

# Modeling Elections in Georgia and Azerbaijan

# Post-Soviet transition in Caucasus

- Territorial Conflicts
  - Nagorno-Karabakh: Armenia vs. Azerbaijan
  - Abkhaz and South Ossetia: Georgia vs. Russia and separatists
- Political and Economic Transition
  - Neoliberal globalization
  - Democratization
- Elections
  - Not only elite competition over policies
  - Should provide legitimacy

# Ethnic Map in Caucasus



# Separatism in Georgia



# Politics in Georgia

- National liberation
  - Communist Party  $\Rightarrow$  Round Table-Free Georgia
  - Gamsakhurdia
  - Failure in liberal and democratic transformation
- Gamsakhurdia  $\Rightarrow$  Shevardnadze in 1992
  - First president (1995, 70% of the vote)
  - Pro-democratic and pro-western stance
  - Corruption and distrust
- Rose Revolution in 2003
  - Saakashvili became president in 2004 (96% of the vote)
  - Democracy: a self-declared identity but not a practice
  - Pro-western stance vs. non-democratic practices
- Presidential election in Jan. 5, 2008
  - split in the society
  - reported irregularities during the election period

# Georgian Presidential Election 2008 Result

Candidate	Party	voteshare
Saakashvili	United National Movement	53.5
Gachechiladze	Opposition coalition	25.7
Patarkatsishvili	media tycoon	7.1
Natelashvili	Georgian Labour Party	6.5
Gamkrelidze	New Right	4.0
Maisashvili	Party of the Future	0.7
Sarishvili-Chanturia	Hope party	0.2
Repeated ballots		1.7
Invalid ballots		0.6
Total		100

# Data and Survey questions

- GORBI-GALLUP post-election surveys
- Factor Space
  - Georgia going in the right direction
  - Current democracy works well
  - Confidence in transparent and fair election
  - Overall opinion of USA
  - Overall opinion of EU
  - Overall opinion of NATO
- Sociodemographics
  - gender, age, education, financial situation

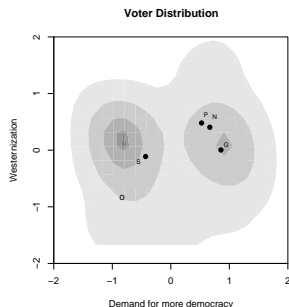
## Factor Loadings

(n=399)	Westernization	Democracy
General direction	0.12	0.77
Democracy	0.15	0.85
Next election faire	0.20	0.66
Opinion USA	0.63	0.26
Opinion EU	0.78	
Opinion NATO	0.91	0.15
% variance	0.32	0.30
Cumulative % variance	0.32	0.62

- Larger value in Westernization dimension: less favorable to US, EU and NATO
- Larger value in democracy dimension: less satisfied with current democratic situation



# Voter distribution and candidate positions



$$\mathbf{z}^* = \begin{bmatrix} & S & G & P & N \\ Democracy & -0.43 & 0.86 & 0.53 & 0.67 \\ West & -0.11 & 0.00 & 0.48 & 0.41 \end{bmatrix}$$

# Pure Spatial Model

	Coef.	Std.Error	t	value
$\beta$	0.78*	0.07	11.15	
$\lambda_S$	2.48*	0.24	10.41	
$\lambda_G$	1.34*	0.24	5.59	
$\lambda_P$	0.51	0.26	1.94	
n	388			
Log-likelihood	: -305.97			

\*  $prob < 0.001$

- $(\lambda_S, \lambda_G, \lambda_P, \lambda_N, \beta) = (2.48, 1.34, 0.51, 0.00, 0.78)$
- $\rho_N = \frac{\exp[\lambda_N]}{\sum_k \exp[\lambda_k]} = \frac{e^0}{e^0 + e^{0.51} + e^{1.34} + e^{2.48}} = 0.05$
- $(\rho_S, \rho_G, \rho_P, \rho_N) = (0.65, 0.21, 0.09, 0.05)$
- Sample voteshare (63.2, 21.3, 9.8, 5.8)

# Characteristic matrix and convergence coefficient

$$\begin{aligned}C_N &= 2\beta(1 - 2\rho_N)\nabla - I \\ &= 2(0.78)(0.9) \begin{bmatrix} 0.83 & 0.05 \\ 0.05 & 0.87 \end{bmatrix} - I \\ &= \begin{bmatrix} 1.17 & 0.07 \\ 0.07 & 1.22 \end{bmatrix} - I = \begin{bmatrix} 0.17 & 0.07 \\ 0.07 & 0.22 \end{bmatrix}\end{aligned}$$

$$\begin{aligned}\text{with } c(\lambda, \beta) &= 2\beta(1 - 2\rho_N)\text{trace}(\nabla) \\ &= 2(0.78)(0.9)(1.7) = 2.39\end{aligned}$$

