2007 State Duma elections: The role of ideological preferences

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Часть I

Introduction and literature review

Two broad questions

1. How do Russians differ on ideology?
2. Does this affect voting behavior?

Background

What determines voting?

1. Media. See review in Enikolopov, Petrova and Zhuravskaya (2008)
2. Retrospective economic evaluations — Fiorina (2002)
3. Party identification: The Michigan school Converse et. al. (1960), Green, Palmquist and Schickler (2001), Erikson, MacKuen, and Stimson (2001), Carsen and Layman (2006), Bartels (2002)
4. Social and economic status — Lipset (1960), Lipset and Rokkan (1967), Lijphart (1975)
5. Ideology or policy preferences — Downs (1957), Black (1958) и вся формальная литература
6. Other factors. Stokes (1963) — valence.

We want to test 4+5+6 vs 4+6.

History of methods used

1. Spatial voting model — Downs (1957), Black (1958) and more
2. Probabilistic voting model. Hinich, Ledyard and Ordeshook (1972), Hinich (1977), Enelow and Hinich (1982), Lin, Enelow, and Dorussen (1999), McKelvey and Patty (2006), Schofield (2007), Banks and Duggan (2005), Zakharov (2008)
3. Estimation of probabilistic models — Poole and Rosenthal (1984), Alvarez and Nagler (1995), Thurner and Eymann (2000), Quinn, Martin and Whitford (1999), Schofield and Sened (2005), Zakharov and Fantazzini (2008), Hellwig (2008)

Russia and the former Soviet block countries

Very little was done.

1. Hesli and Bashkirova (2001) — Retrospective and prospective economic evaluations affected the ratings of Boris Yeltsin in 1995-1999. Treisman (2008) — economics is the most important factor that determines the vote on Pres. elections
2. Tucker (2006), Owen and Tucker (2008) — the transitional economic voting for Eastern Europe
3. Fidrmuk (2000a, 2000b) — social voting in Eastern Europe
4. Colton and Hale (2008) — ideology is important for 2000 and 2004, but the importance of left-right selt-identification is declining. In 2004 the only significant factors were the foreign policy and strong presidential power. See also Mishler and Willerton (2003).
5. White (2005), Colton and McFaul (2003), Enokilopov, Petrova, Zhuravskaya (2008): media effects are more significant than in setablished democracies

Measuring ideology and policy preference of voters

1. Distance to candidate self-identification. Used in USA: Poole and Rosenthal (1984), Adams, Dow, and Merrill (2007), Alvarez and Nagler (1995), and also in Europe: Hellwig (2008)
2. Factor analysis of survey response. Schofield, Sened, and Nixon (1998), Schofield (2007), Quinn, Martin, Whitford (1999), Quinn and Martin (2002).
3. Inclusion of an ideological dummy in the voter utility function.

Measuring the policy platform of a party

1. A priori judgements. Taylor and Herman (1971).
2. Elite surveys. EPPMLE survey.
3. Expert surveys. Castles and Mair (1984), Huber and Inglehart (1995).
4. Systematic analysis of party manifestos. Laver (2001) and others.
5. Factor analysis of mass survey data.
6. Roll call analysis. Poole and Rosenthal (1984), Aleskerov et. al. (2003).

Часть II

The ideological preferences of Russian voters

The data

VZIOM mass survey, may 2007, may 2006..

1. Socioeconomic data — age, gender, income, residence, education
2. Approval of several federal government institutions (including President) (2007 only)
3. 40 questions reflecting the ideological position

Factor analysis of survey data

1. We have N observetions of size L.
2. We suspect that the components are correlated.
3. We need to lower the dimensionality to $K < L$ with as few losses as possible.

Why do it? Learn something about the structure of the data; data more suited for visual analysis.

The principle component analysis

Let X be a $N \times K$ data matrix. We solve the following problem:

$$w_1 = arg \max_{\|w\|=1} \mathrm{var}(wX) \tag{1}$$

We call the $N \times 1$ vector $\hat{x}_1 = w_1 X$ *the first principal component*, while the $K \times 1$ vector w_1 are the coresponding *factor loadings.* The second principal component we get by solving

$$w_2 = arg \max_{\|w\|=1, w \cdot w_1 = 0} \mathrm{var}(wX) \tag{2}$$

The results — 2007

Notion	Pos	Neg	F1	F2	Notion	Pos	Neg	F1	F2
Nation	0,21	0,08	0,11	-0,08	USSR	0,12	0,08	-0,01	-0,34
Order	0,57	0,01	-0,18	0,01	Church	0,21	0,02	-0,13	-0,01
Freedom	0,37	0,03	-0,13	0,20	Revolution	0,01	0,22	0,13	-0,26
Market	0,10	0,15	0,26	0,08	Property	0,14	0,04	0,13	0,14
Russians	0,34	0,02	-0,15	0,03	Success	0,31	0,00	-0,16	0,21
West	0,02	0,23	0,21	0,10	Liberalism	0,01	0,14	0,15	-0,01
Socialism	0,11	0,11	-0,13	-0,28	Reform	0,06	0,14	0,23	-0,02
Communism	0,07	0,19	0,05	-0,32	Stability	0,38	0,00	-0,16	0,00
Democracy	0,15	0,09	0,11	0,07	Labor	0,31	0,00	-0,26	-0,08
Tradition	0,29	0,01	-0,06	-0,04	Individualism	0,02	0,12	0,05	0,10
Patriotism	0,34	0,01	-0,14	-0,15	Non-Russians	0,02	0,29	0,25	-0,12
State	0,26	0,03	-0,17	-0,03	Equality	0,18	0,02	-0,18	-0,06
Compet.	0,05	0,07	0,07	0,12	Collectivism	0,06	0,09	0,02	-0,22
Sovereignty	0,07	0,05	-0,08	0,01	Morals	0,22	0,03	-0,05	-0,07
Elites	0,02	0,41	0,30	0,04	Human rights	0,32	0,02	-0,15	0,12
Party	0,02	0,16	0,04	-0,14	Wealth	0,12	0,01	0,15	0,25
Power	0,09	0,18	0,26	-0,09	Russia	0,28	0,00	-0,03	0,07
Justice	0,49	0,02	-0,30	0,02	Well-being	0,37	0,01	-0,11	0,25
Opposition	0,01	0,17	0,12	-0,06	Progress	0,21	0,01	-0,03	0,27
Business	0,07	0,13	0,17	0,27	Capitalism	0,15	0,02	-0,09	0,22

Результаты анализа — крупный шрифт

Понятие	Пол.	Отр.	Ф. 1	Ф. 2
Нация	0,21	0,08	0,11	-0,08
Порядок	0,57	0,01	-0,18	0,01
Свобода	0,37	0,03	-0,13	0,20
Рынок	0,10	0,15	0,26	0,08
Русские	0,34	0,02	-0,15	0,03
Запад	0,02	0,23	0,21	0,10
Социализм	0,11	0,11	-0,13	-0,28
Коммунизм	0,07	0,19	0,05	-0,32
Демократия	0,15	0,09	0,11	0,07
Традиция	0,29	0,01	-0,06	-0,04

Результаты анализа — крупный шрифт

Понятие	Пол.	Отр.	Ф. 1	Ф. 2
Патриотизм	0,34	0,01	-0,14	-0,15
Государство	0,26	0,03	-0,17	-0,03
Конкуре-сть	0,05	0,07	0,07	0,12
Суверенитет	0,07	0,05	-0,08	0,01
Элита	0,02	0,41	0,30	0,04
Партия	0,02	0,16	0,04	-0,14
Власть	0,09	0,18	0,26	-0,09
Справедл.	0,49	0,02	-0,30	0,02
Оппозиция	0,01	0,17	0,12	-0,06
Бизнес	0,07	0,13	0,17	0,27

Результаты анализа — крупный шрифт

Понятие	Пол.	Отр.	Ф. 1	Ф. 2
СССР	0,12	0,08	-0,01	-0,34
Церковь	0,21	0,02	-0,13	-0,01
Революция	0,01	0,22	0,13	-0,26
Собственность	0,14	0,04	0,13	0,14
Успех	0,31	0,00	-0,16	0,21
Либерализм	0,01	0,14	0,15	-0,01
Реформа	0,06	0,14	0,23	-0,02
Стабильность	0,38	0,00	-0,16	0,00
Труд	0,31	0,00	-0,26	-0,08
Индивид-зм	0,02	0,12	0,05	0,10

Результаты анализа — крупный шрифт

Понятие	Пол.	Отр.	Ф. 1	Ф. 2
Нерусские	0,02	0,29	0,25	-0,12
Равенство	0,18	0,02	-0,18	-0,06
Коллективизм	0,06	0,09	0,02	-0,22
Мораль	0,22	0,03	-0,05	-0,07
Права человека	0,32	0,02	-0,15	0,12
Богатство	0,12	0,01	0,15	0,25
Россия	0,28	0,00	-0,03	0,07
Достаток	0,37	0,01	-0,11	0,25
Прогресс	0,21	0,01	-0,03	0,27
Капитализм	0,15	0,02	-0,09	0,22

Interpreting the factors. First factor — demand for justice

Strong positive correlation Elite, West, non-Russians

Positive correlation Market, power

Negative correlation order, state, equality, stability

Strong negative correlation Justice, labor.

