

Ideological Attitudes of Russian Elite: Has Elite Polarization Occurred ?

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Why Polarization?

- Democratic Transition
 - Elite consensus as important prerequisite of democratic consolidation (Higley & Burton 1989; Burton et al., 1990, Higley et al., 1992; Karl 1990; Linz & Stepan 1996)
 - Elite disagreement as a source of institutional changes?
- Impact on public opinion [Hetherington, 2001; Gabel & Shave, 2007] and possible relations to 2011-2012 mass protests

Measuring Attitude Polarization Restrictions and Complexities

- Ordinal Indicators: standard measures of variation for continuous variables are non-applicable
- How to deal with multiple indicators?
- Ad hoc estimations or universalizable indices?

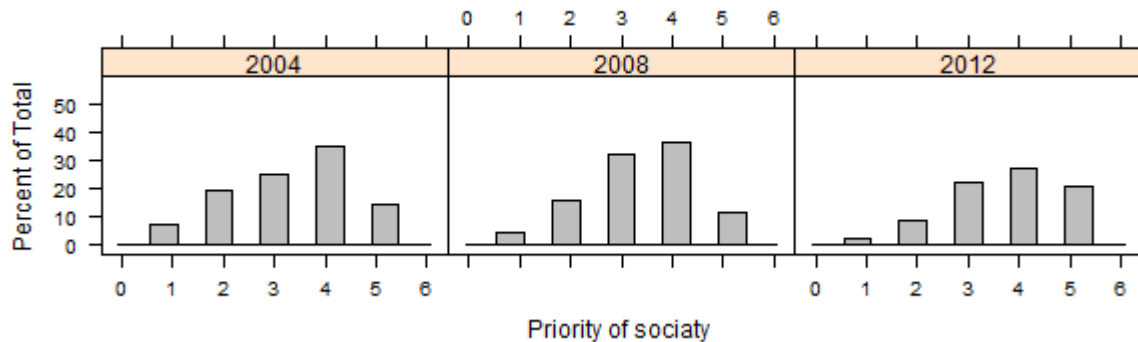
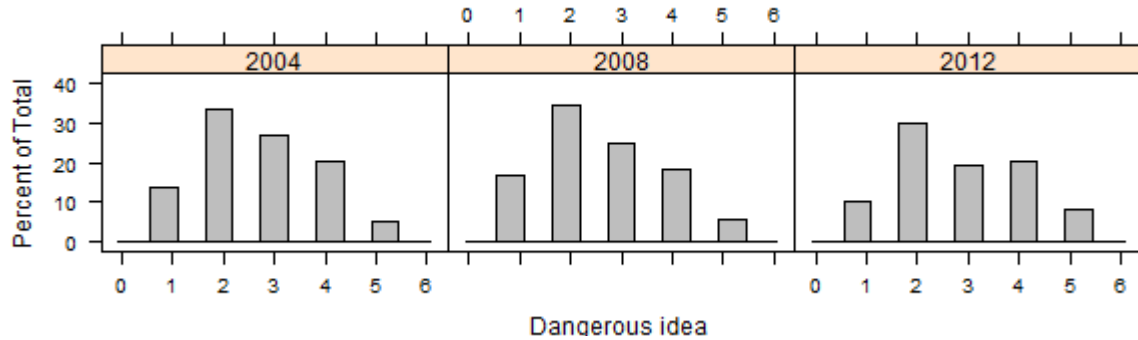
Data

- William Zimmerman's survey of Russian elites
(Zimmerman 1993-2012; Zimmerman 2002)
 - Three waves: 2004, 2008, 2012
 - Number of respondents
N = 800 (320 + 240 + 240)
 - Number of Indicators
I = 10 (five-category Likert Scale)
- (!) Survey Data instead Legislative Voting Data

