

The Media as a Determinant of Voting Behavior in Russian Elections from 2003–2011: Empirical Evidence Based on a Latent Class Approach

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ABSTRACT

The media in Russia has become an attractive tool for influencing voting behavior and the probability that the ruling party wins elections. Using a latent class approach for probabilistic voting modeling, we estimate cross-sectional data from the Russian parliamentary elections from 2003–2011 to determine empirical evidence of media capture on Russian television on the micro-level. Using TV consumption to generate latent heterogeneity, we investigate the impact of daily TV watching on the likelihood that voters will vote for the government party (United Russia) and their policy, non-policy and retrospective voting motives. In this sense, the non-policy motive based on party identity becomes progressively more relevant; the increase in this motive is stronger for voters watching more TV. Furthermore, the government party obtains substantial advantages in the voting probability due to TV consumption over time.

Keyword: Russian election, voting behavior, latent class analysis, capture, media, government performance.

INTRODUCTION

In both democratic and autocratic systems, the mass media can influence the beliefs, preferences and perceptions of ordinary people. However, it might be misused by special interests to manipulate voters in order to advocate a policy at the expense of the general public or to support a transgressing government. Even in established democracies, the media is able to affect beliefs, preferences and perceptions in favor of the government. For example, a distortion of news coverage of human rights in foreign countries not politically allied with the United States was confirmed by study of Qian and Yanagizawa-Drott (2015). Scholars describe this phenomenon as media capture (Besley et al., 2002; Besley and Prat, 2006; Petrova, 2008a,b). The literature about media capture largely focuses on two dimensions of media freedom: media ownership and media bias. Several studies have already theoretically derived the basic effects of media capture on voting behavior and political accountability and also on the dependence of different forms of media ownership (Baron, 2006; Besley and Prat, 2006; Petrova, 2008a; Chan and Suen, 2009; Corneo, 2006; Gehlbach and Sonin, 2014). Moreover, many interesting studies have provided empirical evidence for the significant role of media ownership on political freedom

(Besley et al., 2002; Doyle, 2002; Djankov et al., 2003; Ali A, 2015). Furthermore, there have been a number of empirical studies devoted to media bias and its impact on voting behavior and government accountability (Besley et al., 2002; DellaVigna and Kaplan, 2006; Qian and Yanagizawa-Drott, 2015; Groseclose and Milyo, 2005; Chiang and Knight, 2011; Gerber et al., 2009). Several empirical studies have analyzed impact of media on voting behavior, i.e. how the media acts as an agenda setter (Cohen, 1963; McCombs and Shaw, 1972; McCombs, 2004; Soroka, 2002; Cobb and Elder, 1972; Kingdon, 1995) as well as how the media affects voters' predisposition (Ansolabehere et al., 1991) and attitudes (Campbell et al., 1960; Johnston et al., 1992; Mendelsohn and Nadeau, 1999; Kellstedt, 2003; Dobrzynska et al., 2003). DellaVigna and Kaplan (2006) provided convincing empirical evidence for the Fox News effect, i.e., the positive impact of the introduction of the Fox News channel on the reelection probability of Republicans in the United States. However, DellaVigna and Kaplan (2006) were not able to identify the exact mechanism by which Fox. As a contribution to empirical studies about media capture, we offer an empirical approach how to explicitly take individual media consumption into account to identify media capture at the micro-level. In this approach, media capture is related to disproportional probability

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advantages for the government party as well as increasing non-policy motives of voters over time when watching TV more. This approach is based on extended classic spatial theory and empirically implemented by probabilistic models of latent class analysis and, therefore, is able to uncover unobserved electoral heterogeneity in policy motives based on differences in individual TV watching.

Overview

We distinguish between two strands of studies. While the first strand of literature is devoted the studies about policy versus non-policy voting motives of voters in dependence on their informational status, the second group of studies is concerned with political situation in Russia as well as surplus effects of media on political preferences of Russian voters.

There is a number of theoretical studies contributing to the understanding of voting motives depending on informational status of voters (Baron, 1994; Grossman and Helpman, 1996; Bardhan and Mookherjee, 2002). The basic theory that explains distorted electoral competition by imperfectly and asymmetrically informed voters is based on Baron (1994) and Grossman and Helpman (1996). Baron (1994) distinguishes between informed and uninformed voters: While informed voters vote rather in a policy-oriented manner, and uninformed voters rely strongly on non-policy indicators (party loyalty, perceived competence, charisma of candidate) when evaluating candidates. Furthermore, the votes of uninformed voters can be easily affected by campaign expenditures of candidates or through elites by mean of spreading information in media and social networks (Grossman and Helpman, 1996). In contrast, if voters are well-informed, they are able to vote more rationally, i.e. more policy-oriented, in the traditional sense of spatial theory (Downs, 1957; Enelow and Hinich, 1984). It means that voters prefer the parties whose positions are close to their own positions along a salient policy dimension. In other words, voters support the candidates who best reflect their policy beliefs. In this way, we empirically investigate voting motives and distinguish between non-policy and policy-oriented to better understand to what extent one or another population group is able to make policy decision in a policy-oriented way (Enelow and Hinich, 1984; Henning et al., 2017). Moreover, behavioral theories (DeMarzo et al., 2003) and cognitive linguistics theories (Lakoff, 1987, 1996) explain that voters are subject to non-rational persuasion because voters do not sufficiently account for media bias. Therefore, we take both kinds of voting motives, rational and non-rational. In more detail, we distinguish among three kinds of voting motives: non-policy, policy and retrospective. Thus, policy voting motives refer to rational motives and are based on the classic policy space model (Downs, 1957) in which voters prefer parties whose positions are close to their own positions along the policy dimension. Retrospective voting motives emerge from voters' satisfaction with government performance (Fiorina, 1981). Last, the non-policy (non-rational) voting motives are voters' political judgments based on the leadership characteristics of a political candidate or voters' party identity (Schofield, 2007; Miller and Shanks, 1996).

