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Ruben Enikolopov
Maria Petrova
Ekaterina Zhuravskaya

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Ruben Enikolopov, Maria Petrova, Ekaterina Zhuravskaya*

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Abstract:

How do media affect voting behavior? What difference can an independent media outlet make in a country with state-controlled media? Our paper addresses these questions by comparing electoral outcomes and votes reported by survey respondents during the 1999 parliamentary elections in Russia for those geographical areas that had access and those that had no access to the only national TV channel independent from the government (“NTV”). The effect is identified from exogenous variation in the availability of the signal, which appears to be mostly idiosyncratic, conditional on controls. The findings are as follows. 1) The presence of the independent TV channel decreased the aggregate vote for the government party by 2.5 percentage points and increased the combined vote for major opposition parties by 2.1 percentage points. 2) The probability of voting for opposition parties increased for individuals who watched NTV even controlling for voting intentions measured one month prior to the elections. 3) NTV had a smaller effect on votes of people with higher political knowledge and those using alternative sources of political news and a larger effect on retired persons who watch TV substantially more than working individuals.

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“Contrary to a common perception, mass media is an instrument, rather than an institution,” – Vladimir Putin said to the director of an independent radio station Echo Moscow¹.

1. Introduction

In August 1999, Vladimir Putin, whose popularity rating was below 2% at that time, was appointed prime minister of Russia by the first president Boris Yeltsin. Eight months later, he won the March 2000 Presidential elections in the first round with 52.9% of the vote. Just before that, during the December 1999 Russia’s Parliamentary elections, the new pro-government party, “Unity,” which was created less than two months prior to the election, scored second with 23.3% of the total vote. Scholars and journalists hypothesized that the massive and well-organized media campaign by state-owned television played a crucial role in these successes (Colton and McFaul, 2003, Oates, 2006). Can mass media have such a substantial effect on political outcomes; and if yes, in what circumstances?

A large body of evidence (surveyed below) suggests that media has an important but – in terms of magnitude – rather small effect on political outcomes in established democracies with stable party systems, ideological platforms of parties, which are well known to voters, and competitive media. However, one should expect a larger effect of media on political outcomes in a country characterized by weak democratic institutions. For instance, in the 1990s, Russia’s party system was very unstable with many short-lived parties coming and going. Voters had little prior information about these parties and, therefore, had to put substantial weight on any new information about the parties, which, in turn, was provided mostly by mass media. Parties also ran on platforms with vague ideology; so that their differences were unclear to voters. As a result, issues not related to policy such as candidate's valence became important elements in voting decisions. Finally, competition in Russia’s media market was imperfect: in many regions all major media outlets were controlled by the government, and voters only had access to one-sided political coverage.²

Despite the overall success of the new pro-government party “Unity” in the 1999 Russian parliamentary elections, the success was far from uniform across the country. For example, the party received less than 14% of the vote in the city of Perm and more than 32% in the city of Voronezh. We show that to a large extent this relates to variation in voters’ access to an

¹ As reported by Alexei Venedictov, editor in chief of Echo Moscow, at a public lecture in the New Economic School on February 26, 2009.

² In countries like the U.S. with relatively free and competitive media, persuasion effects of media are mitigated by consumers' ability to self-select or to choose the most preferred media outlet (Durante and Knight, 2009). People in countries with controlled media market do not have such options. Therefore, they are likely to discount the information received from the biased media to a larger extent than consumers in the competitive media market. Such a discount, however, is unlikely to undo the persuasion effect completely (Gentzkow and Shapiro, 2006).

independent media outlet in different parts of the country. Indeed, if the governing party controls a vast majority of media sources, access to an alternative source of information can be important in helping people to make informative choices.³ In particular, we estimate the impact of the only independent national TV channel, NTV, on voting behavior during the Russian 1999 Parliamentary elections. We use the idiosyncratic geographical variation in the availability of the NTV signal to identify the effect. Using both the official statistics on election results and individual survey data, we show that access to an independent TV channel significantly increased vote for opposition parties and decreased vote for the pro-government party, “Unity.”