Interpreting the first factor

Hypothetical profiles of respondents.

Notion	High first factor	Low first factor
Elite	0	-1
Power	0	-1
Non-Russians	0	-1
West	0	-1
Justice	0	1
Labor	0	1
Equality	0	1
Stability	0	1
Order	0	1

Interpreting the factors. Second factor — economic liberalism

Strong positive correlation Business, progress

Positive correlation Well-being, wealth, freedom, success, capitalism

Negative correlation Collectivism

Strong negative correlation Commulism, socialism, USSR, revolution.

Interpreting the second factor

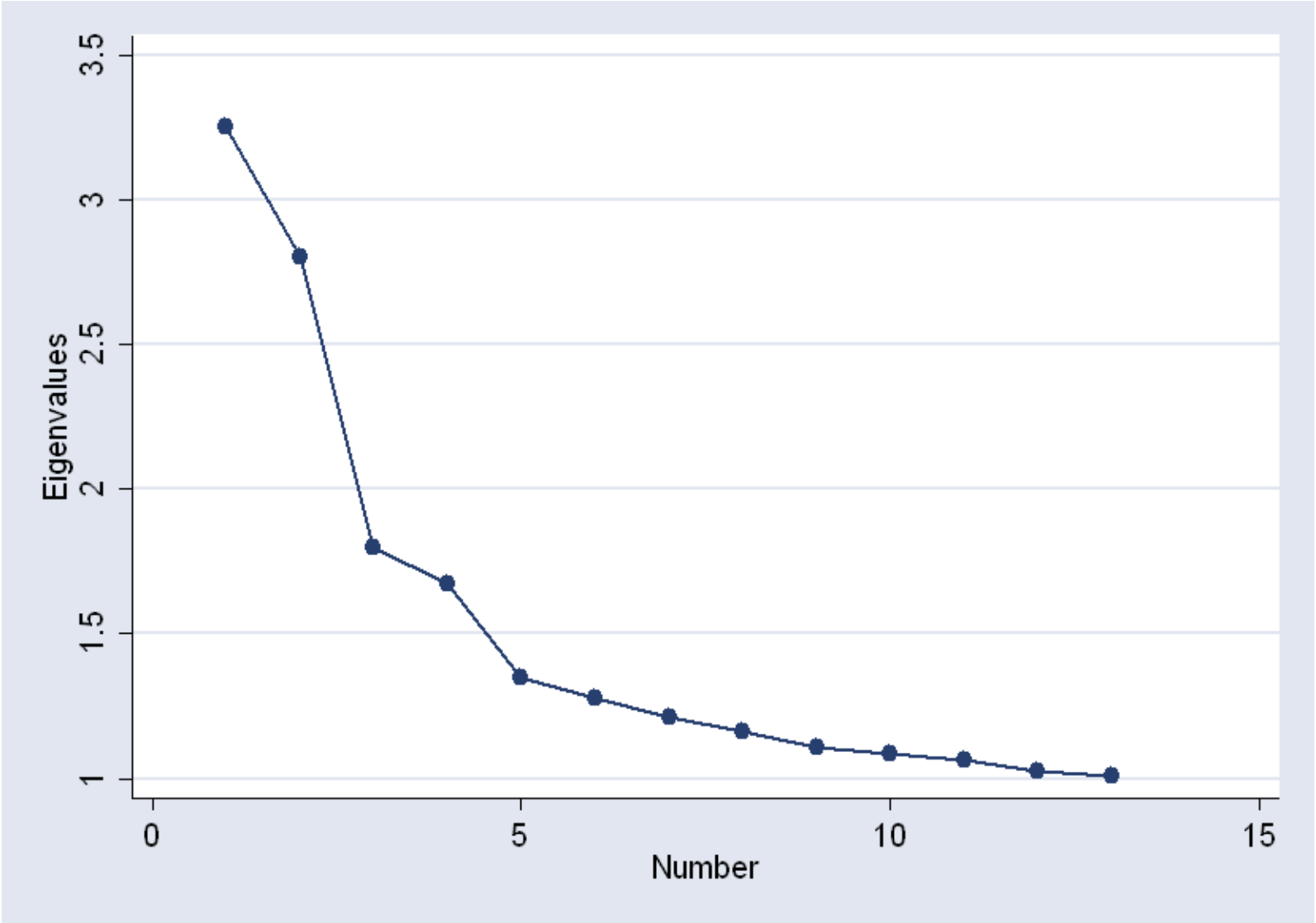
Hypothetical profiles of respondents.

Notion	High second factor	low second factior
Business	1	-1
Progress	1	0
Well-being	1	0
Wealth	1	0
Freedom	1	0
Success	1	0
Capitalism	0	1
Communism	-1	1
Socialism	-1	1
USSR	-1	1