Regarding the second stream of literature, Russia is a good case given the fact that there is a strong bias of Russian TV on voters' preferences and consequently on voting behavior (Toepfl, 2011; Simons, 2015; Yakovlev, 2016; Shevtsova, 2015; Szostek, 2014). Recently, state and church censorship form an essential part of public policy with the aim of unifying national historical identity of the Russian people (Lin'an, 2010), affecting political opinion on issues of foreign policy (Simons, 2015; Yakovlev, 2016; Shevtsova, 2015; Szostek, 2014), excluding sexuality from norms of human rights (Wilkinson, 2013), promoting religious rituals and behavior (Shlapentokh, 2006) and influencing the opinion of a large audience on general issues (Toepfl, 2011). A restriction of media freedom systematically increased since the transition to a democracy in 1993: the index of "Freedom of the Press" (FOTP) has changed from 40 in 1994 to 81 in 2011 so that nowadays Russian media are not free (Freedom House, 2011). TV seems to be still very important for Russian people (Volkov and Goncharov, 2014) and the Internet cannot currently substitute the traditional mass media (television, radio, newspapers): about 90 percent of Russians mostly get news from the TV, 25 percent from their friends and relatives, 24 percent from the internet, and 19 percent from newspapers, whereby the most poorly informed Russians largely depend on TV (Volkov and Goncharov, 2014).

Schofield and Zakharov (2010) already estimated logit models for the Russian Duma election in 2007 and showed that poorly educated, low-income, young females who approve the federal government and possess a centrist ideology were most likely to support the government party United Russia. Compared with these authors, we expand the probabilistic voting modeling using latent class analysis (LCA). A LCA approach allows us to control for media consumption and to analyze media effects over time in order to determine evidence of media capture of Russian broadcasts at the micro-level. We use cross-sectional data from the Russian elections of 2003–2011 (ESS Round 6, 2012; ESS Round 5, 2010; ESS Round 4, 2008; ESS Round 3, 2006). As a measure of media consumption, we measure time spent watching TV each day. In this paper, we firstly formulate a voter utility function including policy and non-policy motives in framework of latent class analysis (LCA). Then, we explain how to derive the marginal effects with regard to the policy, non-policy and retrospective characteristics and formulate the relative importance of voting motives. We use a concept of marginal effects because it reflects a sensibility of voter reaction, i.e., the extent to which the choice probability changes when changing voter attitudes. Second, we estimate LCA-models and uncover a latent heterogeneity in voting behavior in the dependence of individual TV consumption. Moreover, based on the estimation we calculate the relative importance of policy, non-policy and retrospective motives of voters with respect to the power party. Third, we present and discuss our results. Indeed, voters' motives, measured by relative marginal effects, differ between voters based only on their different levels of TV consumption.

MATERIALS AND METHODS

Like economic analysis estimating consumers heterogeneous preferences for goods, political economy is interested to find voters heterogeneous preferences for political candidates. When unobserved heterogeneity in the population is forecasted, this will lead to a class of response models based on random utility maximization (McFadden and Train, 2000). There are mainly two types of models based on the idea of using a mixture of a simple underlying model, such as multinomial logit. The first kind of models concludes multinomial logit models (MMLM) which have continuous distribution of preferences. Second, latent class models, used in this paper, have a finite number of classes for distribution of voters preferences (Hess et al., 2011; Vermunt and Magidson, 2005). A great advantage of latent class analysis is that it is better suited to explain the sources of heterogeneity that relate to the characteristics of individual consumers (Boxall and Adamowicz, 2002). Moreover, the latent class models assume that responses over classes are independent so that “conditional independence assumption” is fulfilled (Yu, 2013).

Regarding latent class modeling, discrete latent constructs characterize the underlying relationships in observed data. As these constructs are not directly observable, statistical models employing latent variables are needed to analyze the data. Yu (2013) distinguishes between two dimensions of latent class models. First, data may be collected at a fixed time (cross-sectional over different population groups) or at multiple time points (longitudinal). Second, in terms of sampling structure, data may be hierarchical (nested or multilevel) or nonhierarchical (nonnested). Regarding this characterization, we estimate standard latent class model for each election period for cross-sectional data over two population groups (voters with high and low TV consumption) at a single time point using non-nested structure separated for every election period, as recommended in the literature for repeated cross-section data (Vermunt et al., 2008).

Voter utility and voting motives

Using multilevel latent class analysis, we formulate the utility of any voter i to vote any party j by means of the classic spatial models extended by non-policy variables. In terms of random utility modeling, voters choose between two or more discrete alternatives and behave as expected utility maximizers. We derive a methodological approach for modeling voting behavior with C latent voter classes and $c = 1; 2; \dots; C$. Let I denote the set of voters; J denotes the set of parties running for election. Voters engage in probabilistic voting,

i.e. a voter $i \in I$ will vote for party $j \in J$ as long as $P_{ij} = \text{Prob}(V_{ij} > V_{ijj}, \forall j \in J)$ with $V_{ij} = U_{ij} + \mu_{ij}$, where U_{ij} denotes the deterministic part of voter j 's utility associated with her voting for party j and μ_{ij} is the stochastic component of the utility function. Following the literature, we assume that each μ_{ij} has unobserved and independently extreme value distribution of Type I. In the real world, the transformation of policies into welfare is very complex and not all voters are aware of policies. Therefore, the calculation of expected utility is complex from

the viewpoint of individual voters. Deterministic utility component includes policy and non-policy factors. Thus, following voter theory, the utility of a voter i belonging to a group c and choosing a party j incorporates three different (policy, retrospective and

First, the motive of policy-oriented voting goes back to the classic voting theory created by Downs (1957), Davis et al. (1970) and Enelow and Hinich (1984). In the Downsian tradition, parties announce their policies prior to the election and are assumed to credibly commit to such policies once elected. The spatial voting model formulates a voter's utility as a loss function of the weighted distance between a voter's own ideal point x_i and a Second, because in the real world the transformation of policies into welfare is rather complex the calculation of expected utility is also rather complex from the viewpoint of individual voters. Hence, voters apply simple heuristics and attitudes belonging to non-policy-oriented indicators in order to estimate their expected utility. Non-policy-oriented indicators correspond to the concept of valence (Schofield, 2007), which holds that, based on a vector of specific characteristics z_{NP} (such as appearance, charisma, occupation and ethnicity of candidates), voters perceive a specific competence of candidates and parties. Moreover, voters can have specific valence-based preferences for a candidate based on their own affiliation to one population group (e.g. rural regions, lowly educated), e.g. because of poor informational level of these voters. In this way, for non-policy utility component

A third set of voting motives corresponds to the concept of retrospective voting (Fiorina, 1981; Katz and Katz, 2009), i.e. voters use observable welfare indicators z_R , such as income growth or other well-being indicators achieved in the incumbent's last election, to update their evaluation of the incumbent's competence-oriented, retrospective and ideological voter preferences, which are homogeneous within each latent class but vary between the classes.