We investigate two types of effects. First, we analyze the aggregate effects of having NTV transmission at the subregional level (analogous to U.S. counties), using the official electoral results. Second, we use data from a large-scale representative panel survey to investigate the media effects on the individual level, using access to NTV as an instrument for NTV exposure. We find large and significant effects of NTV on the voting outcomes. Due to the NTV broadcast, the pro-government party lost 2.5 percentage points of votes (9% of the aggregate vote for the party), while the main opposition parties, in sum, got an additional 2.1 percentage points of the total vote (10% of the aggregate vote for these parties). Using individual level data, we find that exposure to NTV had a significant effect on individual votes in favor of the main opposition party (supported by NTV), even controlling for voting intentions measured one month prior to the elections. NTV had a particularly large negative effect on the vote for the pro-government party among voters who were undecided a month before elections. We also find that the effect of NTV was weaker for people who used newspapers as an alternative source of political information as well as for people who had a high level of political knowledge before the elections. The positive effect of NTV on the support of the main opposition party was stronger for less educated, older and retired people.

An important step in our analysis is to show that the availability of the NTV signal was idiosyncratic, *i.e.* that there were no unobserved characteristics of subregions with and without the NTV signal that could drive the observed differences in voting behavior. First, we show that the presence of NTV in the 1999 elections does not correlate with voting choice in previous parliamentary elections held in 1995, once observable economic characteristics of regions are controlled for. Second, and most importantly, we conducted placebo regressions for the effects of NTV on voting behavior in 1995 and 2003, two elections in which there were no significant differences between the political coverage of different national TV channels. We find that though the availability of NTV in 1999 had a large effect on voting behavior in 1999, it did not

³ McMillan and Zoido (2004) show that the existence of a single independent TV channel can threaten the stability of a corrupt regime. Their findings suggest that the presence of an independent media channel could, potentially, help to keep the government accountable and the elections competitive.

have any effect on the vote in 1995 and 2003. The results of this placebo experiment suggest that some unobservable characteristics of subregions, which could be correlated with voting choice, cannot explain our main findings.

In the analysis of aggregate media effects, our approach is similar to that of DellaVigna and Kaplan (2007) in their investigation of the impact of Fox News on the voting behavior of Americans, using idiosyncratic diffusion of Fox News before the 2000 U.S. election. With respect to the availability of Fox News, they find a positive effect of 0.5 percentage point on the vote for Republicans, whereas we find a 2.5 percentage point negative effect of the NTV signal on the vote for the pro-government party. Such a large difference in the magnitude of the effects is consistent with the hypothesis that the weakness of democratic institutions leads to greater media persuasion effect.

The rest of the paper is organized as follows. In section 2, we review related literature. Section 3 provides background information on the television market and political situation in Russia at the end of the 1990s. In section 4, we formulate our hypotheses and describe the data. Section 5 presents aggregate-level results and discusses validity of the instrument. Section 6 presents individual-level results. We conclude in section 7.

2. Literature

The literature on the effects of media on voting behavior is expanding rapidly. Early classic studies (*e.g.*, Berelson et al. 1944 and Lazarsfeld et al. 1954) find no effect of media on voting once political predispositions of survey respondents are taken into account and argue that media does not persuade voters but only reinforces their existing preferences. These studies, however, suffer from severe endogeneity problem: survey respondents prefer media sources which reflect their political views. More recent contributions to the literature employ experimental and quasi-experimental approaches to deal with inherent endogeneity of survey-based studies and show that media does affect voting behavior.⁴

Most of the evidence comes from established democracies and points to the effect of media on voting outcomes through its effect on turnout. For instance, Strömberg (2004) finds that an increase in the penetration of local radio stations in the United States in the 1930s increased turnout. Gentzkow (2006) finds that the introduction of television in 1940s-1950s in the United States significantly decreased turnout, as people read fewer newspapers and received less political information. George and Waldfogel (2006) use penetration of the *New York Times*