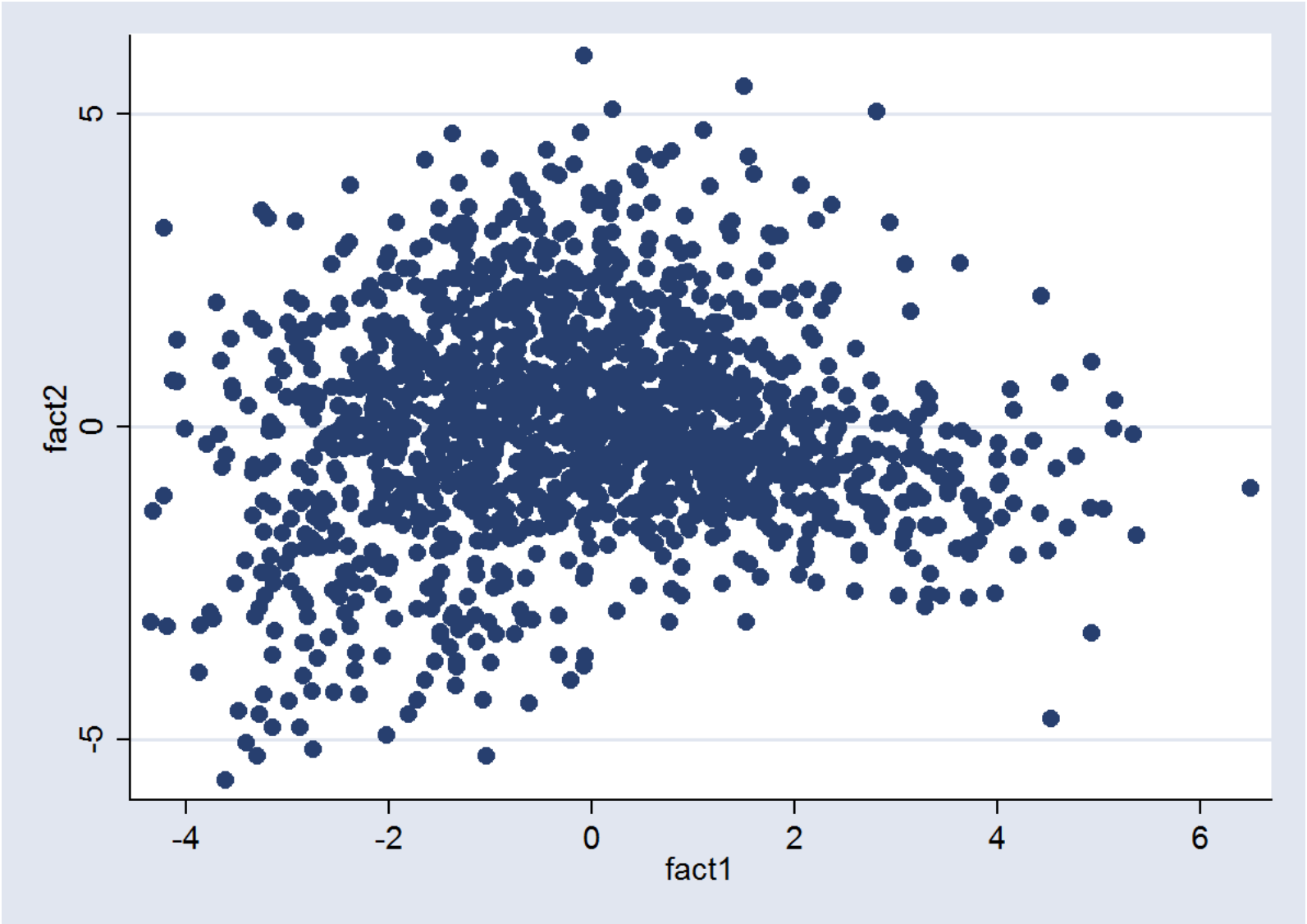
Results compared with 2006

1. Percent of positive/negative responses did not change, except
   1. Capitalism: +8% pos, -30% neg.
   2. Justice: -8% pos.
2. 1st factor: capitalism: -0,36, non-Russians: +0,17, USSR: +0,19, power: +0,17
3. 2nd factor: order: -0,16, west: +0,17, patriotims: -0,23, elite: +0,19, capitalism: +0,22

Eigenvalues of the covariance matrix for 2007



Scatterplot for estimated ideological positions



Party preferences and ideology — 2007

Party	% in survey	% on election	F1	F2
Agrarian aprty	0,63	1,47	-0,16	-0,92
United Russia	45,72	40,96	0,05	0,30
CPRF	7,12	7,37	-0,76	-1,59
LDPR	4,22	5,13	-0,53	0,69
Patriots of Russia	0,25	0,57	0,22	-0,10
Just Russia	6,17	4,93	-0,60	-0,87
Civil power	0,69	0,67	-0,43	0,31
SPS	0,57	0,61	-0,47	1,14
Yabloko	0,76	1,01	-0,56	0,20
Democratic party	0,25		-0,16	1,36
Republican party	0,19	0,08	-0,25	0,75
“Will not vote”	17,88		0,23	-0,06
“Can’t answer”	14,92		0,43	-0,04
Did not vote		36,3		

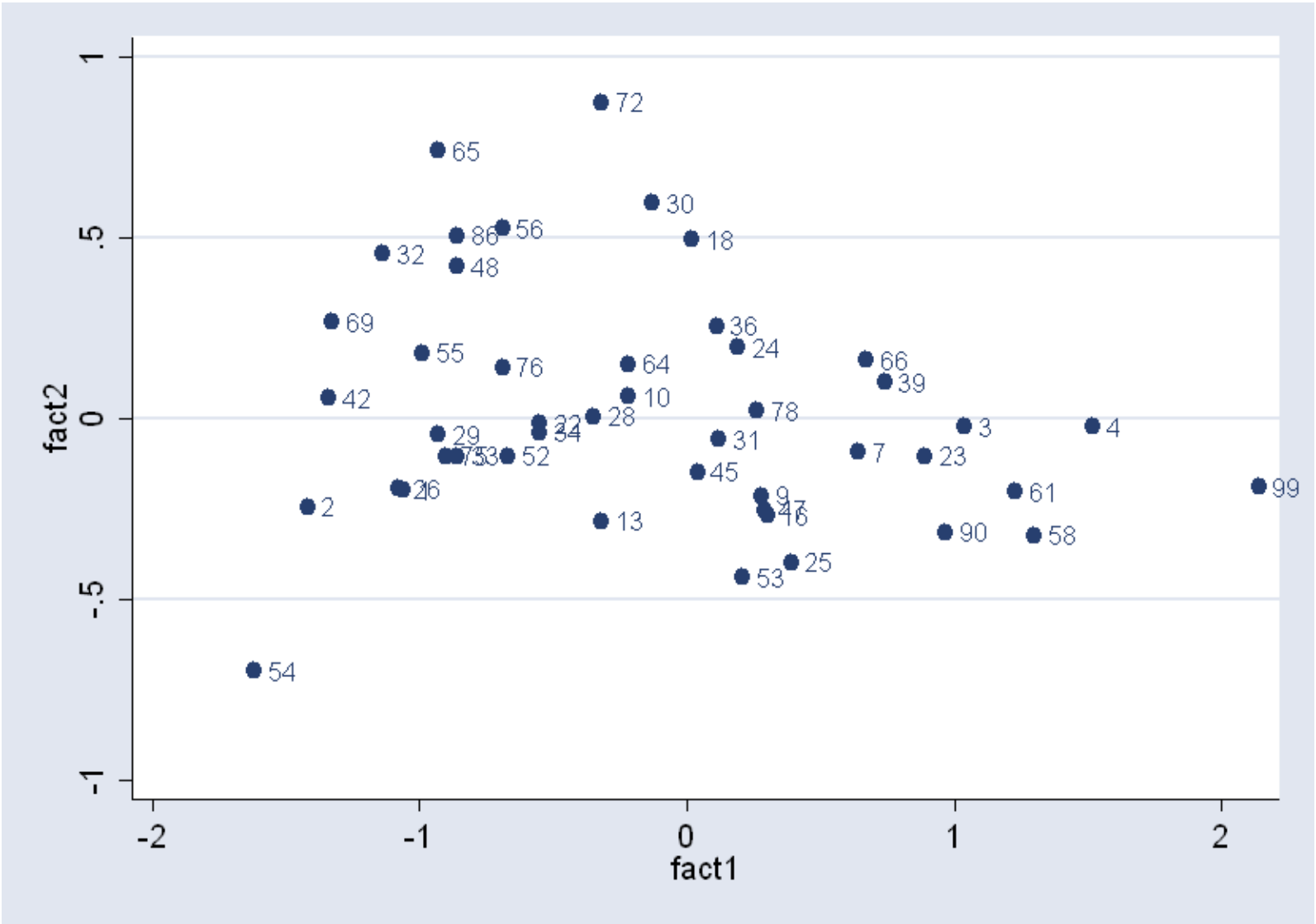
Party preferences and ideology — 2006

Party	% in survey	Φ1	Φ2
Agrarian party	2,00	0,36	-0,36
United Russia	44,80	0,27	0,27
CPRF	8,00	1,51	-1,51
LDPR	5,69	0,08	0,08
Limonov party	0,38	0,19	0,19
Patriots of Russia	1,50	-0,19	-0,19
Party of pensioners	3,19	0,44	-0,44
Rodina	0,88	1,31	1,31
SPS	1,00	0,34	0,26
Yabloko	0,38	1,39	1,39
Democratic party	0,31	1,30	1,30
Party of life	0,56	1,29	1,29
Republican party	0,31	1,85	-1,85
Other	10,56	0,07	-0,07
None	8,38	0,00	0,00
Can't answer	12,25	0,03	-0,03

Party loyalty and ideological position

1. United Russia — center
2. Communists, Just Russia — one niche
3. LDPR — separate niche
4. Compare Yabloko and SPS on second dimension
5. Average positions differ mostly on second dimension
6. 2007 data roughly corresponds to the election results

Ideology and regions



Region codes

1 - Adygea 2 - Bashkortostan, 3 - Buriatiya, 4 - Gorny Altai, 5 - Dagestan, 7 - Kabardino-Balkariya, 9 - Kerachaevo-Cherkesiya, 10 - Karelia, 13 - Mordovia, 16 - Tatarstan, 18 - Udmurtiya, 22 - Altai, 23 - Krasnodarskii Krai, 24 - Krasnoyarskii Krai, 25 - Primorye, 26 - Stavropolskii Krai, 28 - Amur Oblast, 29 - Archangel Oblast, 30 - Astrakhan Oblast, 31 - Belgorod Oblast, 32 - Bryansk Oblast, 33 - Vladimir Oblast, 34 - Volgograd Oblast, 36 - Voronezh Oblast, 39 - Kaliningrad Oblast, 42 - Kemerovo Oblast, 45 - Kurgan Oblast, 47 - Leningrad Oblast, 48 - Lipetsk Oblast, 52 - Nizhegorodskaya Oblast, 53 - Novgorod Oblast, 54 - Novosibirst Oblast, 55 - Omsk Oblast, 56 - Orenburg Oblast, 58 - Penza Oblast, 61 - Rostov Oblast, 64 - Saratov Oblast, 65 - Sakhalin Oblast, 66 - Sverdlov Oblast, 69 - Tver Oblast, 72 - Tumen Oblast, 75 - Chita Oblast, 76 - Yaroslavl Oblast, 78 - Saint Petersburg, 86 - Khanty-Mansi AO, 90 - Moscow Oblast 99 - Moscow

Federal districts

Compare factor averages accross districts.