We denote vic as a class membership likelihood function that classifies the voter i into one of the C finite number of latent groups with some probability, Pic . The membership likelihood function for voter i and class c is given by $\text{vic} = h_0c + K \delta_k h_{ki} + \text{sic}$, where h_{ki} represents the observed characteristics of voters. In our analysis, we take an individual level of media consumption and of trust in institutions as two covariates generating class affiliation. Assuming that error terms, sic , follow a Gumbel distribution, the probability of the LCA, we construct a mixed-logit model that simultaneously accounts for a party choice and class membership. The joint unconditional probability of voter i belonging to class c and choosing party alternative j is given by $\text{Pijc} = \text{Pij} | \text{Pic}$. In this way, we are able to calculate a joint unconditional probability over all classes, Pij , representing the probability density for party j as (Vermunt and Magidson, 2005; Vermunt, 2003)

$$\text{Pij} = \sum \text{Pijc} = \sum \text{Pic} \text{Pij} | \text{c}. \quad (1)$$

Further, we look at the first order condition for probability maximization of all competing parties and derive a total differential for probability regarding party j and voter i and with

respect to change own position s_{jn} in policy n taking into account non-policy factors. While parties may express their policy position and in this way optimize their win probability in a policy space, it is only hardly possible for them to change non-policy factors since the most non-policy settings of voters are mostly fixed and changeable pre-dominantly in long-terms (such as party identity). Nevertheless, the non-policy factors are changeable in a long-term perspective. For this reason, we look at the first order condition to find out, to what extent the party j has the probability advantages from voters' non-policy settings in a long-term perspective, compared to the probability efforts of this party in a policy space.

1A structure of the probability density is simpler as in technical guide of Vermunt and Magidson (2005) because our election data has only one time point and one item, i.e. voters were asked once about their party choice in the last election. j is interested to maximize its win probability over all voters. A win probability of party j is an average probability over all voters: $PWIN = 1 \sum P_{ij}$. For maximization of win probability, party can adapt their policy position and affect her distance to voters. For this reason, the first order condition results from the change of probabilities over all choice probability with regard to the policy distance D_{ij} gives us the extent to which a voter is more or less likely to vote for party j when changing the distance by one unit. In other words, the change of probability with regards to policy distance (marginal effects) reflects an importance of policy issues for a voter. If the marginal effects in policy space are high, voters react sensitively on any change in policy space, because estimated coefficients are large.² By contrast, if policy space is not important for voters, i.e. estimated coefficients are low, marginal effects will be relatively small. Thus, given probability structure of latent class models, individual marginal effects with regard to policy distance $D_{ij} = (D_{ij1}; \dots; D_{ijn})$ result from parties are unable in short terms to affect a probability through non-policy variables such as satisfaction with government job or party identity, nevertheless it is possible to identify their importance for voter choice probability by means of marginal effects. Thus, the marginal effects of a vector of L ideological characteristics ZNP knowing the extent of marginal effects – that is, the sensitivity of choice probability regarding policy, retrospective and non-policy settings – allows us to define a relative voting component for each motive by normalizing the marginal effects (Henning et al., 2017). Thus, each relative voting component can be calculated.

Empirical Analysis

Data

The data used for the empirical analysis were derived from the European Social Survey (ESS). The data for Russia are available for Round 3 (2006), Round 4 (2008), Round 5 (2010) and Round 6 (2012) and consist of a collection of questions on different themes (sociodemographics, subjective well-being, politics, etc.) (ESS Round 6, 2012; ESS Round 5, 2010; ESS Round 4, 2008; ESS Round 3, 2006). The relevant questions for political choice were: "Some people don't vote nowadays for one reason or another. Did you vote in the last [country] national election?" and "Which party did you vote for in that election?"

For this reason, the data referred to the national parliamentary elections held in 2003, 2007 and 2011, respectively.

The relevant parties and their results from the latest elections are summarized in Table

The data sets from 2008 and 2010 are similar and related to the election of 2007. Therefore, we consolidated both data sets to one sample. Given that there was a slight disproportion of party shares in favor of the ruling party United Russian (ER)⁵, we decided to also include the liberal party Yabloko, which did not pass the 5% threshold (the 7% threshold since 2007) – it appears to be an opposite party in the eyes of Russian voters (Gel'Man, 2008). The following variables have been used in our analysis

RESULTS

Table 1: Party Seats in Duma after Elections 2003-2011 and party shares in our sample.

Party (Ideology)	Abb.	Elect.	Samp	Elect.	Samp	Samp	Elect.	Samp
			le		le	le		le
		2003	2006	2007	2008	2010	2011	2012
		%	%	%	%	%	%	%
United Russian (centrism)	ER	37.57	64.67	64.3	75.02	69.9	49.32	61.6
Communist Party (socialism)	KPRF	12.61	18.82	11.57	14.43	16.23	19.19	19.7
Liberal Democratic Party (national-cons.)	LDPR	11.45	7.25	8.14	6.39	7.88	11.67	8.5
Rodina (socialism)	Rodina	9.02	4.84	-	-	-	-	-
Union of Right Forces (liberal-cons.)	SPS	3.97	2.84	0.96	-	-	-	-

Just Russi a (social - demo c.)	SR	-	-	7.74	3.66	4.81	13.24	7.9
Yablo ko (social - demo c.)	Yablo ko	4.3	1.58	1.59	0.5	1.18	3.43	2.3
others		21.08	-	5.7	-	-	3.15	-
Total numb er of voters		-	951	-	1393	1269	-	1191

Policy variables

We used policy distances between the voter and each party for relevant policy issues as

5This disproportion may arise because voters for the ruling party may have been more willing to be interviewed while voters of small parties may have been more worried about the potential consequences from an honest declaration of their political preferences to capture policy-oriented voting. Interviewees were asked about their self-placement concerning three political dimensions using the following scales:

Left-Right-Scale: "Where would you place yourself on the scale left-right ?", 0=left, and 10=right, (L – R); Economical dimension: "Government should reduce differences in income levels", 1=agree strongly, 5=disagree strongly, (Eco); Social-cultural dimension : "Gay men and lesbians should be free to live their own life as they wish", 1=agree strongly, 5=disagree strongly, (Soc). The corresponding party position is the average policy position of all voters who voted for a particular party. This method is known as "partisan constituencies" and has been used widely by political scientists (Schofield and Zakharov, 2010). Following the classical proximity model of Downs, we calculated the quadratic distances between a voter's policy position and a policy position of a given party. In this way, we adopted the policy variables (18 distances for 2003 and 15 distances for 2007–2011) as a principal attitude for policy-oriented voting.