⁴ An additional body of research, not using quasi-experimental methods, looks at the consequences of the differences in the freedom of media across countries. The lack of media freedom is found to be associated with state media ownership (Djankov et al. 2003), resource curse and low incentives for bureaucracy (Egorov et al. 2006), low level of social spending (Petrova 2007), and high corruption (Brunetti and Weder, 2003).

in 1990s to show that it decreased turnout in local elections because of a “distraction” of college-educated voters from local media and local affairs. Oberholzer-Gee and Waldfogel (2007) show that local news channels in Spanish in the United States increase turnout of Spanish-speaking electorate. DellaVigna and Kaplan (2007) use idiosyncratic diffusion of Fox News to show that it affected the vote for Republicans in the 2000 elections, mainly through increased turnout among Republican supporters. In contrast to other studies, Gerber et al. (2007) find a substantial effect of the access to the *Washington Post* on the voting behavior in a Washington D.C. gubernatorial election directly (rather than through turnout). They conducted a randomized experiment by providing individuals with a free subscription to the *Washington Times* or the *Washington Post* and show that those who received either paper were 8% more likely to vote for Democrats. Strömberg and Snyder (2008) use variation in overlap of congressional districts and local media markets resulting from redistricting to show that coverage by local media affects behavior of the politicians and, as a result, public policies.

The evidence on the effects of media on voting outside the developed world is scarce. Several recent papers start to fill this gap and our paper contributes to this emerging strand of the literature. These studies suggest that media, in addition to affecting turnout, have a substantial effect on political preferences in regimes other than advanced democracies. Using survey data, Lawson and McCann (2007) show that before the 2000 elections in Mexico, TV news had a significant effect on attitudes and vote choices. Gentzkow and Shapiro (2004) argue that biased media in Arabic countries reinforce anti-Americanism. McMillan and Zoido (2004) provide a detailed account on how the media was used to undermine democratic accountability in Peru. Haimueller and Kern (2007) show that the availability of free West German TV increased support of the authoritarian regime in East Germany by providing otherwise-missing entertainment to East Germans. Colton and McFaul (2003) emphasize the importance of media effects for the outcomes of Russian elections in 1999 and 2000 using a survey-based approach.⁵

Our paper is closely related to White et al. (2005). They also try to estimate the effect of Russian media on the results of the 1999 parliamentary and 2000 presidential elections and find a significant media exposure effect on voting results. White et al., however, use the self-reported vote choice and the self-reported presence of state-owned or commercial television from a 2001

⁵ Furthermore, recent papers find direct effects of media on public policy. Strömberg (2004) finds that in the U.S. in the 1930s radio diffusion in a county was positively correlated with the level of public expenditures in the region. Einensee and Strömberg (2007) show that the amount of media coverage, instrumented by the timing of external newsworthy events, such as the Olympics, affects U.S. aid on disaster relief. Besley and Burgess (2002) find that in India the newspaper circulation in a state is an important factor which influences the government's responsiveness to food shortages and floods. Reinikka and Svensson (2005) show that in Uganda the amount of public spending reaching local schools was higher when the intended amount of funding was publicized in local newspapers. In addition, mass media has important effects on other forms of behavior (Olken, 2008; La Ferrara et al, 2008; Jensen and Oster, 2007).

survey conducted 18 months after the elections. This methodology is subject to severe endogeneity problems.⁶ Our approach is superior from a methodological perspective because it allows us to evaluate the size of the *causal* effect of NTV on voting decisions. Furthermore, in addition to the analysis of self-reported individual voting behavior, we document the effect of NTV on the aggregate electoral outcomes using official electoral statistics.⁷