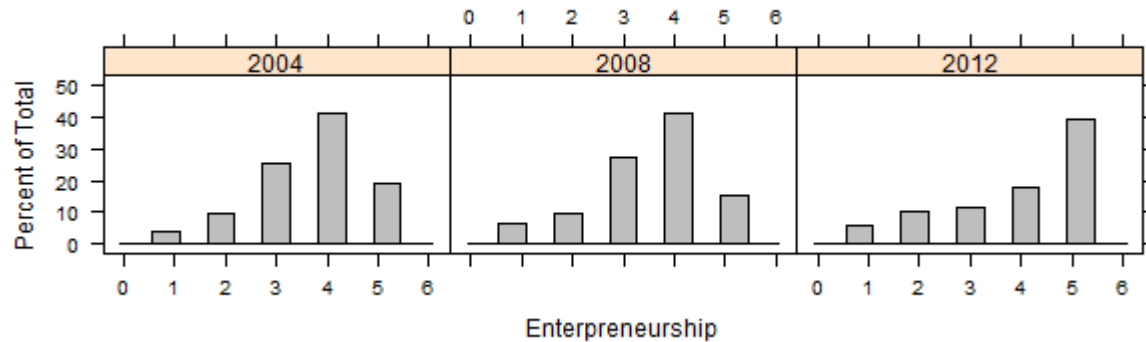
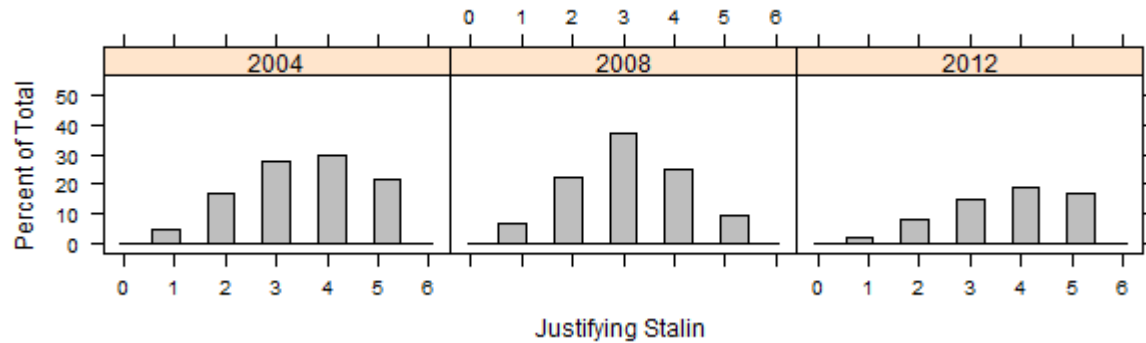
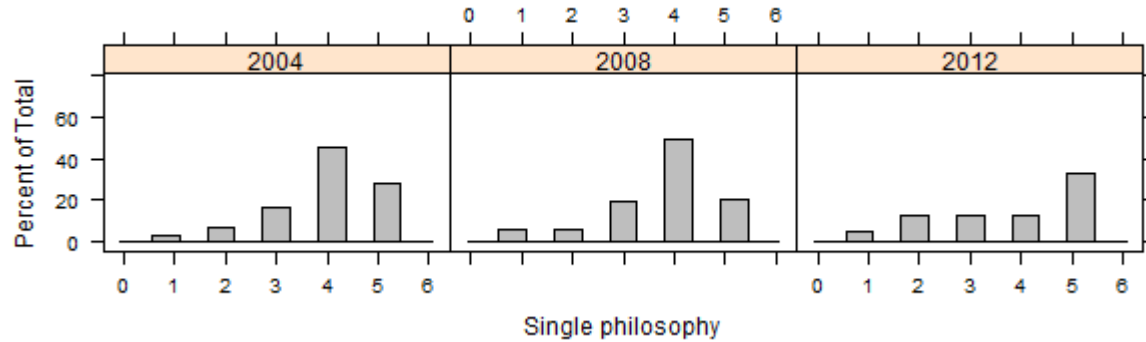
Indicators