Retrospective variables

For retrospective voting, we took into account questions about voter satisfaction. The voters responded to the following questions on a scale from 0 (meaning "extremely unsatisfied") to 10 (meaning "extremely satisfied"):

- Satisfaction with the economy in country (satis-econ);
- Satisfaction with government job (satis-gov);
- Satisfaction with democracy (satis-dem).

Non-policy predictors

Further, we have included a party identity for non-policy voting: "Is there a particular political party you feel closer to?", 1=yes, 0=no, if yes: "Which one? How close do you feel to this party?", 1=Distant, 2=Not close, 3=Quite close, 4=Very close, (PI).

Other available variable are Moreover, the following variables were available for our analysis: age (age), gender (gen-education (educ)7, total monthly income (income) 8, region (region) 9, voter interest in politics (pol-intr) 10, voter perception about the state (imp-gov) 11, voter happiness (happy)12, TV consumption (TV)13, trust in political institutions (trust-inst), trust in people (trust-peop) 14.

Empirical Results

LCA Model

We estimate latent class logit models with a different number of classes. To determine the best number of classes, we considered the Akaike information criterion (AIC) and the Bayesian information criterion (BIC). A formal comparison in terms of performance between AIC and BIC is very difficult, particularly because AIC and BIC address different questions (Wagenmakers and Farrell, 2004).

Markon and Krueger (2004) noted that AIC performs relatively well in small samples but that it is inconsistent and does not improve in performance in large samples; BIC performs poorly in small samples but is consistent and improves with a larger sample size (De-Graft Acquah, 2010). Because our sample is large and two-class models are more stable, we selected the model based on BIC. 6Gender is coded as 1=Male, 0=Female. 7Education is coded as 1=less than lower secondary, 2=lower secondary, 3=lower tier upper secondary, 4=upper tier upper secondary, 5=advanced vocational, 6=lower tertiary education, BA level, 7=higher tertiary education, >= MA level. 8Income is coded as: 1=Less than 6000 roubles, 2=6001-9000 roubles, 3=9001-12000 roubles, 4=12001-15000 roubles, 5=15001-18000 roubles, 6=18001-21000 roubles, 7=21001-25000 roubles, 8=25001-30000 roubles, 9=30001-40000 roubles, 10=More than 40000 roubles. 9Region is coded as a distance from the central region: 1=Center, 2=North and North West, Volgo- Vyatsky, Central-Chernozhem, 3=Volga, North Caucasus, Ural, 4= West Siberia, East Siberia, Far East. 10Interest in politics is coded as: 1=Not at all interested, 2=Quite interested, 3=Hardly interested, 4=Very interested. 11This variables arises from a quotation: "A person wants the state to be strong so it can defend its citizens. Tell us how much each person is or is not like you": 1=Not like me at all, 2=Not like me, 3=A little like me, 4=Somewhat like me, 5=Like me, 6=Very much like me 12"How happy would you say you are?": From 00=Extremely unhappy to 10=Extremely happy. 13"On an average weekday, how much time, in total, do you spend watching television?": 0=No time at all; 1=Less than 0.5 hour; 2=0.5 hour to 1 hour; 3=More than 1 hour, up to 1.5 hours; 4=More than 1.5 hours, up to 2 hours; 5=More than 2 hours, up to 2.5 hours; 6=More than 2.5 hours, up to 3 hours; 7=More than 3 hours.14Both variables, trust in institutions and trust in people, arise as two factors solution from factor analysis

based on the eight following variables scaled from 0=disagree to 10=agree: The questions about trust are: Most people can be trusted (ppl-t); Most people would try to be fair (ppl-f); People mostly try to be helpful (ppl-h); I completely trust in country's parliament (tr-p); I completely trust in the legal system (tr-l); I completely trust in the police (tr-po); I completely trust in politicians (tr-pl); I completely trust in political parties (tr-pr). The results from this factor analysis are available on request.

Table 2: Fit for different number of latent classes: BIC and AIC are based on LL.

	Election 2003	Election 2007	Election 2011
	Data 2006	Data 2008-2010	Data 2012
BIC for 2 cl.	2191	4142	2451
BIC for 3 cl.	2403	4344	2639
AIC for 2 cl.	1710	3665	2040
AIC for 3 cl.	1674	3620	2013

Estimation results for the latent class model are presented in Table 3. We considered the same two-class model for each year (LCA 1, LCA 2 and LCA 3, respectively). We estimated the LCA 2 models for the election of 2007 based on merged data from 2008 and 2010 because the results from both data sets corresponded, on average, with the results from the merged data 15 16. The estimated models of Table 3 include constants, voter ideological settings (party identity - PI), individual characteristics (age, education, income, region), policy attributes (Euclidean distances in three policy dimensions - L-R, Eco and Soc), three kinds of voter satisfaction (with economy, democracy and government jobs) as well as watching TV and voter trust in institutions determining class membership probabilities. A class membership was significantly determined by watching TV and trust in institutions: individuals in class 1 demonstrated a significantly higher level of TV consumption for each election period.

The results indicated heterogeneity of party preferences across two latent classes and differed from year to year. Moreover, there was policy-oriented voting during all election periods because the coefficients for policy distances were negatively significant. A negative sign for policy attributes implies: the less the Euclidean distance between a voter and a party in any dimension, the greater the likelihood for a party to be elected.