3. Background information

Politics

Throughout the 1990s, Russia's political landscape was constantly changing (see, *e.g.*, White et al 1995, 1997; Brader and Tucker 2001). New parties were forming and then disappearing. The number of parties participating in parliamentary elections was 13 in 1993, 43 in 1995, and 26 in 1999. Partisan attachments were weak, with the exception of Communist Party supporters. According to Colton (2000), 71% of voters changed their preferred party between 1993 and 1995; for 60% of voters, this change came with a substantial change in ideology.⁸ Less than one fourth of voters chose the same party in 1995 and 1999 parliamentary elections (Colton and McFaul 2003). To sum up, 1990s Russia had an unstable party system and lacked developed partisan attachments.⁹

Prior to the 2004 political reform, the lower house of the Russia's parliament (Duma) was formed by a mixed electoral rule. One half of all seats (225 deputies) was chosen in single-member-district majoritarian elections and the other half of the seats was filled by party-lists voting in a single national district according to a proportional representation formula with a 5% entry barrier. In our empirical analysis, we focus on the party-list vote in the December 1999 Duma elections.

On September 27, 1999, a new electoral party "Unity" ("Edinstvo" in Russian) was created. The leaders of the party officially stated that it has no ideology other than to support the

⁶ Survey respondents, whose choice was affected by media, tend to remember their vote choice better; survey respondents not interested in watching a particular channel do not know whether it is available. In addition, as identified by Colton and McFaul (2003), Russian citizens tend to forget their past vote choices: in their survey, around half of the respondents in 1999 either did not remember their vote in 1995 at all or recalled a vote that was different from that reported immediately after the 1995 elections.

⁷ We cannot compare the magnitudes of the estimated effects in our paper and theirs, as they do not report marginal effects for their logit regressions.

⁸ Colton classified all Russian parties into 6 different groups by their ideology: liberal, socialist, centrist, nationalist, government and miscellaneous. 60% of survey respondents chose different party families in 1993 and 1995.

⁹ Such regimes are often referred to as "partial democracies." According to Epstein et al. (2006) these are regimes which possess some (but not all) properties of full democracies. They also are sometimes called "young" or "immature" democracies as they are typically newly created and later either evolve to established, consolidated democracies or return back to authoritarian types of government. These regimes usually have elections, but the competitiveness and fairness of these elections is questionable at best.

government and its head, Vladimir Putin.¹⁰ In October 1999, the most popular party was the opposition party called OVR (“Fatherland – All Russia”), which had centrist ideology and based its campaign on criticizing the government. It was created in August 1999 from a coalition of the existing parties “Fartherland” and “All Russia.” According to polls two months before the elections, OVR was expected to get 29% and KPRF (the Communist Party) 21% of the total vote.¹¹ The results of the December 1999 election were sharply different from these forecasts: KPRF was first with 24.3%, pro-government “Unity” second with 23.3%, and the main opposition party, OVR third with only 13.3%.¹² The other three parties that overcame the 5% electoral threshold were liberal SPS and Yabloko, and nationalistic LDPR (8.5%, 5.9%, and 6.0%, respectively).

Mass Media

What accounts for the change in voter preferences which happened in the fall of 1999? Colton and MacFaul (2003) conjecture that a skilled PR campaign with the massive support of state-owned TV channels caused this “reversal of fortunes.” Indeed, during the electoral campaign of 1999, television played a very important role in dissemination of political information to the population: according to a representative survey of Russia’s voters, 89% said that television was their “basic source of information about political events,” compared with 8% of the population who named radio, and 3% who named newspapers (Colton and McFaul 2003; see also White and Oates 2003).

There were three major national TV channels in 1999 that broadcasted political news. The state controlled the two main channels, ORT and RTR. The third major channel, NTV (“Independent TV”), was a commercial network owned by Vladimir Gusinsky, a tycoon who was not close to Yeltsin or Putin.¹³

The broadcast of political news on all major national channels was unbalanced: both state-owned channels were biased towards pro-government Unity, while NTV was biased towards opposition OVR.¹⁴ The political news coverage on both state-controlled channels was uneven both in terms of the amount of time allocated to different parties and the content of

¹⁰ The leader of “Unity,” Sergei Shoigu, then the minister of emergency situations, said about the ideology of the newly created movement: “We do not bind ourselves to any narrow ideological direction. We are not ‘centrists’, ‘rightists’, or ‘leftists.’ We are a party of consolidation of all healthy forces in society, free of ideological bias.” Here “healthy forces” meant support of Putin’s government and Putin himself. Source: *Nezavisimaya Gazeta*, December 8, 1999, as cited in Colton and MacFaul (2003).