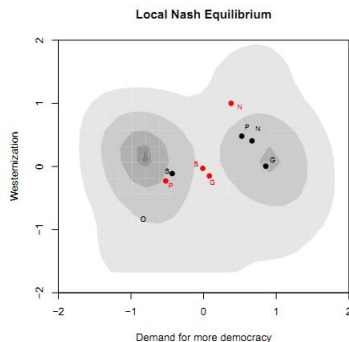
Not Converging to the electoral mean

## Spatial+Sociodemographic Model

		Coef	Std. Error	t  value
	Distance	0.82***	0.07	11.16
Saakashvili	constant	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	constant	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	constant	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		
	llk	-298.23		

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ .

# Local Nash Equilibrium



$$\begin{bmatrix} & S & G & P & N \\ \textit{Democracy} & -0.01 & 0.08 & -0.52 & 0.38 \\ \textit{West} & -0.03 & -0.15 & -0.23 & 1.00 \end{bmatrix}$$

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

# Azerbaijani 2010 Election Result

**Table 9.7.** Summary of the 7 November 2010 National Assembly of Azerbaijan election results

Party	Votes	Seats
Yeni Azerbaijan Party (YAP)	1,104,528 (45.8%)	72
Civic Solidarity Party (VHP)	37,994 (1.6%)	3
Motherland Party (AVP)	32,935 (1.4%)	2
Equality Party (MP)	42,551 (1.8%)	-
Azerbaijani Popular Front Party (AXCP)	31,068 (1.3%)	-
Independents	1,160,053 (48.2%)	48
Of which supported government		(38)
Opposition*		(10)
<b>Total turnout (50.1%)</b>	<b>2,409,129</b>	<b>125</b>

- reported irregularities
  - Election commission disqualified large number of candidates
  - Masavat Party declared that the election was illegitimate.
  - President Aliyev (YAP) claimed that the election conformed to European standards.
- No seats to the main opposition Azerbaijan Popular Front Party (AXCP) or Musavat Party (MP)

# Data and Survey Questions

- Pre-election surveys by the International Center for Social Research (ICSR)
- Factor Space
  - Democratic satisfaction
  - Democratic development for the last decade
  - Free speech
  - Trust in Parliament
  - Trust in government
  - Trust in president
  - Trust in elections
  - Political inactiveness (lack of freedom and democracy)
  - Free election
- Sociodemographic
  - gender, age, education, economic situation, city
- Voting intension, party supporter

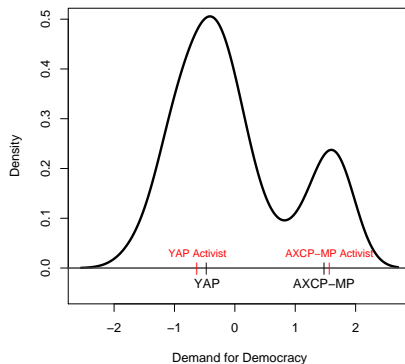
## Factor Loadings

	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
n	149

- larger value: less satisfied with democratic situation in Azerbaijan
- Call the dimension 'Demand for democracy'



# Voter distribution in the one dimension



$\mathbf{z}^* = (\text{YAP}, \text{AXCP-MP}) = (-0.47, 1.48)$

Activists' positions (YAP, AXCP-MP) = (-0.63, 1.57)

## Pure spatial and sociodemographic model

	Coef.  t-value	Coef.  t-value
distance	1.34 *** (4.62)	1.65 *** -3.38
$\lambda_{YAP}$	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)
n	149	149
llk	-11.48	-10.02
McFadden $R^2$	0.86	0.88

\*  $p < 0.05$ , \*\*\*  $p < 0.001$

- $(\lambda_{YAP}, \lambda_{AXCP-MP}, \beta) = (1.30, 0.00, 1.34)$

# Convergent coefficient and characteristic matrix

- $(\lambda_{YAP}, \lambda_{AXCP-MP}, \beta) = (1.30, 0.00, 1.34)$
- $(\rho_{YAP}, \rho_{AXCP-MP}) = (0.79, 0.21)$
- $c = 2\beta(1 - 2\rho_{AXCP-MP}) \cdot \text{var} = 2(1.34)(1 - 0.42)(0.93) = 1.44$
- $C = 1.44 - 1$
- The single eigenvalue is positive, and  $c$  exceeds the number of dimension (1): divergence