1. In any society there will always be a need to forbid the public expression of dangerous idea
2. The rights of individuals must be protected even if guilty people sometimes go free
3. The interests of society should be protected even if innocent people sometimes are imprisoned
4. It is apparent that of all the philosophies that exist in the world only one is undoubtedly correct
5. Stalin is blamed for things he didn't do
6. Competition among various political parties makes our political system stronger
7. Competition among various enterprises, organizations, and firms benefits our society
8. It is normal when the owner of a prosperous enterprise, using the labor of his workers, becomes richer than many other people
9. It makes no sense to begin a new business inasmuch as it might not succeed
10. All heavy industry must belong to the state and not be given over to private ownership

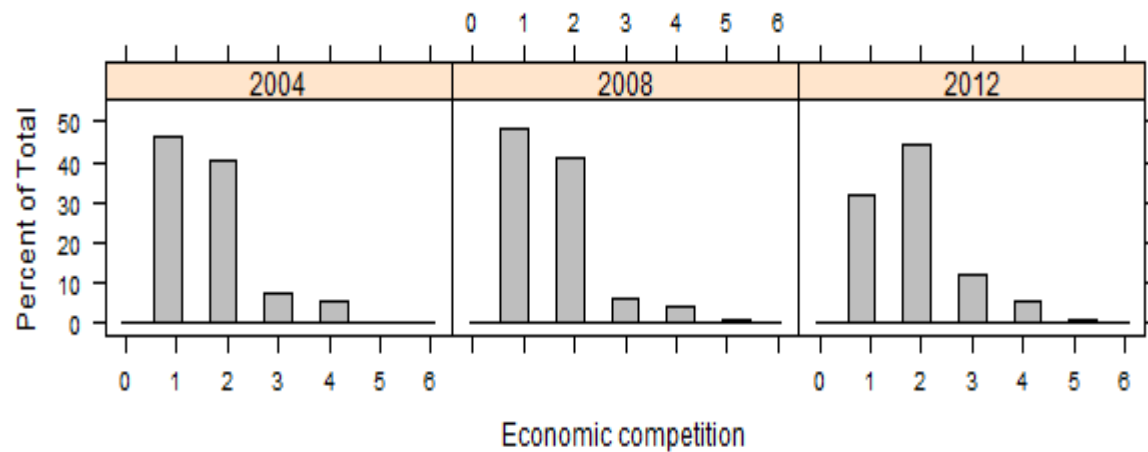
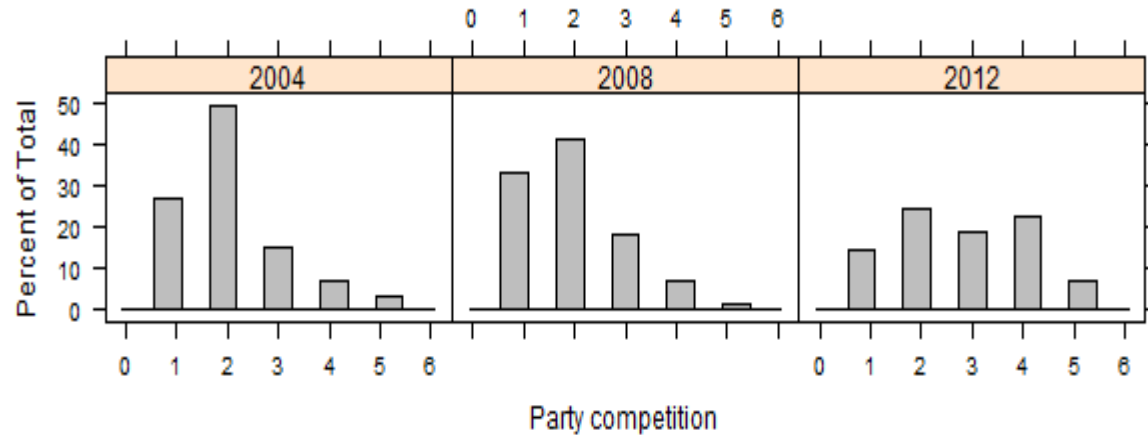
Distributional Change I