¹¹ Foundation “Obschestvennoe mnenie,” 20.10.1999 http://bd.fom.ru/report/cat/policy/party_rating/o907003

¹² It is worth noting that after one and a half years, in April 2001, “Unity” and OVR, former fierce competitors, united to create “United Russia” party, which became the main “party of power” in Russia for the 2003 and 2007 elections.

¹³ The other three TV channels with national status were either much smaller as “TV-Tsentr” and “TV-6” or did not cover politics as “Cultura.”

¹⁴ The political biases of the media channels were inferred by the Institute of the European Media based on a content analysis (Oates, 2000).

broadcasted messages. The content of NTV programs was sharply different from that of the state-controlled TV channels. NTV programs criticized the Putin government, supported the main opposition party, OVR, and were friendly to liberal pro-reform parties, SPS and Yabloko. Despite the fact that many analysts found its coverage to be more fair, as compared with other channels, it was substantially biased in favor of the opposition.¹⁵

NTV availability

The broadcasting infrastructure in Russia was largely inherited from the Soviet era. The two state channels, ORT and RTR, were the successors to the two main Soviet channels accessible to almost 100% of the population. NTV channel was created in 1993 as a small, privately owned news channel. At the end of 1996 it was granted the whole broadcasting infrastructure of the national educational channel which ceased to exist at that time. To a small extent, NTV expanded the area that could receive its signal between 1996 and 1999, but the availability of the signal in 1999 was still primarily based on the inherited infrastructure. This increase in the area covered by the NTV signal was determined primarily by the availability of transmitters whereas the choice of location for the channel's transmitters was driven by the whims of the Soviet central planning system rather than by any strategic considerations.¹⁶ According to summary statistics (presented in Table 1), as one would expect, in 1999 the channel was more frequently available in populous, educated, urban areas with developed infrastructure.

In 1999, approximately two thirds of Russia's population could watch NTV. Thus, one third of voters located in parts of the country where NTV was not accessible were treated with one-sided media coverage (by state channels, ORT and RTR), while the two thirds of voters in the other parts of the country that had access to NTV could receive media coverage from both sides of the political struggle.¹⁷

4. Empirical hypotheses and the data

Hypotheses

In 1999 a substantial part of Russia's population did not have access to any news source other than the official pro-government channel, which provided strongly biased coverage of

¹⁵ One of the two state channels, ORT, positively covered Unity 28% of the time and its party leader Shoigu 19% of the time, with OVR and Luzhkov getting extremely negative coverage 9% and 4% of the time, respectively (Oates 2000, 2006). The other state channel, RTR, covered Unity 24% of the time, and OVR 13% of the time, in addition to the heavy coverage of Unity leader Shoigu and Prime Minister Putin (Oates 2000). NTV covered OVR 33% of a time and Unity only 5% of a time.

¹⁶ Source: authors' interview with the former anchor and general director of NTV, Evgeny Kiselev.

¹⁷ NTV had a satellite transmission that was available in all the Russian territory, but the share of population using this service was minuscule (at the beginning of 2000 there were only 110,000 subscribers – less than 1% of voters).

electoral campaign. As the availability of a source of information with a bias in the opposite direction can prove to be extremely important in shaping political views of electorate, we expect to find a large effect of the availability of NTV on voting behavior.

The main hypothesis is that there is a significant positive effect of the availability of NTV on voting for all parties that were supported by NTV (centrist opposition, OVR, and liberal opposition, Yabloko and SPS) and a significant negative effect of NTV on the vote for pro-government Unity, which was criticized by NTV and praised by other national channels. We expect to see these effects both at the aggregate and individual level. For parties that got similar coverage by NTV and state TV channels (Communists, KPRF, and nationalists, LDPR), we expect to see no effect of NTV.