Regarding ideological voting, we observed a strong impact of party identity only for the government party ER and the communist party KPRF . While party identity for ER in 2003 was significant for voters belonging to the class that watched relatively more TV, in 2007 and 2011 it was significant for the class of individuals who watched less TV. Furthermore, we observed significant retrospective voting based on voter satisfaction. Voters unsatisfied with the economy tended to belong to the class of individuals who watched less TV: -0.316*** in 2003 and -0.772*** in 2011. In 2003, voters satisfied with 15The estimations based on both data sets, 2008 and 2010, are

available on request. 16To choose the best fitted model among the estimated models with the same number of classes, we used two criteria: 1. no contradiction between theoretical and empirical models, i.e. beta coefficients should be possibly negative; 2. a possibly small BIC.

Table 3: Estimation Results of Latent Class Models.

	Mo del LC A 1	Mo del LC A 2	Mo del LC A 3										
	Ele cti on 2003 (2006)	Ele cti on 2007 (2008-2010)	Ele cti on 2011 (2012)										
Var iabl es	Log LL = -756.1	Log LL = -1751.6	Log LL = -939.8										
	Co eff.	z- val.	Co eff.	z- val.	Co eff.	z- val.	Co eff.	z- val.	Co eff.	z- val.	Co eff.	z- val.	
Poli cy													
Dis tan ces:													
L-R	0.016	0.353	-0.672**	-4.437	-0.005	-0.199	-2.335*	-3.438	-0.166**	-5.441	0.094	0.864	
Eco	-0.298	-1.547	-0.743**	-2.974	-0.169	-0.877	1.563	1.348	-0.368	-1.342	-2.922**	-3.362	
Soc	-0.589**	-4.05	0.099	0.677	-0.204*	-2.177	-0.256	-0.318	-0.602**	-3.212	-0.275	-0.744	
Co nst ants													
ER	9.212**	3.334	0.942	0.74	3.356**	5.963	7.383*	1.685	-3.186*	-2.037	5.118	1.635	

KP	-4.4	-2.0	-2.5	-0.8	0.3	0.6	1.6	0.3	-3.2	-2.3	1.5	0.5
RF	02*	26	9	11	9	56	1	2	15*	74	44	26
	*								*			
LD	1.3	0.7	7.3	3.0	2.2	3.6	-3.0	-0.5	4.4	2.1	-1.1	-0.3
PR	93	442	80*	72	63*	38	25	33	15*	11	2	84
			**		**				*			
Ro	-8.1	-2.3	3.0	1.5	-	-	-	-	-	-	-	-
din	04*	75	56	17								
a	*											
SP	4.9	1.8	-4.7	-1.7	-	-	-	-	-	-	-	-
S	05*	52	18*	32								
SR	-	-	-	-	-1.8	-2.5	-9.5	-0.6	-2.4	-1.7	-2.4	-0.3
					03*	61	03	07	51*	42		48
					*							
Yab	-3.0	-0.5	-4.0	-1.7	-4.2	-2.7	3.5	0.5	4.4	1.2	-3.1	-1.0
lok	04	65	70*	95	06*	83	36	8	36	54	42	74
o					**							
PI												
ER	1.4	3.7	2.2	1.0	1.7	0.7	5.7	1.9	2.8	1.5	6.2	2.5
	71*	14	7	64	92	265	53*	9	22	71	06*	28
	**						*				*	
KP	-0.8	-2.9	0.1	0.0	0.1	0.0	-9.4	-2.1	-1.3	-0.4	-2.9	-0.8
RF	70*	08	76	79	83	74	05*	63	11	86	97	56
	**						*					
LD	-0.4	-1.5	-0.8	-0.2	0.0	0.0	2.7	1.0	-0.7	-0.1	1.0	0.2
PR	76	31	93	12	84	34	39	28	06	9	36	38
Ro	-0.5	-1.4	1.4	0.6	-	-	-	-	-	-	-	-
din	99	47	2	59								
a												
SP	0.1	0.2	-1.5	-0.2	-	-	-	-	-	-	-	-
S	06	25	41	53								
SR	-	-	-	-	0.6	0.2	-1.0	-0.1	-1.2	-0.3	-5.7	-1.0
					52	64	07	85	61	29	54	66
Yab	0.3	0.5	-1.4	-0.1	-2.7	-0.2	1.9	0.2	0.4	0.0	1.5	0.2
lok	69	94	32	75	1	75	21	14	56	91	1	25
o												
age												
ER	-0.0	-2.7	0.0	0.5	-0.0	-5.9	0.0	1.5	0.0	1.0	-0.0	-1.4
	92*	76	07	49	35*	63	68	86	15	04	39	61
	**				**							
KP	0.0	3.2	0.0	0.4	0.0	4.4	0.0	1.7	0.0	2.0	0.1	3.0
RF	76*	1	12	17	27*	44	85*	16	30*	85	01*	77
	**				**				*		**	
LD	-0.0	-1.6	-0.0	-2.3	-0.0	-5.3	-0.0	-0.3	-0.0	-1.1	-0.0	-1.3
PR	33*	88	50*	19	34*	09	13	11	23	48	32	87
			*		**							