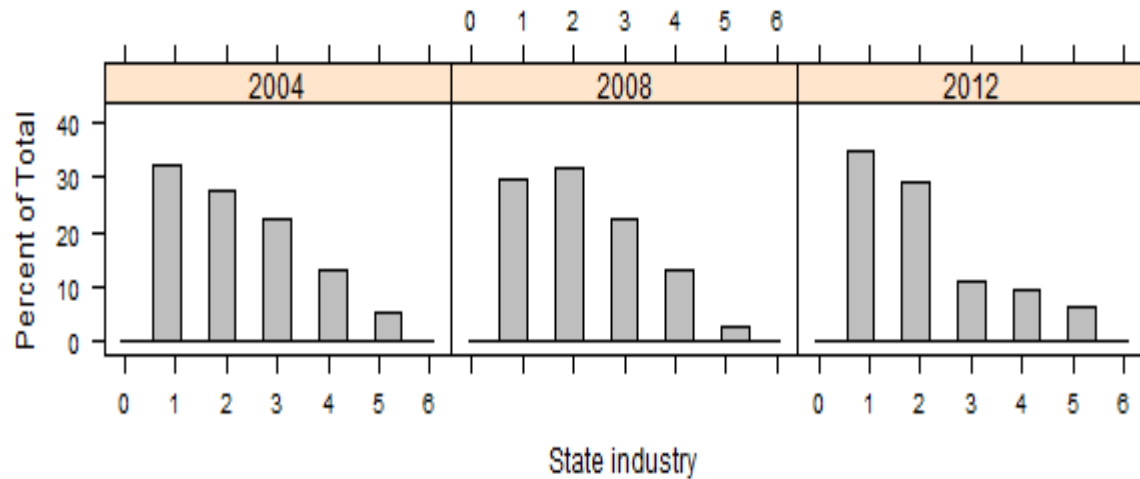
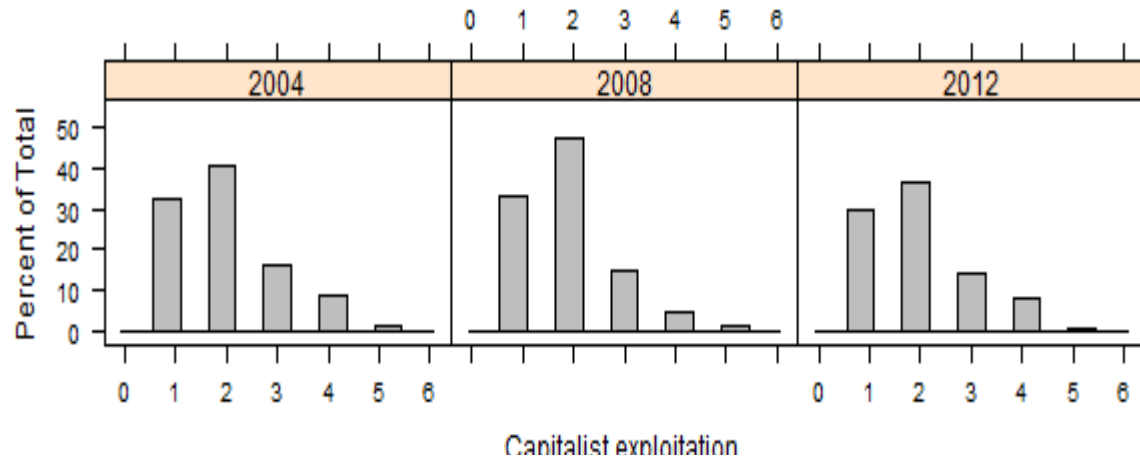
Distributional Change II