District	F 1	F 2	N
Central	0,32 (2,02)	0,02 (1,65)	418
Northwest	0,06 (1,47)	-0,075 (1,36)	154
South	0,21 (1,76)	-0,18 (1,43)	253
Volga	-0,24 (1,41)	-0,08 (1,77)	343
Urals	0,31 (1,41)	0,32 (1,55)	92
Siberia	-0,57 (1,73)	0,21 (2,04)	210
Far East	-0,18 (1,43)	0,02 (1,61)	118

Ideology and income

Income	F 1	F 2	N
1 (highest)	-0,1 (1,39)	-0,16 (1,05)	11
2	0,82 (1,82)	0,28 (1,59)	126
3	-0,04 (1,77)	0,19 (1,65)	989
4	0,15 (1,83)	-0,48 (1,64)	383
5 (lowest)	-0,05 (1.71)	-0,59 (1,63)	79

1. Nonlinear relationship for both dactors
2. Above average income — highest position on either factor

Ideology and education

Education	F1	F2	N	
1 (primary or less)	-0,24 (2,01)	-1,38 (1,29)	42	
2	-0,03 (1,74)	-0,80 (1,79)	118	
3	0,06 (1,73)	0,04 (1,56)	538	Linear
4	-0,17 (1,78)	0,12 (1,71)	545	
5	0,34 (1,85)	0,40 (1,42)	77	
6 (4 years of college)	0,18 (1,94)	0,11 (1,67)	268	

dependency.

Ideology and size of township

Resides is	F1	F2	N
1 (Moscow, St. Petersburg)	1,54 (2,17)	-0,25 (1,54)	163
2	-0,44 (1,53)	-0,33 (1,76)	139
3	0,01 (1,45)	0,14 (1,41)	148
4	-0,34 (1,65)	0,32 (1,64)	290
5	0,23 (2,00)	-0,35 (1,48)	135
6	0,39 (1,51)	0,61 (1,78)	171
7	-0,18 (1,58)	0,10 (1,70)	116
8 (village)	-0,28 (1,71)	-0,17 (1,76)	426

1. First factor higher in Moscow and St. Pete
2. First factor is below average in other large cities.

First and second factors — cont.

"Do you approve of V. Putin's performance as RF President?"

Response	Φ 1	Φ 2	N
"Yes"	-0,02 (1,73)	0,11 (1,65)	1252
"No"	0,02 (1,98)	-0,44 (1,76)	201
"Can't answer"	0,18 (2,14)	-0,39 (1,53)	134

"Are you ready to participate in acts of civilian protest?"

Response	Φ 1	Φ 2	N
"Yes"	-0,23 (1,94)	-0,36 (1,68)	347
"No"	0,08 (1,73)	0,15 (1,64)	1074
"Can't answer"	-0,01 (1,92)	-0,25 (1,70)	165

The second factor seems to be more important.

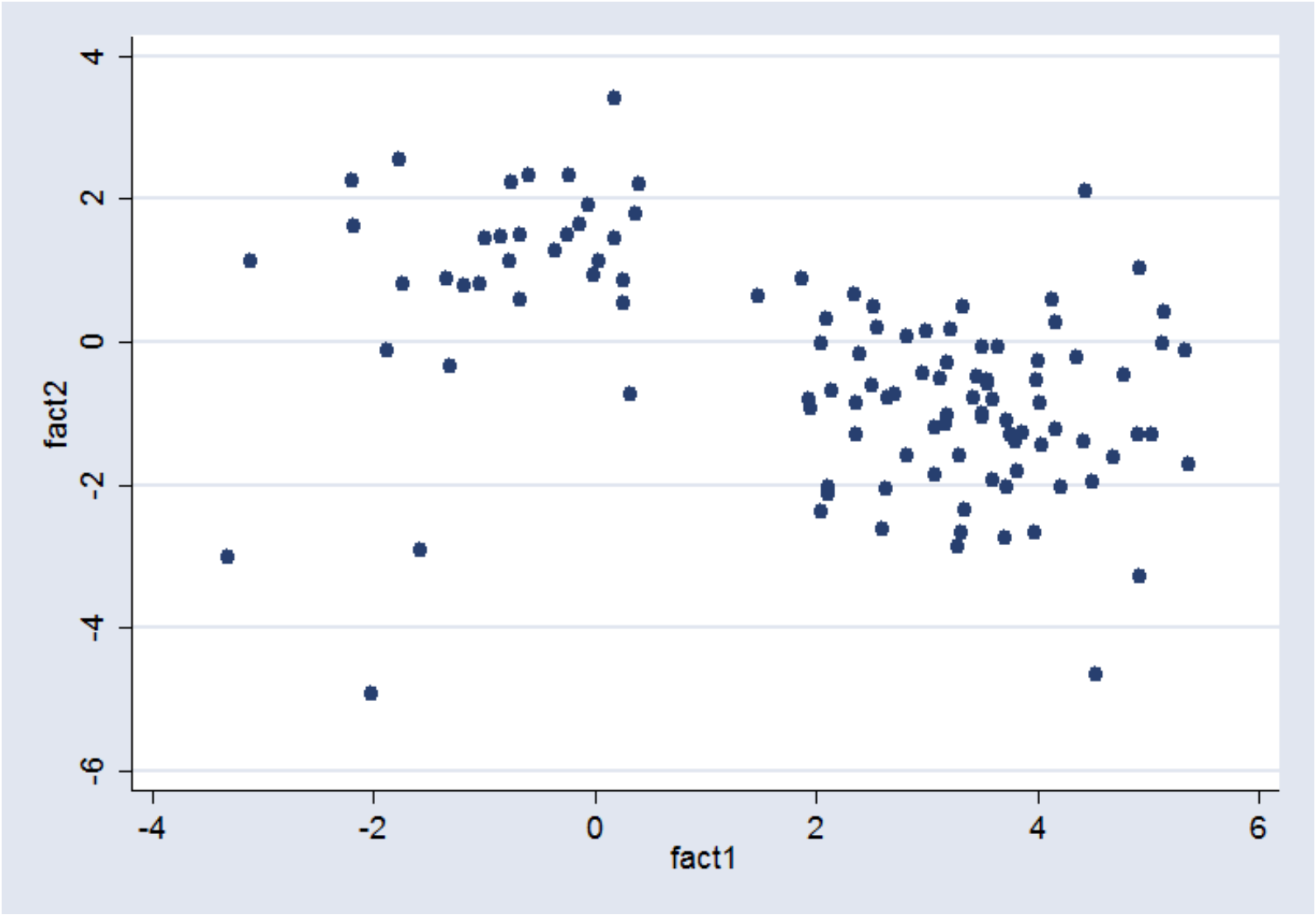
First and second factors — cont.

"Do you discuss politics at home or at work?"

Response	F1	F2	N
1 (yes, daily)	0,37 (2,02)	-0,34 (1,74)	112
2	0,02 (1,84)	-0,16 (1,64)	559
3	-0,15 (1,79)	0,13 (1,67)	556
4 (almost never)	0,02 (1,64)	0,21 (1,72)	309
5 (Can't answer)	1,11 (1,47)	-0,21 (1,29)	52

The respondents who answered "1" are mostly CPRF and Just Russia supporters.