Ro	0.0	2.5	-0.0	-1.2	-	-	-	-	-	-	-	-
din	86*	27	23	64								
a	*											
SP	-0.0	-2.6	0.0	1.2	-	-	-	-	-	-	-	-
S	72*	48	33	68								
	**											
SR	-	-	-	-	0.0	1.2	-0.0	-0.5	0.0	1.3	-0.0	-0.3
					09	78	59	14	2	48	2	19
Yab	0.0	0.6	0.0	0.9	0.0	2.1	-0.0	-1.2	-0.0	-0.8	-0.0	-0.4
lok	35	47	2	22	33*	75	8	41	41	36	1	08
o					*							
edu												
c												
ER	0.1	0.8	-0.2	-1.4	-0.2	-4.0	1.1	1.5	-0.2	-1.4	0.9	1.8
	59	72	28	35	26*	01	12	91	87	48	12*	75
					**							
KP	-0.0	-0.0	0.4	1.1	-0.0	-1.5	0.3	0.4	0.1	0.5	-0.5	-1.0
RF	15	98	76	31	82	07	15	12	13	76	21	82
LD	-0.3	-1.9	0.4	1.5	-0.1	-2.8	0.9	1.3	-0.8	-2.9	1.1	2.3
PR	54*	26	62	49	80*	5	8	04	22*	03	61*	58
					**				**		*	
Ro	0.2	1.2	-0.0	-0.3	-	-	-	-	-	-	-	-
din	73	43	72	34								
a												
SP	0	0.0	-0.6	-1.7	-	-	-	-	-	-	-	-
S		01	11*	59								
SR	-	-	-	-	0.0	0.9	-2.8	-1.1	-0.1	-0.5	-2.9	-1.7
					64	66	67	24	01	07	19*	59
Yab	-0.0	-0.1	-0.0	-0.0	0.4	2.8	0.4	0.6	1.0	1.5	1.3	2.7
lok	63	41	27	98	23*	51	61	26	97	91	66*	84
o					**						**	
inc												
om												
e												
ER	-1.4	-3.0	0.5	2.4	-0.0	-1.0	-0.0	-0.1	-0.0	-0.1	-0.8	-2.3
	40*	65	17*	55	34	12	48	96	16	78	13*	89
	**		*								*	
KP	0.4	1.6	-0.1	-0.6	-0.0	-2.4	0.1	0.5	-0.1	-1.1	-0.3	-1.1
RF	56*	99	97	04	85*	16	5	34		82	99	72
					*							
LD	0.4	1.6	-1.2	-2.2	0.0	0.4	0.3	1.3	0.0	0.7	-0.4	-1.4
PR	4	14	51*	54	16	38	5	53	84	11	78	58
			*									
Ro	0.4	1.1	-0.2	-0.7	-	-	-	-	-	-	-	-
din	53	23	24	28								
a												

SP S	-0.9 14*	-2.2 5	1.2 56*	2.9 04	-	-	-	-	-	-	-	-
	*		**									
SR	-	-	-	-	0.0 56	1.3 86	-0.6 04	-0.7 23	-0.0 47	-0.5 3	2.2 87*	1.8 01
Yab lok o	1.0 05	1.3 12	-0.1 02	-0.2 91	0.0 47	0.5 52	0.1 52	0.4 82	0.0 77	0.2 78	-0.5 97*	-1.7 9
regi on												
ER	-0.6 15*	-2.2 62	0.1 94	1.0 6	0.2 23*	2.7 08	-0.2 77	-0.3 26	1.6 24*	2.8 69	1.0 57	1.4 37
	*				**				**			
KP RF	0.4 94*	2.2 82	0.3 88	1.3 48	0.0 36	0.4 36	1.0 29	1.0 32	1.3 90*	2.5 33	0.3 54	0.5 3
	*								*			
LD PR	0.3 59	1.4 86	-1.0 26*	-2.5 59	0.2 84*	3.1 36	0.2 13	0.2 21	0.6 92	1.1 73	0.9 69	1.4 89
			*		**							
Ro din a	-0.0 45	-0.1 35	-0.2 69	-0.9 16	-	-	-	-	-	-	-	-
SP S	-0.2 81	-0.8 51	0.5 85	1.5 78	-	-	-	-	-	-	-	-
SR	-	-	-	-	0.1 37	1.3 96	-2.9 59	-0.9 3	1.1 82*	2.1 09	-3.1 85	-1.3 82
									*			
Yab lok o	0.0 88	0.1 37	0.1 26	0.3 91	-0.6 80*	-3.1 6	1.9 94	1.5 51	-4.8 89*	-2.3 06	0.8 05	1.1 88
					**				*			
sati s- eco n												
ER	0.3 72*	1.6 64	-0.3 16*	-2.7 68	0.0 17	0.3 4	0.6 26	0.9 4	0.1 2	1.0 67	-0.7 72*	-2.6 62
			**								**	
KP RF	-0.3 13*	-1.9 64	-0.0 08	-0.0 38	0.0 88*	1.6 91	-0.3 04	-0.4 37	-0.0 93	-0.8 51	1.4 65*	3.3 12
	*										**	
LD PR	-0.1 49	-1.1 86	0.1 21	0.6 62	-0.0 74	-1.2 97	1.5 05*	1.9 67	-0.1 28	-0.6 89	-0.6 38*	-2.2 85
							*				*	
Ro din a	0.2 91	1.4 74	-0.1 76	-1.1 86	-	-	-	-	-	-	-	-
SP S	0.1 75	0.9 42	0.3 29	1.4 06	-	-	-	-	-	-	-	-

SR	-	-	-	-	0.2 07*	3.3 77	-3.0 25	-1.1 52	0.0 37	0.3 32	0.5 21	0.7 29
					**							
Yab lok o	-0.3 77	-1.2 4	0.0 5	0.2 73	-0.2 38*	-1.7 81	1.1 98	1.5 61	0.0 64	0.2 08	-0.5 76*	-1.9 9
											*	
sati s- gov												
ER	0.0 78	0.5 17	0.4 01*	3.3	0.1 24*	2.8 4	-1.4 75	-1.3 08	0.7 20*	2.5 85	1.3 70*	2.3 56
			**		**				**		*	
KP RF	-0.0 06	-0.0 4	-0.0 19	-0.0 61	-0.0 91*	-2.0 3	-1.0 92	-0.9 69	0.6 36*	2.2 88	-0.7 96	-1.2 74
					*				*			
LD PR	-0.0 82	-0.7 6	-0.4 10*	-2.0 34	-0.0 32	-0.6 15	-0.4 79	-0.4 28	-0.1 55	-0.4 33	1.3 93*	2.3 65
			*								*	
Ro din a	-0.0 52	-0.3 66	0.0 53	0.3 61	-	-	-	-	-	-	-	-
SP S	0.0 3	0.1 88	-0.2 11	-0.8 78	-	-	-	-	-	-	-	-
SR	-	-	-	-	-0.0 85	-1.5 07	5.9 04	1.3 25	0.6 16*	2.1 86	-3.4 81*	-1.6 91
									*			
Yab lok o	0.0 31	0.1 45	0.1 86	1.0 34	0.0 84	0.7 68	-2.8 58*	-2.1 6	-1.8 17*	-1.7 29	1.5 14*	2.5 71
							*				*	
sati s- de m												
ER	-0.1 61	-0.9	0.1 71	1.5 95	-0.0 3	-0.6 59	1.1 2	1.4 88	0.1 96	1.1 89	-1.0 95*	-2.3 5
											*	
KP RF	0.4 07*	2.7 72	-0.0 51	-0.2 43	-0.0 46	-1.0 14	0.7 72	0.9 99	-0.0 41	-0.2 58	-0.6 84	-1.3 71
	**											
LD PR	0.5 29*	3.2 19	-0.5 93*	-2.2 23	0.0 74	1.3 61	0.0 48	0.0 61	0.0 59	0.2 73	-0.4 5	-0.9 87
	**		*									
Ro din a	0.2 74	1.5 06	0.0 99	0.6 77	-	-	-	-	-	-	-	-
SP S	0.1 76	0.8 08	-0.0 17	-0.0 64	-	-	-	-	-	-	-	-