Distributional Change III



Distributional Change IV



Statistics of Ordinal Variation

- L-squared statistics (Blair and Lacy 2000)
- $N = 1, \dots, i$ – number of individuals
- $k = 1, \dots, j$ – number of response categories for item l
- p_j – sample proportion for the j -th of the k categories
- $F_i = \sum_{j=1}^i p_j$
- $l^2 = \frac{\sum_{i=1}^{k-1} (F_i - 1/2)^2}{(k-1)/4}$ - concentration of ordinal variable
- $1 - l^2$ - dispersion of ordinal variable

Change in Item ($1 - I^2$) Over Time I

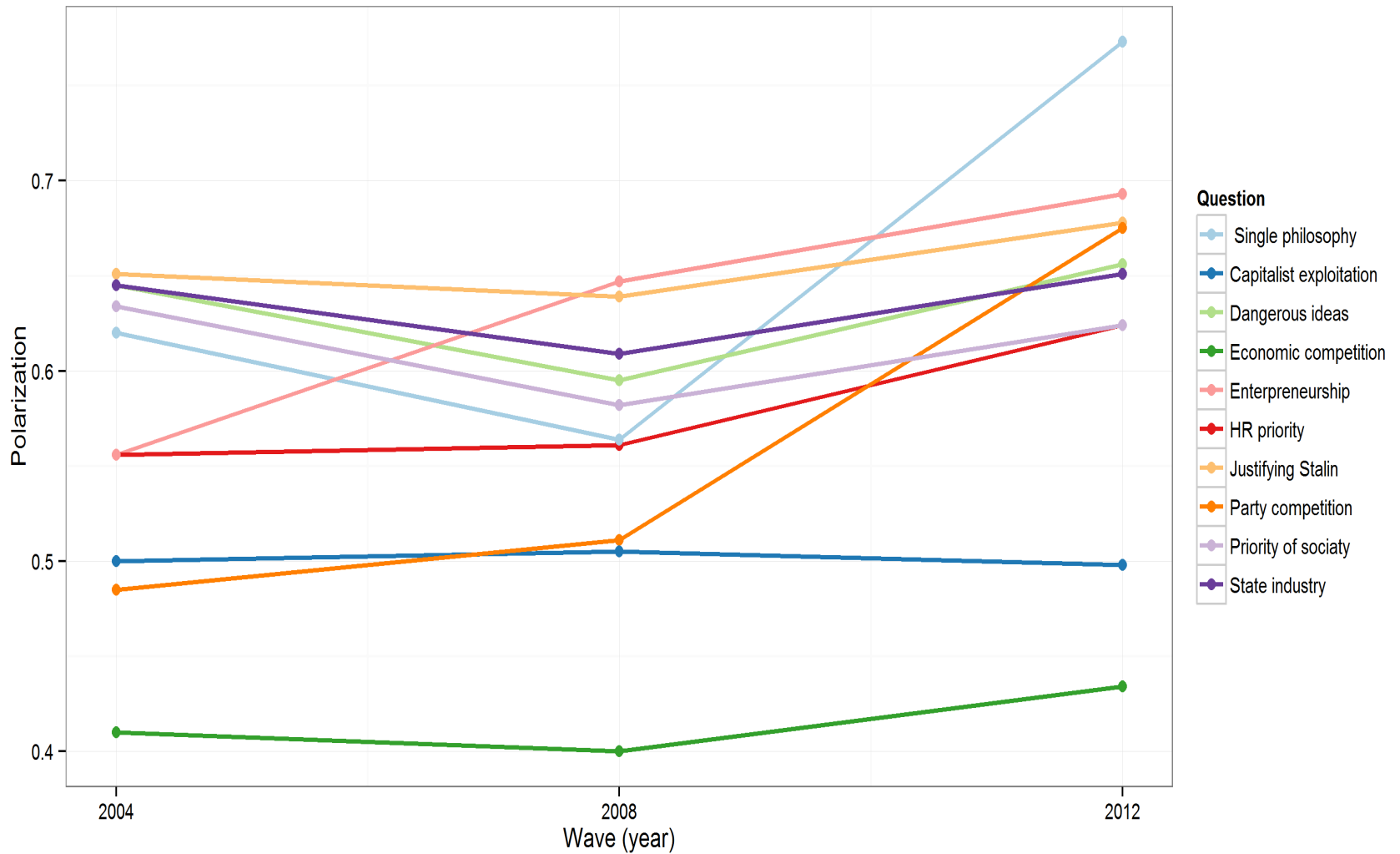
	2004	2008	2012	04-12	08-12
Dangerous Ideas	<i>0.645</i>	<i>0.595</i>	<i>0.656</i>	<i>0.01</i>	<i>0.06</i>
Individual Rights	<i>0.556</i>	<i>0.561</i>	<i>0.624</i>	<i>0.07</i>	<i>0.06</i>
Priority to Society	<i>0.634</i>	<i>0.582</i>	<i>0.624</i>	<i>-0.01</i>	<i>0.04</i>
One Philosophy	<i>0.620</i>	<i>0.564</i>	<i>0.773</i>	<i>0.15</i>	<i>0.21</i>
Justification of Stalin	<i>0.651</i>	<i>0.639</i>	<i>0.678</i>	<i>0.03</i>	<i>0.04</i>
Party Competition	<i>0.485</i>	<i>0.511</i>	<i>0.675</i>	<i>0.19</i>	<i>0.16</i>
Economic Competition	<i>0.410</i>	<i>0.400</i>	<i>0.434</i>	<i>0.02</i>	<i>0.03</i>
Capitalist Exploitation	<i>0.500</i>	<i>0.505</i>	<i>0.498</i>	<i>-0.002</i>	<i>-0.01</i>
New Business	<i>0.556</i>	<i>0.647</i>	<i>0.693</i>	<i>0.14</i>	<i>0.05</i>
State Industry	<i>0.645</i>	<i>0.609</i>	<i>0.651</i>	<i>0.006</i>	<i>0.04</i>