Moscow



Moscow

Two clusters:

1. Content and economically illiberal
2. Discontent and liberal

Moscow — cont.

Ideological notions that do not affect the cluster to which a parson belongs:
Tradition, patriotism, elite, competitiveness, party, justice, opposition, church, revolution, property, liberalism, stability, labor, Russia, progress

Ideological notions with reverse effect:
West, socialism, business.

Moscow — cont.

1. Cluster 2 is more homogeneous.
2. All politically inactive population is concentrated in Cluster 1.
3. All potential protest voters are in Cluster 1.
4. Educatiuon does not affect to which cluster one belongs.
5. More questions than answers.

Часть III

Estimating a model of vote choice

The multinomial choice model

This approach is used in most empirical works on spatial voting. Suppose that N voters choose between J alternatives (parties). The utility that voter i attributes to party j is given as

$$u_{ij} = a_j + \alpha_j x_i^T - \phi(v_i, y_j, \beta) + \epsilon_{ij}. \quad (3)$$

Here

1. $v_i \in \Re^K$ — the best alternetive of voter i
2. $y_j \in \Re^K$ — the alternative offered by party j
3. $\phi(\cdot, \cdot)$ — the disutility function
4. α_j, β, a_j — parameters
5. x_i — voter characteristics
6. ϵ_{ij} — a zero-mean random variable

The independent variables

`educ` — education:

- 0 Primary or below
- 0.2 Incomplete secondary
- 0.4 Secondary
- 0.6 Vocational school
- 0.8 Less than 4 years of higher ed.
- 1 4 or more years of higher ed.
- 0.5 Can't answer

The independent variables

Approval of federal institutions:
`approve_putin` — President,
`approve_duma` — State Duma,
`approve_gov` — Cabinet,
`approve_pm` — Prime Minister,
`approve_sf` — Federation Council.
1 — approve, 0 — do not approve, 0.5 — can't answer.

`is_village` — whether the resident lives in a village (1 or 0).

The independent variables

`income` — income

- 0 Can afford expensive things — residence, auto.
- 0.25 Can afford durable products.
- 0.5 We have sufficient income to buy food and clothing, but not durable goods.
- 0.75 We have enough income to buy food, but not enough for clothing.
- 1 We live very poorly. There is insufficient income even for food.
- 0.5 Can't answer

The independent variables

`age` — age in full years

`gender` — gender (0—male, 1 — female)

`efficacy` — response to the question "Do you believe that average voters, like yourself, have an effect on who will run the country and what policy he will implement?"

- 0 No. Practically everything is decided without the involvement of ordinary people.
- 0.5 Something depends on the ordinary people, but not much.
- 1 Yes, a lot depends on people like me.
- 0.5 Can't answer

The independent variables

`income_2007` — mean disposable income in roubles
`times_2007` — mean disposable income in roubles over cost of living
`times_growth` — percentage change in mean disposable income in roubles over cost of living over the last year

Model estimated in this work

$$u_{ij} = a_j + \alpha_j x_i^T + \beta_1 (v_{i1} - y_{j1})^2 + \beta_2 (v_{i2} - y_{j2})^2 + \epsilon_{ij} \equiv \bar{u}_{ij} + \epsilon_{ij} \quad (4)$$

Here we assume that

$$P(\epsilon_{ij} \leq x) = e^{-e^{-x}} \quad (5)$$

and that ϵ_{ij} are independent.

Using the maximum likelihood method

In that case, the following is true:

$$P_{ij} = P(u_{ij} = max_k u_{ik}) = \frac{e^{\bar{u}_{ij}}}{\sum_k e^{\bar{u}_{ik}}}. \quad (6)$$

The likelihood function is:

$$L = \prod_{i=1}^{N} P_{id_i}, \quad (7)$$

where d_i is the party of choice for respondent i.
Our goal is to maximize L, choosing a_j, α_j, β_1, and β_2. Fix $a_1 = 0$ and $\alpha_1 = 0$.

Models done here.

2 families of models, by the number of parties:

1. 4 party — UR, CPRF, Just Russia, LDPR
2. 7 party — UR, CPRF, Just Russia, LDPR, SPS, Yabloko, Agrarian Party
3. 5 party with abstention

3 groups of independent variables

1. `age`, `gender`
2. `education`, `income`, `is_village`
3. `efficacy`, `approve_putin`, `approve_duma`, `approve_pm`, `approve_gov`, `approve_sf`.

Estimated models — 4 party

Independent variables included:

1. All,
2. All with $\beta_1 = \beta_2 = 0$,
3. All significant,
4. `age`, `gender`, `education`, `income`, `is_village`,
5. `education`, `income`, `is_village`,
6. Only constants a_j.

Likelihood ratio test

Let Θ, Θ_1 — be the sets of parameter values, with $\Theta_1 \subset \Theta$. Consider the statistic

$$l = -2 \ln \left(\frac{\sup\{L(\theta|x) : \theta \in \Theta_1\}}{\sup\{L(\theta|x) : \theta \in \Theta\}} \right).$$

Then as $n \to \infty$, l is distributed according to χ^2_k, where $k = dim(\Theta) - dim(\Theta_1)$.

Likelihood ratio test — 4 parties

	Model 1	Model 2	Model 3	Model 4	Model 5
Model 2	2 45,8 <0,00001	—			
Model 3	14 4,7 0,44		—		
Model 4	18 42,2 <0,00001			—	
Model 5	24 89,1 <0,00001			6 54,9 <0,00001	—
Model 6	33 102,1 <0,00001		19 97,4 <0,00001	15 60,3 <0,00001	9 5,4 0,28

Estimated model — 4 party

β_1	_cons	-0,175	0,035	-4,89	0,000
β_2	_cons	-0,143	0,020	-7,06	0,000
CPRF	age	0,045	0,007	5,76	0,000
	gender	-0,636	0,250	-2,55	0,011
	efficacy	-0,926	0,374	-2,47	0,013
	approve_pu n	-2,206	0,350	-6,29	0,000
	times_growth	6,466	2,610	2,48	0,013
	times_2007	-0,846	0,244	-3,46	0,001
	_cons	-6,151	2,715	-2,27	0,023
LDPR	income	2,668	0,862	3,09	0,002
	is_village	-0,505	0,325	-1,55	0,120
	age	-0,022	0,009	-2,26	0,024
	gender	-1,910	0,340	-5,60	0,000
	efficacy	-0,512	0,421	-1,21	0,224
	approve_pu n	-2,101	0,413	-5,08	0,000
	approve_duma	0,405	0,342	1,18	0,236
	_cons	-0,302	0,678	-0,44	0,656
Just Russia	age	0,034	0,006	4,99	0,000
	gender	-0,297	0,235	-1,26	0,206
	efficacy	-0,494	0,346	-1,43	0,154
	approve_pu n	-1,219	0,440	-2,77	0,006
	approve_duma	-1,151	0,370	-3,11	0,002
	approve_sf	0,636	0,393	1,62	0,105
	times_growth	4,198	2,088	2,01	0,044
	_cons	-6,973	2,355	-2,96	0,003
N		1004			
ln(L)		-688,9			

Estimated model — 4 party

Conclusions:

1. Ideology is important
2. United Russia has large administrative resource, especially compared to LDPR and Just Russia. Ideology, demographics, and Putin approval cannot alone explain the UR voteshare.
3. Education is not significant; income is significant for LDPR only, which is popular among the poor
4. Gender matters. UR is a «female» party, LDPR is «male».
5. `efficacy` and `approve_putin` are always important.

Regional economic growth

1. `income_2007` is significant only if considered separately, and only for CPRF; the coefficient is negative and small
2. `times_2007` is significant only if considered separately, and only for CPRF; the coefficient is negative and small
3. CPRF is strong in Adygeya, Krasnodar Krai, Tatarstan and Vladimir oblast. All are below average on `income_2007`, all but Tatarstan are below on `times_2007`.
4. Standard deviation of `times_growth` is 5%, `times_2007` — 90%
5. No change if `approve_` variables are removed.
6. Is there economic voting? No conclusive evidence thus far. Most likely it's a party of CPRF strategy.