We also expect that the voting behavior of people who use alternative sources of information regarding political news (such as radio and newspapers) will be less influenced by the availability of NTV. Similarly, we expect that people who possess better political knowledge before the elections will be less influenced by NTV, since these people have stronger prior opinions regarding political parties and are less likely to be affected by any new information, including the one provided by NTV. In addition, groups of the population who have more time to watch TV, *e.g.*, the retired, are expected to be affected more by NTV's presence.

Data Sources

We use four primary sources of data. First, data on NTV signal availability for 1997 and 1999 are courtesy of the *Video International*, a major Russian media advertising company. Using these data, we created a subregion-level dummy variable *NTV*, which is equal to 1 if NTV was available in that subregion and 0 otherwise.¹⁸ There are no subregions with partial treatment. The availability is calculated by *Video International* based on the location of NTV transmitters. A subregion is assumed to have NTV if an NTV transmitter was located in this subregion. This measure is imperfect, since in subregions with no transmitters, one could receive the NTV signal from the neighboring subregions and, in some subregions with transmitters, a part of the subregion did not have the signal because of insufficient transmitter power or geographical obstacles (such as mountains). Despite these imperfections, the quality of the data as a proxy for measuring NTV audience was considered sufficiently high by a major advertising agency to set prices for advertisements on the channel based on this information. As we show below, *NTV* dummy is highly correlated with the proportion of people who report watching NTV.

¹⁸ In Russia, all 89 regions are divided into subregions, which are administrative districts, similar to counties in the United States. A typical subregion is an urban or rural area with a population of 200 to 300 thousand people.

Second, data on electoral outcomes are from the Central Election Commission of the Russian Federation. Specifically, we use the data on voting results and turnout at the level of electoral districts (officially, Local Electoral Commissions) for the party-list voting in the Duma elections of 1995, 1999, and 2003. If needed, we aggregated votes from different electoral districts to get voting results at the subregional level.¹⁹

Third, we use data on socioeconomic conditions of subregions for the year 1998 from Rosstat, the official Russian statistical agency. As socioeconomic controls for the aggregate level of analysis, we use the following variables: logarithm of population, population change, migration rate, log of average wage, average pension, fraction of retired people, fraction of unemployed, number of people employed in farms, and crime rate.

Finally, we use data from a representative multiregional survey of voters from Colton (2000) and Colton and McFaul (2003). The survey is a large-scale panel survey of the Russian electorate held before the 1999 parliamentary elections, after the 1999 parliamentary elections, and after the 2000 presidential elections, conducted by the Institute of Sociology of the Russian Academy of Sciences. The nationally representative panel consists of 1783 respondents from 41 subregions in 28 regions. The survey instruments included questions on respondents' socio-demographic characteristics, political preferences, and the sources of political information. In particular, respondents reported what TV channels and programs they watched. Based on these questions, we construct an individual-level dummy (*Watches_NTV*) equal to 1 if the respondent watched either daily news or weekly news magazine on NTV "almost every day" or "from time to time."

Summary Statistics

Aggregate-level data

Our dataset contains 425 subregions with NTV signal and 1682 subregions without NTV signal. In 1999, the NTV signal was available in 20% of the subregions and 52% of the population. Summary statistics for socio-economic characteristics of subregions with and without NTV signal are presented in Table 1 along with summary statistics for the election results in 1995 and 1999. Subregions with higher population and higher income were more likely to get the NTV signal. For the other control variables, the availability of the NTV signal was not significantly affected by observables. The map of NTV availability is given in Figure 1. The figure illustrates that the NTV signal was more or less evenly dispersed throughout the country, with the exception of a higher density of subregions with NTV around very big cities like

¹⁹ There were 2724 Local Electoral Commissions ("*Territorialnye Izbiratelnye Komissii*") during the 1999 Parliamentary elections. For the vast majority of subregions, they coincide with electoral districts; but some large subregions (typically, bigger cities) are divided into several electoral districts.