In bold – 04-12 change by more than 10%

In bold italic – 04-12 change by 5-10%

In italic – positive 04-12 change less than 5%

Change in Item ($1 - I^2$) Over Time II



Reducing Multidimensionality

Approach I Via *Latent Variable Analysis*

- Increase in variance of latent variable indicates growth of polarization

Approach II Via *Latent Profile Analysis*

- Two-Step Check of Polarization
 - 1) Could we identify ordered latent classes?
 - 2) Does proportion of respondents in ordered classes change over time?

(!) It seems possible to apply cumulative probit model with heteroscedasticity and variable cutpoints developed in (Mouw and Sobel 2001) to comparing distributions of population among ordered classes in different waves.

Exploratory Factor Analysis I

- One Factor Model Fit Indices

RMSEA	0.080 (90% CI = (0.069; 0.090) , p. < 0.05 = 0)
CFI	0.927
TLI	0.907

- Item Factor Loadings

DANIDEA	0.292
DEFINDIV	-0.238
DEFSOC	0.283
ONEPHILO	0.637
STALIN	0.408
COMPPOL	-0.346
COMPECO	-0.650
CAPEXP	-0.818
NEWBUSI	0.221
STATEIND	0.316

Exploratory Factor Analysis II

- One Factor Model Fit Indices

RMSEA 0.024 (90% CI = (0.0; 0.039) , p. < 0.05 = 0.998)
CFI 0.995
TLI 0.992

Item	FL1	FL2
DANIDEA	0.228	-0.159
DEFINDIV	0.076	0.453
DEFSOC	0.529	0.209
ONEPHILO	0.526	-0.062
STALIN	0.604	0.004
COMPPOL	0.211	0.596
COMPECO	-0.004	0.838
REACHEXP	-0.230	0.590
NEWBUSI	0.412	-0.032
STATEIND	0.187	-0.250

Hypothesize two latent dimensions: **liberalism/authoritarianism** and **capitalism/socialism**

Confirmatory Factor Analysis

Model Fit

Chi-Square Test of Model Fit

Value	21.392*
DF	18
P-Value	0.2601

Chi-Square Contributions From Each Group

2004	3.581
2008	4.672
2012	13.139

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.027
90 Percent C.I.	0.000 0.063
Prob. RMSEA <= .05	0.825