The impact of ideology on party choice

Predicted probabilities of voting. Female, all other variables taken at mean velues

fact1	fact2	UR	CPRFФ	LDPR	JR
0	0	0,861	0,042	0,019	0,076
3,4	0	0,924	0,020	0,011	0,043
-3,4	0	0,758	0,082	0,030	0,128
0	3.4	0,936	0,006	0,031	0,025
0	-3.4	0,609	0,202	0,009	0,178

The impact of ideology on party choice

Predicted probabilities of voting. Male, all other variables taken at mean velues

fact1	fact2	UR	CPRFФ	LDPR	JR
0	0	0,725	0,074	0,107	0,092
3,4	0	0,835	0,038	0,069	0,056
-3,4	0	0,577	0,131	0,151	0,139
0	3.4	0,784	0,011	0,173	0,030
0	-3.4	0,452	0,314	0,044	0,189

The impact of other factors on party choice

Males, $fact1 = fact2 = 0$, all other variables taken at mean values

putin	effic.	inc.	vill.	age	UR	CPRF	LDPR	JR
1	1	1	1	30	0,936	0,014	0,016	0,034
1	1	4	0	30	0,781	0,020	0,162	0,036
0	0	1	1	30	0,605	0,153	0,134	0,107
0	0	4	0	30	0,227	0,099	0,622	0,051
1	1	1	1	60	0,846	0,052	0,007	0,093
1	1	4	0	60	0,737	0,078	0,080	0,105
0	0	1	0	60	0,374	0,380	0,043	0,203
0	0	4	1	60	0,205	0,360	0,293	0,143

The impact of other factors on party choice

Females, $fact1 = fact2 = 0$, all other variables taken at mean values

putin	effic.	inc.	vill.	age	UR	CPRF	LDPR	JR
1	1	1	1	30	0,964	0,008	0,002	0,025
1	1	4	0	30	0,927	0,013	0,029	0,030
0	0	1	1	30	0,771	0,105	0,025	0,098
0	0	4	0	30	0,552	0,130	0,226	0,090
1	1	1	1	60	0,897	0,030	0,001	0,071
1	1	4	0	60	0,850	0,049	0,014	0,087
0	0	1	0	60	0,511	0,279	0,009	0,200
0	0	4	1	60	0,376	0,355	0,080	0,188

Most loyal voters

I Female, fact1=0, fact2=0, income=0, is_village=0, age=30, efficacy=1, approve_putin=1, approve_duma=1,

II Male, fact1=-1,7, fact2=1,7, income=0,75, is_village=0, age=30, efficacy=0, approve_putin=0, approve_duma=1,

III Male, fact1=-1.7, fact2=-1.7, income=0, is_village=0, age=60, efficacy=0, approve_putin=0,

IV Male, fact1=-1.7, fact2=-1.7, income=0, is_village=0, age=60, efficacy=0, approve_putin=0, approve_sf=0.

Predicted voting probabilities

Party	UR	CPRF	LDPR	JR
I	0,973	0,009	0,009	0,009
II	0,088	0,023	0,883	0,005
III	0,375	0,332	0,116	0,176
IV	0,379	0,224	0,057	0,338

Conclusion

1. The CPRF and JR electorate is difficult to localize
2. UR, LDPR electporate can be localized.

The impact of Vladimir Putin approval

How many voices would United Russia have received if the Presidential approval ratings were lower?

	UR	CPRF	LDPR	JR
Data	0,723	0,112	0,066	0,097
Approval at 50%	0,609	0,163	0,112	0,116
Approval at 0%	0,430	0,253	0,194	0,121

Estimated model — 7 party

Independent variables included:

1. All,
2. All, with $\beta_1 = \beta_2 = 0$,
3. All significant,
4. `age`, `gender`, `education`, `income`, `is_village`,
5. Oncly the constants a_j.

Likelihood ratio test — 7 parties

	Model 1	Model 2	Model 3	Model 4
Model 2	2 50,3 <0,00001	—		
Model 3	23 15,5 0,12		—	
Model 4	24 60,7 <0,00001			—
Model 5	54 135,6 <0,00001		51 100,1 <0,00001	24 75,1 <0,00001

Estimated model — 7 party

β_1	_cons	-0,153	0,033	-4,55	0,000
β_2	_cons	-0,153	0,019	-7,87	0,000
CPRF	approve_pu n	-2,283	0,338	-6,75	0,000
	efficacy	-0,793	0,363	-2,18	0,029
	age	0,045	0,007	5,90	0,000
	gender	-0,603	0,241	-2,50	0,012
	_cons	-1,600	0,499	-3,21	0,001
LDPR	income	2,477	0,848	2,92	0,004
	approve_pu n	-2,111	0,407	-5,18	0,000
	approve_duma	0,390	0,340	1,15	0,252
	age	-0,021	0,009	-2,17	0,030
	is_village	-0,478	0,322	-1,49	0,137
	gender	-1,865	0,337	-5,53	0,000
	_cons	-0,430	0,659	-0,65	0,514
JR	approve_pu n	-1,034	0,416	-2,48	0,013
	approve_duma	-1,121	0,370	-3,03	0,002
	approve_sf	0,796	0,371	2,15	0,032
	efficacy	-0,497	0,339	-1,46	0,143
	age	0,034	0,006	4,98	0,000
	gender	-0,334	0,232	-1,44	0,151
	_cons	-2,361	0,516	-4,57	0,000

Estimated model — 7 party (cont.)

SPS	approve_pu n	-5,180	1,302	-3,98	0,000
	approve_duma	3,215	1,342	2,40	0,017
	age	0,031	0,019	1,65	0,099
	_cons	-3,479	1,067	-3,26	0,001
Yabloko	approve_pu n	-3,843	0,830	-4,63	0,000
	approve_duma	-2,189	1,152	-1,90	0,058
	approve_sf	2,038	0,995	2,05	0,041
	_cons	-1,521	0,459	-3,31	0,001
Agrarian party	income	3,565	1,764	2,02	0,043
	approve_pu n	-1,563	0,849	-1,84	0,066
	approve_sf	-0,894	0,967	-0,92	0,355
	_cons	-4,704	1,423	-3,31	0,001
N		1035			
ln(L)		-846,1			

Conclusion

1. Coefficients for the 4 main parties did not change
2. For 3 smaller parties, the coefficient signs `approve_putin` and `efficacy` are negative
3. Education, age, residence not importnat for small parties (maybe, the sample size was too small)
4. SPS and Yabloko have different signs for `approve_duma`
5. Agrarian party has positive coefficient for `income`

Abstention and models of vote choice

1. The rational voter paradox — Riker and Ordeshook (1968), Davis, Hinich, and Ordeshook (1971) , Chamberlain and Rotschild (1984), Myerson (2000), Green and Shapiro (1994)
2. Ledyard (1984), Palfrey and Rosenthal (1983, 1985) — game-theoretic models don't work
3. Indifference and alienation hypotheses (1941), Hinich, Ledyard, and Ordeshook (1968), Zakharov (2008b)
4. Indifference and alienation hypotheses: empirical testing Adams, Dow, and Merrill (2006), Thurner and Eymann (2000), Plane and Gershtenson (2004) and Peress (2005)

Vote choice under abstention

The indifference hypothesis.
Assume that the utility of voter i if party j wins is

$$u_{ij} = a_j + \alpha_j x_i^T + \beta_1 (v_{i1} - y_{j1})^2 + \beta_2 (v_{i2} - y_{j2})^2 + \epsilon_{ij} \equiv \bar{u}_{ij} + \epsilon_{ij} \quad (8)$$

Voter i

1. Votes for j if $u_{ij} \geq \max_{k \neq j} u_{ik} + c_i$,
2. Does not vote if no such j exist.

Here,

$$c_i = exp(a_{ind} + \alpha_{ind} x_i^T). \quad (9)$$

Vote choice under abstention

Alienation hypothesis.
Suppose that the utility of i if party j wins is

$$u_{ij} = a_j + \alpha_j x_i^T + \beta_1 (v_{i1} - y_{j1})^2 + \beta_2 (v_{i2} - y_{j2})^2 + \epsilon_{ij} \equiv \bar{u}_{ij} + \epsilon_{ij} \quad (10)$$

