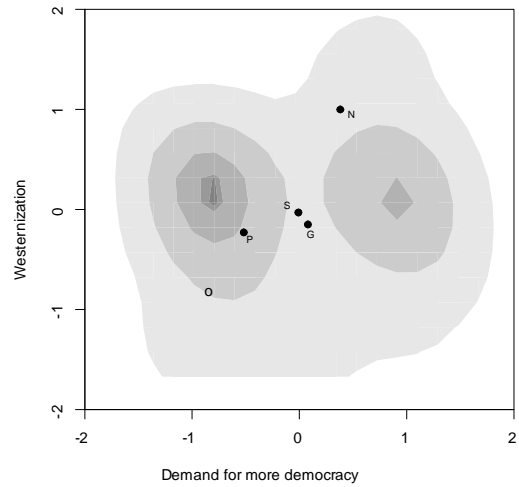


Figure 12: Estimated equilibrium positions in Georgia in 2008

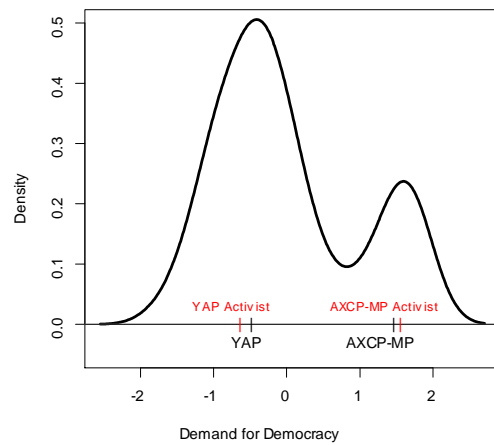


Figure 13: Voter distribution and activist positions in Azerbaijan in 2010