SR	-	-	-	-	-0.0	-0.1	-3.1	-1.0	-0.0	-0.1	3.0	1.7
					07	18	72	93	22	34	14*	21
Yab	-1.2	-2.2	0.3	2.1	0.0	0.0	1.2	1.4	-0.1	-0.3	-0.7	-1.6
lok	25*	4	90*	56	09	77	32	7	91	27	85*	88
o	*		*									
Cla												
sses												
:												
Co	-0.6	-3.8	0.6	3.8	0.0	0.4	-0.0	-0.4	0.0	0.5	-0.0	-0.5
nst	42*	99	42*	99	67	83	67	83	75	59	75	59
ant	**		**									
TV	0.0	3.2	-0.0	-3.2	0.0	1.7	-0.0	-1.7	0.0	3.4	-0.0	-3.4
	97*	47	97*	47	40*	44	40*	44	93*	98	93*	98
	**		**						**		**	
tru	0.0	1.6	-0.0	-1.6	-0.0	-1.6	0.0	1.6	0.1	2.0	-0.1	-2.0
st-	98*	89	99*	89	82*	78	82*	78	24*	62	24*	62
inst									*		*	

jobs watched relatively less TV (0.401***); in 2007 and 2011 such voters watched more TV (0.124*** and 0.720***, respectively). It appears that watching TV and trust in political institutions have an increasing importance for class determination and for this reason for voting motives. However, because we had more than two parties we were able to determine the comparative advantages for the government party ER only after calculating marginal effects.

Analysis of determinants

Next, we turn our attention to the analysis of voting components and probabilities with regard to ruling party over all voters. Using the indicators derived previously, we sought to empirically better understand two aspects: 1. How does TV-watching affect relative voting motives? In particular, does TV consumption imply stronger non-policy voting or, on the other hand, a stronger policy-oriented motive? 2. How does TV-watching influence the probability of voting for the ruling party?

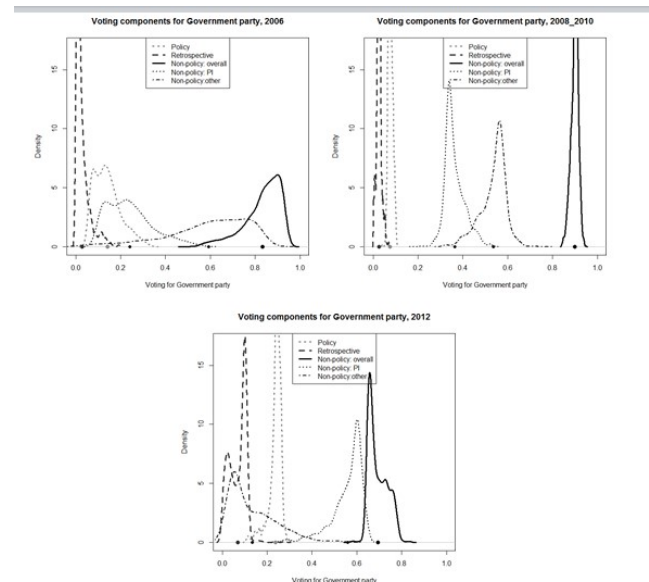
Voting motives over time

We start by investigating how TV consumption affects relative voting motives. First, we compute relative voting components for the ruling party according to formulas 5-7 for each model. Second, we examine the distribution of the motives. Moreover, for the average indicator values presented here and later we determine 95% confidence intervals using the means of bootstrapping with 100,000 simulations.

Empirically, we clearly identified the importance of ideological voting motives (NV) during each election period with average values of 83.2%, 89.9% and 69.3% over time, respectively. In Figure 1, we present the distribution of the relative voting motives; average values of these components are listed in Table 4. Additionally, we decomposed the entire ideological component into two parts: first, related only to party identity (NV-PI); second, related to the remaining ideological predictors

such as valence, age, education, income and region (NV-other). We found that the relative importance of party identity increases over time from 24.1% in 2003 to 36.3% in 2007 to 55.9% in 2011. On the other hand, one of the remaining predictors falls from 59.1% in 2003 to 53.6% in 2007 to 13.4% in 2011.

Figure 1: Kernel density estimation of policy, non-policy and retrospective relative voting components for the ruling party.



in 2011. Accordingly, we considered a rapid increase in the relevance of party identity over time.

Regarding policy motives (PV), we considered a volatile trend from 14.1% in 2003 to 7.5% in 2007 to 23.7% in 2011.

It is also interesting that the retrospective voting component (RV) considerably increases over time (2.7%, 2.6% and 6.9%, respectively), i.e. voter satisfaction with government job becomes more important for a voter's political choices.

Table 4: Average values of relative voting motives for the ruling party, in %.

	Election 2003			Election 2007		Election 2011	
Motives:	mean	[95% c.i.]		mean	[95% c.i.]	mean	[95% c.i.]
NV-PI	24.1	[23.4, 24.7]		36.3	[36.1, 36.5]	55.9	[55.6, 56.3]
NV-other	59.1	[58.0, 60.3]		53.6	[53.4, 53.8]	13.4	[12.8, 14.0]
PV	14.1	[13.7, 14.4]		7.5	[7.45, 7.6]	23.7	[23.6, 23.9]
RV	2.7	[2.5, 2.9]		2.6	[2.5, 2.61]	6.9	[6.7, 7.1]
Total	100			100		100	

TV and Voting motives

Here, we compute a t-test to measure relative voting components between two separated voter groups depending on their TV consumption: for the group with above-average value of hours spent with TV and the group with below-average TV consumption.