Moscow and lower density of subregions with NTV in low-populated areas in Siberia. We exclude Moscow and St. Petersburg from the sample because they are clear outliers in the individual-level analysis and because there is no variation in NTV signal within these metropolitan areas, which have the status of regions, whereas our main specification includes regional fixed effects.

Election results are different in subregions with and without NTV both in 1995 and 1999. This comparison, however, is based on the unconditional means and does not take into account socio-economic differences among subregions and regional fixed effects. Below we present evidence that election results in 1995 are the same and election results in 1999 are vastly different for subregions with and without NTV once differences among subregions are accounted for, to show that *a priori* political preferences of electorate do not systematically differ for subregions with and without NTV.

Individual-level data

Table 2 summarizes the individual-level survey data. The first row of the table shows that the *NTV* dummy (which indicates availability of the NTV signal in a subregion) is an important, though not perfect, predictor of whether people located in this subregion report watching NTV. 69% of respondents reported that they watch NTV in subregions coded as having the NTV signal and 49% of respondents reported that they watched NTV in subregions without the NTV signal (the difference is statistically significant). Why do people report watching NTV in subregions coded as not having NTV signal? There are several potential explanations. First, our measure of NTV signal availability is based on the existence of a transmitter in a given subregion, and, therefore, is imprecise. Second, some people receive satellite NTV signal. However, because of the very small number of satellite subscribers, satellite transmission cannot fully explain the discrepancy between individual data on watching NTV and subregional data on NTV signal availability. Third, TV receivers available to the population are of varying quality. Some people had high-quality antennas or signal amplifiers which allowed viewers to see NTV even if the signal was weak. Finally, a measurement error might also be an explanation.

5. Aggregate-level results

In order to test whether the presence of the NTV signal had an effect on aggregate voting outcomes in 1999 elections, we estimate the following model:

$$vote_{i,1999}^j = \beta_0 + \beta_1 NTV_{i,1999} + \beta_2' X_{i,1995} + \beta_3' S_{i,1998} + \delta_r + \varepsilon_{ij},$$

where i indexes subregions, $vote_{i,1999}^j$ is the percent of votes for party j at the 1999 Duma elections in subregion i , $NTV_{i,1999}$ is a dummy variable for the presence of NTV signal in

subregion i in 1999, $X_{i,1995}$ is a vector of electoral outcomes in 1995 elections, $S_{i,1998}$ is a set of socio-economic characteristics of subregion i before the 1999 elections, and δ_r are regional fixed effects.

Table 3 presents regression results for the vote for major parties and voter turnout.²⁰ The vote for Unity, the pro-government party opposed by NTV, was significantly smaller in NTV subregions than in non-NTV subregions. The magnitude of the effect is large: the availability of the NTV signal in a subregion decreased the vote for Unity by approximately 2.5 percentage points.²¹ This result is consistent with the hypothesis that NTV was a successful counterweight to the pro-government and pro-Unity propaganda broadcast by the two main state channels. The effect of the NTV signal on the combined vote for all three opposition parties, supported by this channel, is significantly positive. The effect of NTV on the vote for OVR is weaker than its effect on the vote for liberal parties (SPS and Yabloko). NTV signal increased the vote for OVR by 0.6 percentage points and for the two liberal parties by 1.6 percentage points.

The aggregate size of the effect (-2.5 percentage points for Unity and comparable +2.1 percentage points for three opposition parties combined) amounts to a change of one tenth of the vote received by these parties as a result of the NTV broadcast. This effect is notably greater than the effect of Fox News (0.5 percentage points) observed by DellaVigna and Kaplan (2007) in the U.S. In addition, Fox News in 2000 was available to 34% of U.S. population, while NTV was available to 66% of Russian population, which implies that the aggregate effect of NTV on the results of the elections at the national level is even stronger. Note, however, that this comparison should be taken with caution, as it is difficult to compare the extent of the media bias in Russia and in the U.S.