CFI/TLI

CFI	0.988
TLI	0.994

Factor model

Standardized Results

Group 2004

Item	estimate	S.E.	Est./S.E.	p-value
ONEPHILO	1.000	0.000	999.0	999.0
NEWBUSI	1.160	0.147	7.893	0.000
STALIN	0.974	0.124	7.837	0.000

Group 2008

ONEPHILO	1.000	0.000	999.0	999.0
NEWBUSI	1.160	0.147	7.893	0.000
STALIN	0.974	0.124	7.837	0.000

Group 2012

ONEPHILO	1.000	0.000	999.0	999.0
NEWBUSI	1.160	0.147	7.893	0.000
STALIN	0.974	0.124	7.837	0.000

Variance

2004	0.211
2008	0.331
2012	0.463

Modelling Ordered Classes

- MultiLCIRT package (R)
- Multidimensional Item Response Latent Classes

Type of Models

- Latent Class Model
- Graded Response Model
- Partial Credit Model

(for technical details see Bartolucci et al. 2012a, 2012b)

- Unidimensional Graded Response Model could be interpreted as ordinal categorical latent variable
- Class Assignment is conducted by posterior probabilities
$$p(u_i = \mathcal{E}_i | y_i) = \max p(u_i = \mathcal{E}_i | y_i),$$
$$u_i - \text{class}, \mathcal{E}_i - \text{ability level}, y_i - \text{response pattern}$$

Model Selection

Four or Five Steps

- Identifying Optimal Number Of Latent Classes
- Choose Link Function
- Check unidimensionality against n-dimensionality
- If model is unidimensional – compare different parameterizations of item difficulty parameters
- If Need Add Covariates

Model Selection Criteria (Bartolucci 2012; see also Nylund et al., 2007)

1. **Bootstrapped Likelihood Ratio Test** (not available in MultiLCIRT)
2. **BIC**: $-2\log L_k + 2\log[(n) \# n$ - number of free parameters
(recommended by development team of MultiLCIRT)
3. **aBIC**: $-2\log L_k + 2\log[(n + 2)/24]$

Step I Decide on Optimal Number of Latent Classes

	LogLK	NP	AIC	BIC	aBIC
1-class	-9252.21	40	18584.42	18764.53	18729.28
2-class	-8947.85	81	18057.70	18422.43	18351.05
3-class	-8783.54	122	17811.07	18360.41	18252.91
4-class	-8684.98	163	17695.96	18429.92	18286.28
5-class	-8622.49	204	17652.99	18571.56	18391.80
6-class	-8572.87	245	17635.74	18738.92	18523.03

(!) three classes is the best solution

Step II

	LogLK	NP	AIC	BIC	aBIC
Latent Class	-8783.537	122	17811.07	18360.41	18252.91
Graded Response	-8974.914	62	18073.83	18353.00	18248.32
Partial Credit	-8981.219	62	18086.44	18365.61	18262.88

(!) Global Logit is the best link function. So Graded Response Model should be preferred to basic LC-model

Step III Determine Optimal Number Of Dimensions

1 Bidimensional Model vs. Unidimensional Model

- Log-likelihood of the constrained model -9186.499
- Log-likelihood of the unconstrained model -9234.916
- Deviance 96.83
- Degree of freedom 1
- P-value 1

(*) Unidimensional model is better than 2-dimensional model**

2. Multidimensional Model vs Bidimensional Model

- Log-likelihood of the constrained model 9234.916
- Log-likelihood of the unconstrained model -8975.105
- Deviance 519.622
- Degree of freedom 8
- P-value 0

(*) 10-dimensional model is better than both 1 and 2-dimensional models**

Step IV Add Time as Covariate

	LgLK	NP	AIC	BIC	aBIC
Without	-8975.105	62	18074.21	18353.38	18248.32
With	-8950.480	64	18028.96	18317.14	18260.74