# Simulation

- No local equili

	YAP	AXCP-MP
0	-0.47	1.48
1	0.98	-
2	-	-0.21
3	-0.12	-
4	-	0.50
5	0.30	-
6	-	-0.52
7	-0.31	-
8	-	0.34
9	0.20	-
10	-	-0.54
11	-0.32	-
12	-	0.33
13	0.20	-
14	-	-0.54
15	-0.32	-

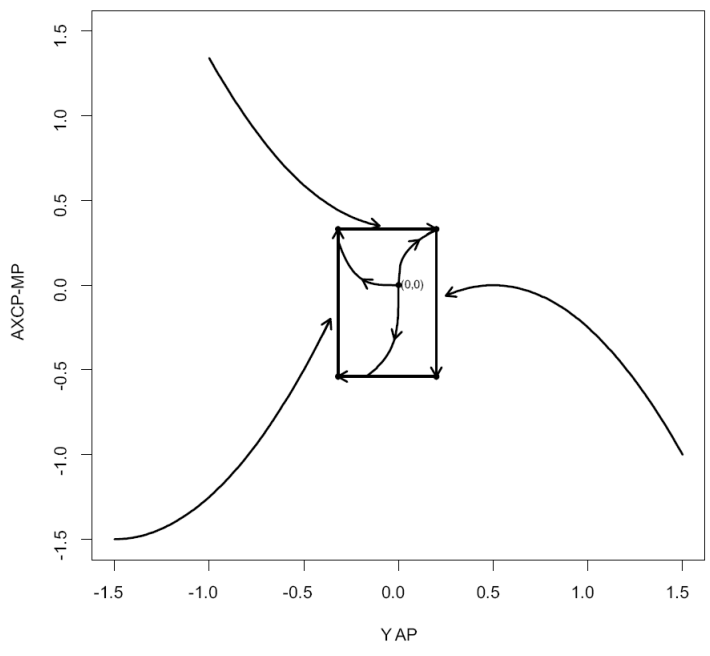


Figure 4: A limit cycle in Azerbaijan

**Table 9 Convergence coefficients and Fragmentation**

Variable	Country		
	US	Britain	Canada
<b>Conv. Coef.</b>	[0.40,1.1] (2000-08)	[0.84,0.98] (2005-2010)	1.94 (2004)
<b>Political system</b>	Pres. <sup>a</sup> PL. <sup>b</sup>	Parl. <sup>a</sup> PL. <sup>b</sup>	Parl. <sup>a</sup> PL. <sup>b</sup>
<b>env</b>	2.0	2.7 (2005)	4.0 (2004)
<b>env</b>		3.8 (2010)	4.1 (2008)
<b>ens</b>	1.0	2.5 (2005)	3.1 (2004)
<b>ens</b>		3.3 (2010)	3.5 (2008)
	<b>Russia</b>	<b>Georgia</b>	<b>Azerbaijan</b>
<b>Conv. Coef.</b>	1.7 (2007)	2.4 (2008)	2.89 <sup>c</sup> (2010)
<b>Political system</b>	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>	Anoc Pres. <sup>d</sup> PL. <sup>b</sup>
<b>env</b>	2.3	2.9 (2008)	2.27
<b>ens</b>	2.0	1.0 (2008)	1.3
	<b>Israel</b>	<b>Turkey</b>	<b>Poland</b>
<b>Conv. Coef.</b>	3.98 (1996)	5.94 (2002)	6.82 (1997)
<b>Political system</b>	Frag. <sup>e</sup> PR <sup>b</sup>	Frag. <sup>e</sup> , PR <sup>b</sup> , cut off	Frag. <sup>e</sup> PR <sup>b</sup>
<b>env</b>	6.5 (1996)	7.7 (1999)	5.5 (1997)
<b>env</b>	10.0 (2009)	4.0 (2007)	7.7 (2005)
<b>ens</b>	6.5 (1996)	5.0 (1999)	3.1 (1997)
<b>ens</b>	10.0 (2009)	2.3 (2007)	5.0 (2005)

<sup>a</sup> Parl= parliamentary; Pres.= presidential. <sup>b</sup> PL=plurality; PR= proportional representation.

<sup>c</sup> Convergence coefficient modified for two dim <sup>d</sup> Anoc.Pres=Anocratic presidential.

<sup>e</sup> Frag. = fragmented