Voter i

1. Votes for j if $u_{ij} = \max_k u_{ik}$ and $u_{ij} \geq d_i$,
2. Does not vote if no such j exists.

Here,

$$d_i = a_{al} + \alpha_{al} x_i^T. \quad (11)$$

Estimating the 4-party+alienation model

β_1	_cons	-0,070	0,014	-4,71	0,000
β_2	_cons	-0,061	0,013	-4,61	0,000
CPRF	approve_pu n	-1,925	0,328	-5,85	0,000
	approve_sf	-0,752	0,307	-2,45	0,014
	efficacy	-0,785	0,343	-2,29	0,022
	age	0,052	0,007	6,93	0,000
	gender	-0,534	0,221	-2,42	0,016
	_cons	-0,202	0,620	-0,33	0,744
LDPR	income	2,079	0,798	2,60	0,009
	approve_pu n	-2,120	0,408	-5,19	0,000
	approve_duma	0,848	0,493	1,72	0,086
	approve_sf	-0,813	0,524	-1,55	0,121
	age	-0,022	0,009	-2,41	0,016
	is_village	-0,419	0,312	-1,34	0,180
	gender	-1,797	0,332	-5,40	0,000
	_cons	-0,859	0,629	-1,36	0,172
JR	approve_pu n	-0,973	0,427	-2,28	0,023
	approve_pm	0,439	0,334	1,31	0,189
	approve_duma	-1,024	0,373	-2,74	0,006
	approve_sf	0,494	0,386	1,28	0,200
	efficacy	-0,562	0,336	-1,67	0,095
	age	0,040	0,007	5,63	0,000
	_cons	-1,249	0,467	-2,68	0,007 height

Estimating the 4-party+alienation model (cont).

Alienation	education	-0,458	0,340	-1,34	0,179
	income	1,997	0,487	4,10	0,000
	approve_pu n	-2,108	0,259	-8,13	0,000
	approve_gov	-0,955	0,197	-4,83	0,000
	efficacy	-1,248	0,261	-4,77	0,000
	age	-0,010	0,005	-2,06	0,039
	is_village	-0,605	0,187	-3,23	0,001
	gender	-0,189	0,160	-1,18	0,238
	_cons	0,523	0,462	1,13	0,258
N		1288			
ln(L)		-1298,6			

The role of Putin approval on the United Russia vote

	UR	CPRF	LDPR	JR	Abstain
The data	0,562	0,089	0,052	0,076	0,220
Approval 50%	0,349	0,127	0,078	0,082	0,364
Approval 0%	0,177	0,157	0,108	0,065	0,493

The role of Putin's approval

Relative voteshares of the 4 parties.

4 parties, full turnout

	UR	CPRF	LDPR	JR
The data	0,723	0,112	0,066	0,097
Approval 50%	0,609	0,163	0,112	0,116
Approval 0%	0,430	0,253	0,194	0,121

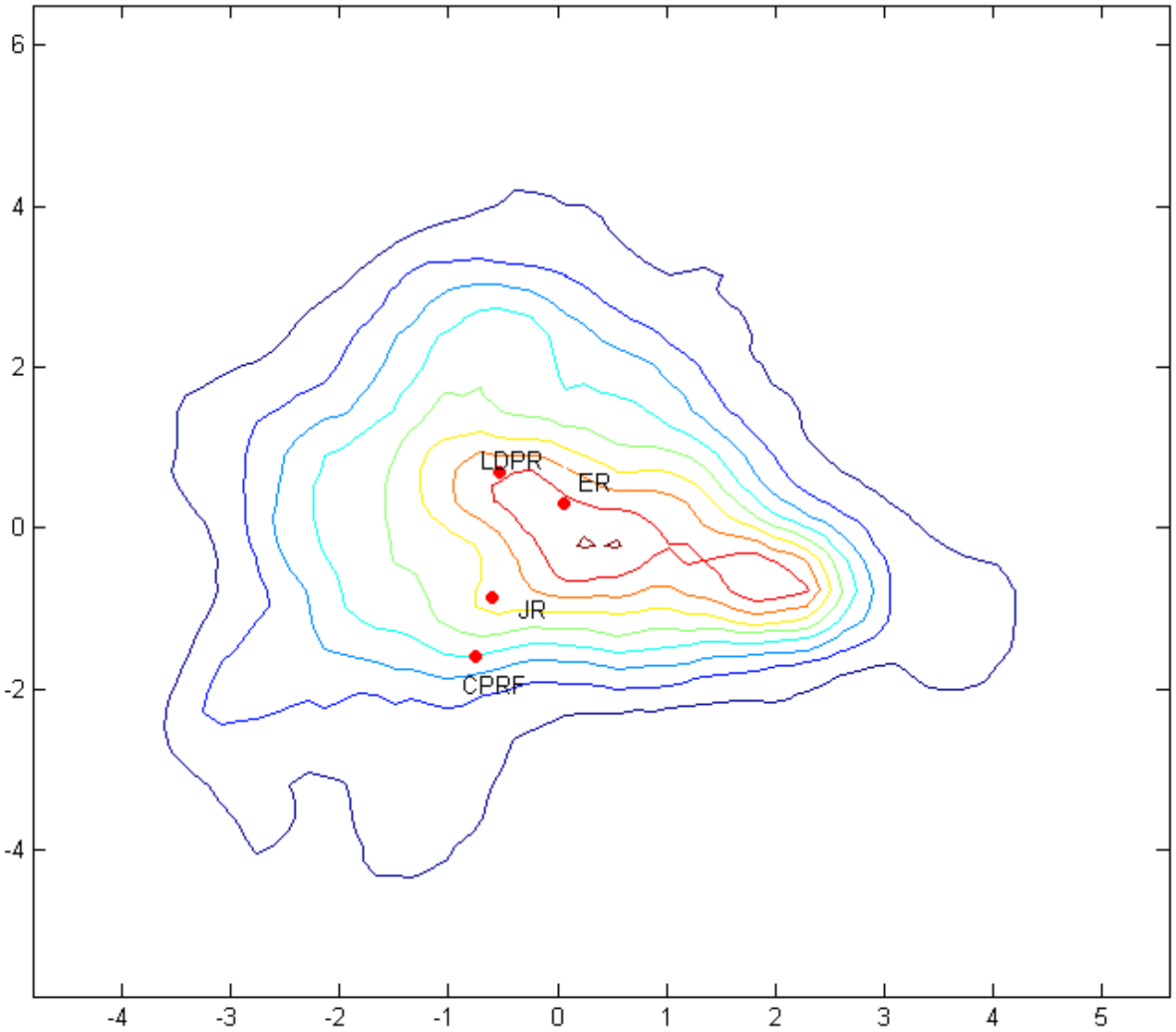
4 parties, abstention due to alienation

	UR	CPRF	LDPR	JR
The data	0,717	0,114	0,066	0,097
Approval 50%	0,549	0,200	0,113	0,129
Approval 0%	0,349	0,310	0,213	0,128