Model with covariate “Wave” is better according to BIC

Final Model Description

- Multidimensional Graded Response Model with Covariate
- There is no underlying single latent trait
- There are ten ordered dimensions (each corresponds to one item)
- There are no ordered latent classes

Class Structure I

- Support Points (Ability Levels) for each dimension and latent class

	Class 1	Class 2	Class 3
DANIDEA	1.715	1.892	3.320
DEFIND	2.452	1.062	1.645
DEFSOC	3.176	2.370	4.288
ONEPHIL	2.838	2.947	6.176
STALIN	2.823	2.481	5.259
POLCOMP	2.540	0.373	0.672
ECCOMP	2.229	-0.711	-0.917
CAPEXP	2.111	0.240	-0.622
NEWBUS	2.906	2.722	4.782
STATEIND	0.204	0.907	1.974

Class Structure II

(mean values for each item given class)

	Class1	Class2	Class3
Dangerous Ideas	1.56	1.68	2.47
Individual Rights	2.00	1.10	1.56
Society	2.49	1.92	3.01
One Philosophy	2.55	2.58	3.85
Justifying Stalin	2.21	1.96	3.51
Party Competition	1.87	0.69	0.97
Economic Competition	1.33	0.32	0.26
Capitalist Exploitation	1.57	0.64	0.42
New Business	2.52	2.45	3.46
State Industry	0.87	1.37	1.94

Class Structure III

Class Population Across Waves

	2004	2008	2012
Class1	80 (0.250)	79 (0.328)	116 (0.483)
Class2	157 (0.491)	97 (0.402)	17 (0.071)
Class3	27 (0.084)	26 (0.108)	64 (0.267)

Huge decrease in the Second Class

Slight increase in the First Class

Modest increase in the Third Class

Measurement Invariance: Means as Proxy

	Wave	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Class1	1	1.39	1.98	2.49	2.85	1.99	1.74	1.44	1.88	2.52	0.86
Class2	1	1.70	1.10	1.92	2.59	2.03	0.71	0.37	0.68	2.48	1.31
Class3	1	3.15	1.22	3.30	3.89	3.67	0.93	0.22	0.56	3.26	2.44
Class1	2	1.46	1.80	2.35	2.70	1.95	1.62	1.39	1.61	2.41	0.95
Class2	2	1.66	1.04	1.99	2.60	1.82	0.63	0.26	0.60	2.43	1.46
Class3	2	2.12	1.08	3.19	3.81	3.69	0.62	0.27	0.62	3.46	2.12
Class1	3	1.75	2.15	2.59	2.23	2.55	2.12	1.22	1.33	2.59	0.82
Class2	3	1.59	1.47	1.41	2.35	2.12	0.82	0.29	0.53	2.29	1.41
Class3	3	2.33	1.89	2.81	3.84	3.38	1.14	0.27	0.28	3.55	1.66

In Bold: Cases when order of values for a given item among classes in a given wave differs from the general order

Measurement Invariance

Medians as Proxy

Class	Wave	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	
Class1	2004	1	2	3	3	2	2	2	1	2	3	1
Class2	2004	2	1	2	3	2	1	0	1	3	3	1
Class3	2004	3	1	4	4	4	1	0	1	3	3	3
Class1	2008	1	2	2	3	2	1	1	1	1	3	1
Class2	2008	2	1	2	3	2	1	0	1	3	3	1
Class3	2008	2	1	4	4	4	0	0	0	4	4	2
Class1	2012	2	2	3	2	3	2	1	1	3	3	1
Class2	2012	1	1	1	2	2	1	0	1	3	3	1
Class3	2012	2	2	3	4	4	1	0	0	4	4	1

- **In Bold:** Cases when order of values for a given item among classes in a given wave differs from the general ordering

Conclusions

- There is only partial polarization in elite opinions between 2008 and 2012
- There are no stable latent structure in ideological attitudes of Russian elite