From Table 5, the relative importance of party identity in 2011 was significantly greater for the group with higher levels of TV consumption (56.6% versus 55.1%); in 2003 and 2007 the relative importance of party identity was significantly higher for the group with lower levels of TV consumption. Furthermore, although the policy voting component in 2003 and 2007 was significantly smaller for the group with higher levels of TV consumption (13.1% versus 15.1% in 2003 and 7.4% versus 7.7% in 2007), there was not a significant difference between the groups in 2011 (23.8% versus 23.6%).

Table 5: T-test for relative voting motives for the ruling party by TV consumption.

	Elect ion 2003			Elect ion 2007			Elect ion 2011		
	Moti ves:	more TV	less TV	(p- value)	more TV	less TV	(p- value)	more TV	less TV
NV-PI		0.22 3	0.25 9	(0.00 0)	0.35 7	0.37 2	(0.00 0)	0.56 6	0.55 1
NV-other		0.62 2	0.55 9	(0.00 0)	0.54 4	0.52 4	(0.00 0)	0.121 0	0.149 0
PV		0.131	0.151	(0.00 0)	0.074 7	0.07 7	(0.00 0)	0.23 8	0.23 6
RV		0.02 4	0.03 1	(0.00 1)	0.02 5	0.02 7	(0.00 0)	0.07 5	0.06 4
Total		1	1		1	1		1	1

In this way, on the one hand we measured the expected increase in entire ideological motives because of the uptick in the importance of party identity over time for all voters and particularly for those who watched more TV. For example, the relative importance of party identity almost doubled in 2011 compared with 2003 (55.9% versus 24.1%). Additionally, the relative importance of party identity was significantly higher for the group characterized by higher levels of TV consumption.

On the other hand, these results were partly surprising because of a fluctuating increase in the relative policy component for the ruling party (the relative importance of policy motives was the highest in 2011). However, we recognized that in 2011 there were no differences in policy voting between the two groups based on TV consumption. It appears that the highest policy voting in 2011 was not necessary achieved due to TV consumption but rather due to other unobserved factors (e.g., the growing availability of the Internet and mobile information technologies that may have induced a total shift of knowledge in the population). Moreover, TV broadcasting appeared to be

insufficient in policy space in 2011 because watching TV had no significant impact on policy motives of voters with more and less TV consumption.

TV and Probability of Voting for the Government party

Applying equations 8, we calculated marginal effects of TV consumption for each election period. From Table 6 we see the marginal effects of TV consumption determining a latent heterogeneity of voting motives. Because the impact of TV consumption on class affiliation is significant (Table 3), we can state that increasing TV consumption essentially affects the predicted voting probabilities of the ruling party. In particular, we calculated a treatment effect of watching TV of -0.716, -0.242 and 0.233 percentage points over time. This results mean that TV broadcasting is able to increase the probability over time: an increase of a half an hour of TV consumption each day leads to, on average, a change of -0.716 percentage points in 2003, -0.242 p.p. in 2007 and 0.233 p.p. in 2011. Therefore, watching TV considerably increases the probability of voting for the government party, particularly during the last period. Clearly, this fact indicates raising media capture in Russian TV in favor of the government party.

Table 6: Marginal effects of TV consumption, in %.

	Election 2003		Election 2007		Election 2011	
	mean	[95% c.i.]	mean	[95% c.i.]	mean	[95% c.i.]
TV effects:	-0.716	[-0.779, -0.653]	-0.242	[-0.254, -0.230]	0.233	[0.190, 0.276]

CONCLUSION

Because the mass media is an important source of information about policy for ordinary Russian citizens, it is an attractive tool for influencing voters' opinions about government performance and thereby affecting their voting behavior. In this study, we developed an empirical framework to investigate the impact of TV consumption on voter behavior in the Russian elections from 2003–2011 at the micro-level. Our goal was to show how it is empirically possible to identify media capture on Russian TV.

Using marginal effects, we formulated several empirical indicators representing the relative importance of voting motives as well as effects of TV watching on predicted probability for the ruling party. We estimated a latent class model for each parliamentary election from 2003–2011 to conduct post-logit analysis using the formulated indicators. To generate latent heterogeneity, we used the number of hours spent watching TV each day.

In framework of latent class analysis we investigated voting motives over time, relationship between voting motives and TV consumption as well as the importance of TV watching for win probability of the ruling party.

We identified that with the respect to the ruling party voters make their assessment, i.e. political decision, increasingly on the basis of party identity and retrospective evaluation. Moreover, the relative importance of party identity nearly doubled in 2011 compared with 2003 (55.9% versus 24.1%). Furthermore,

watching TV considerably contribute to these both motives in the following way: while in elections 2003 and 2007 the importance of party identity and retrospective assessment was lower for voters with stronger TV consumption, in 2011 the importance of these both motives is significantly higher for voters watching TV more.

Despite public and academic viewpoints on the possible stultification of Russian voters with propaganda, we found that the relative importance of the policy component surprisingly increased in 2011 compared with 2003. Moreover, the policy-oriented motive could not be explained by different levels of TV consumption in 2011. This is because probably other unobserved factors (e.g., the use of the Internet and a total shift in the knowledge of the population due to the Internet) may also explain the increase in policy-oriented motives. Furthermore, we must not forget that in countries without low freedom level, policy-oriented motives can be strengthened via pre-selected information in the official media (including the Internet) or by an artificial intensification of voter perception of less-important topics (e.g., the rights of sexual minorities) in order to draw voters' attention away from more important issues (e.g., economic development or scandals about corruption among incumbents). Therefore, taking into account possibly many other policy (including political matters not popularized through the government) is essential for such analysis.

Regarding the impact of TV consumption on an individual's probability of voting for the ruling party, our results suggest that the government party has clear probability advantages as voters consume more TV: watching TV increases the probability of voting for the ruling party in 2011.

The existence of media capture in Russia is confirmed now by our empirical results. These results imply that TV is an efficient instrument for increasing the probability of the ruling party as well as for transmitting stronger non-policy motives, i.e. identification with this party. Moreover, we found increasing

policy motives in 2011 referring to the effects of median capture in policy space, also suggested by other authors Lin^ˆan (2010); Simons (2015); Yakovlev (2016); Shevtsova (2015); Szostek (2014); Wilkinson (2013). In this way, we have econometrically found that media capture may also be related to policy motives of voters. This phenomena needs not only further empirical explanation but also more differentiable theoretical formulation in future.

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