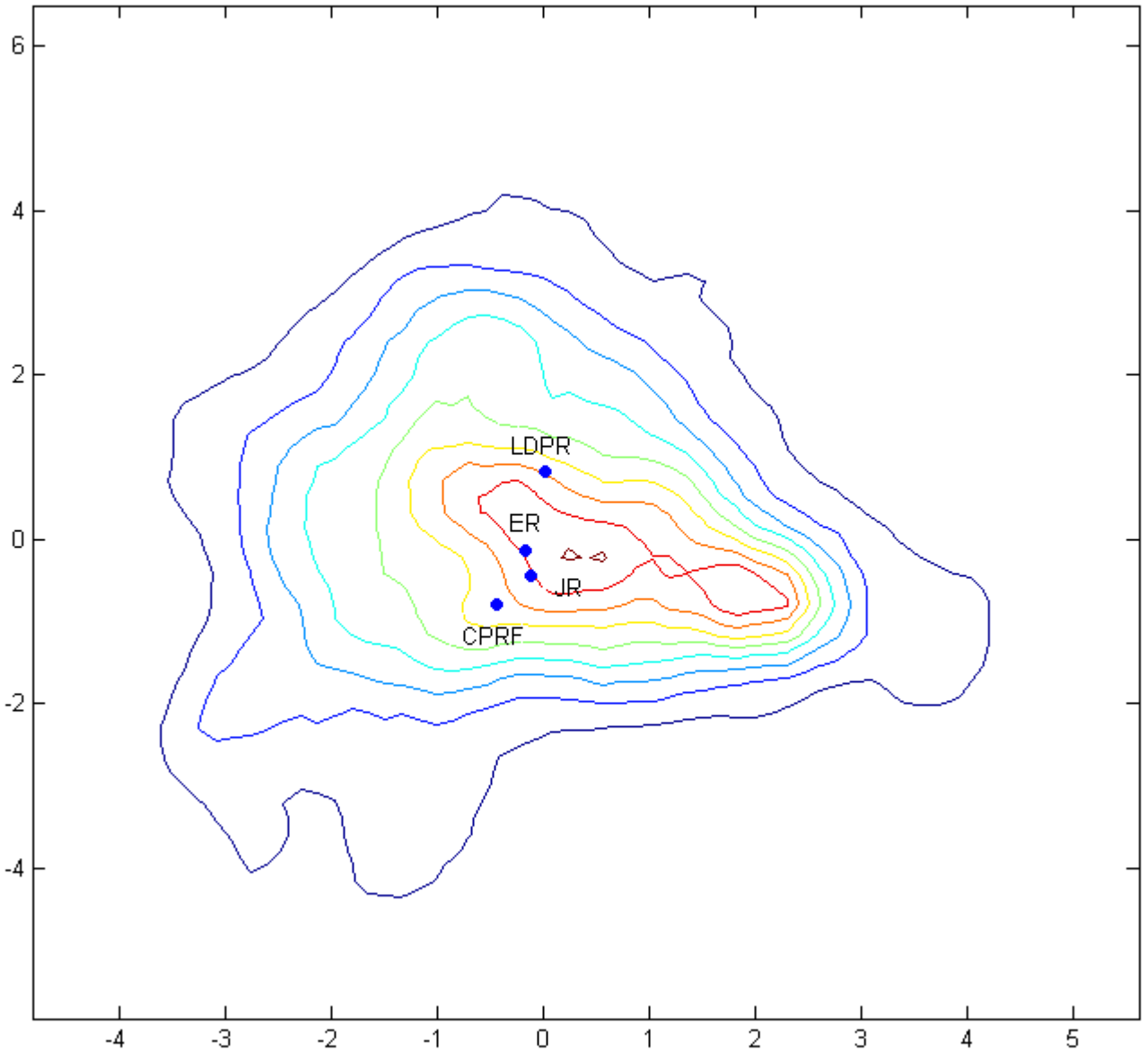
Часть IV

Nash equilibrium calculation

The four large parties



The four large parties — Nash equilibrium



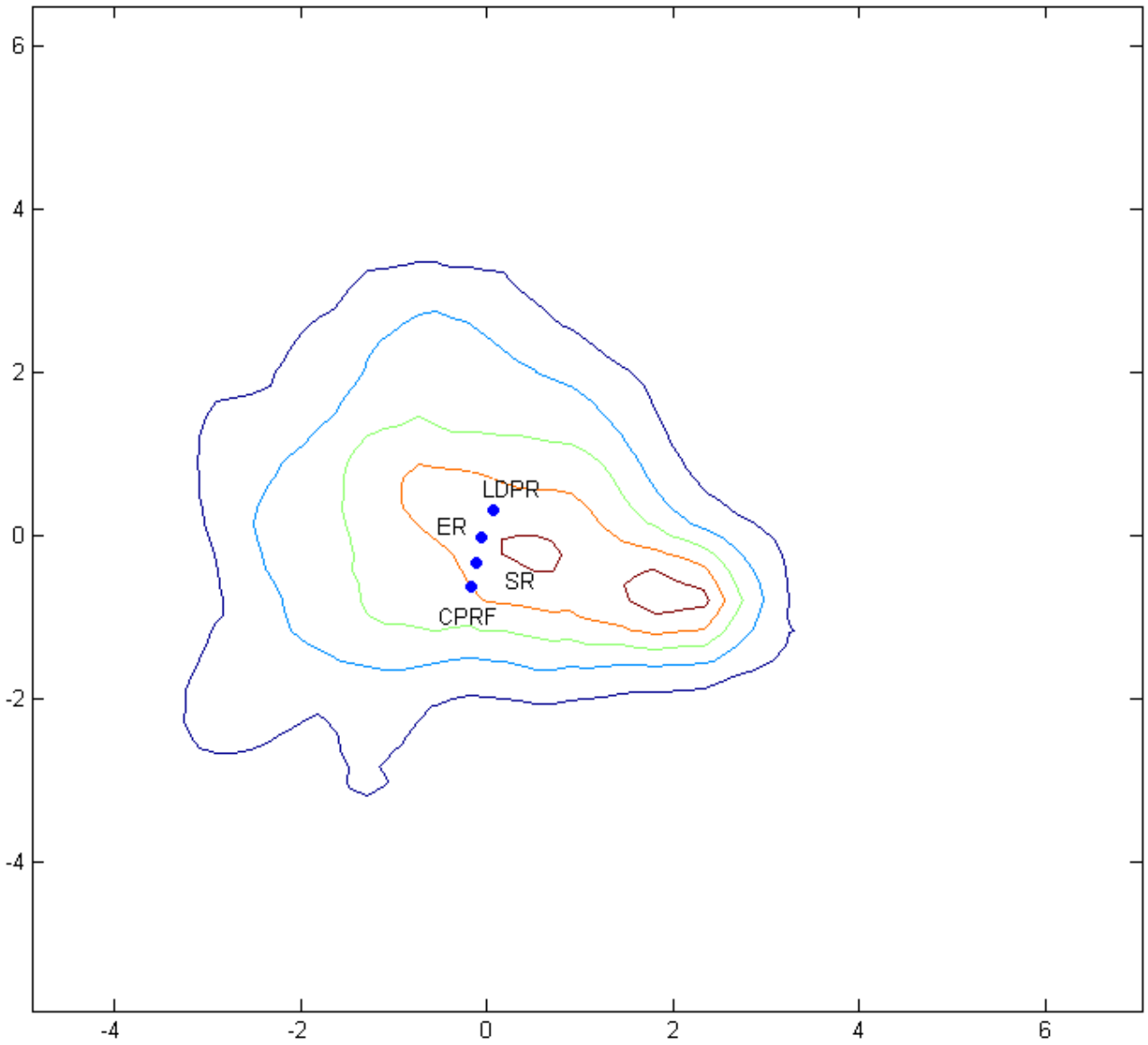
The four large parties: Nash equilibrium shares

Party	F1	F2	F1'	F2'	vote gain
ER	0.05	0.3	-0.16	-0.12	-0.0025
CPRF	-0.76	-1.59	-0.43	-0.78	0.0000
LDPR	-0.53	0.69	-0.01	0.83	0.005
SR	-0.60	-0.87	-0.12	-0.43	-0.0025

The four large parties: individually optimal deviations

Party	F1	F2	F1'	F2'	vote gain
ER	0.05	0.3	-0.26	-0.17	0.016
CPRF	-0.76	-1.59	-0.51	-0.94	0.005
LDPR	-0.53	0.69	-0.01	0.59	0.003
SR	-0.60	-0.87	-0.21	-0.57	0.001

The four large parties — abstention Nash equilibrium



Wish list

What kind of data do I need?

1. Socioeconomic data: gender, age, income, etc
2. Electoral preferences
3. Ideological/political preferences: qiestions concerning some of the following:
    1. Policy in the North Caucasus
    2. Foreign policy
    3. Attitude to immigrant workers
    4. Stronger central power?
    5. Attitude to business/enterpreneurship
    6. Mass media and internet
4. Retrospective and perspective economic evaluations were not in this dataset
5. Personal data on civil society involvement, access to mass media, etc.
6. Macrodata on mass media access
7. Regional macroeconomic data
8. Panel data would be best

Thank you!