We find no significant effect of NTV signal for the two parties which got the same coverage by NTV and the state channels, Communist KPRF and nationalist LDPR. This is consistent with the assumption about the similarity of NTV and non-NTV subregions conditional on observables which we tested formally in the next section. There is also no significant effect of NTV signal on the turnout after controlling for the 1995 election results.

Our findings on the aggregate level data can be summarized as follows. The presence of NTV signal affected the vote for the parties which were covered differently by NTV and the two state channels. The sum of the positive effects on the vote for the three parties supported by NTV is approximately equal to the negative effect on the vote for the pro-government party Unity

²⁰ For brevity we combine votes for the two liberal parties, Yabloko and SPS. The results are similar if we analyze vote for these two parties separately.

²¹ Regressions presented in Table 3 put equal weight on all subregions. We have also estimated regressions weighted by subregional population; the size and statistical significance of the coefficients of interest are robust to such weighting (not reported).

criticized by NTV. Probably, as a consequence, we find no effect of NTV on turnout. This suggests that voters persuaded by the state channels to vote for Unity came from the electorate of these three parties, rather than from the electorate of smaller parties or politically inactive groups of the population who, otherwise, would not have voted.

Checking the validity of the instrument

The key identifying assumption in our analysis is that the availability of NTV, controlling for observable characteristics of subregions, is uncorrelated with political preferences of voters other than through the effect of NTV. There are two potential reasons why this assumption may not hold. First, there might be reverse causality, as subregions with certain political preferences could be more likely to receive NTV. Second, there may have been some omitted characteristics of subregions that correlated both with the presence of the NTV signal and political preferences of the population. To test the validity of our main assumption, we conduct several checks.

First, we examine whether the results of the previous parliamentary elections are correlated with NTV coverage in 1999 once we control for observables. If the availability of NTV is not correlated with pre-existing political preferences, which presumably persist over time, then voting outcomes in 1995 should not be correlated with the availability of NTV in 1999. Table 4 presents results of regressions in which a dummy for having NTV signal in a subregion is regressed on voting results in 1995 and subregional characteristics. Without additional controls (columns 1 and 2), the availability of the NTV signal is significantly correlated with past vote choices. Columns 3 and 4, however, show that after controlling for such observable characteristics as population, education, and average wage, the presence of NTV is no longer significantly linked to voting outcomes in 1995. This is true both with and without controlling for the availability of NTV in the beginning of 1997. Once socio-economic controls are included, the joint significance of electoral variables sharply decreases (in columns 3 and 4, F-statistics for electoral controls are not significant even at 10% level, while F-statistics for socio-economic controls are significant at 1% level).

Second, we conduct a placebo experiment. We exploit the fact that political coverage of NTV was different from all other national channels only during the parliamentary elections of 1999, but was the same for all TV channels during the elections of 1995 and 2003. In 1995, NTV frequency and infrastructure still belonged to the national educational TV channel which did not cover politics. In 2003, after NTV was taken over by state monopoly Gazprom, the news coverage of the channel was no longer different from that of other national channels.

Tables 5 and 6 report the results of estimating the effect of NTV availability in 1999 on the voting results of parliamentary elections in 1995 and 2003, respectively. The coefficients for

NTV availability are small in size and statistically insignificant for all major parties and voter turnout for 1995 and 2003. There is only one exception: a small (much smaller than in 1999) but positive and significant effect of the NTV signal availability in 1999 on the vote for the liberal parties in 2003. It is important to note that, despite the fact that during the 2003 electoral campaign, political coverage of NTV was similar to the other major TV channels, the difference in the voting patterns in the 1999 elections could persist till 2003. Consistent with this explanation the effect becomes insignificant once we control for voting results in 1999.

Another potential alternative explanation of our results is that the soviet educational channel, whose broadcasting infrastructure was inherited by NTV, had a lasting effect on the education of population, and therefore, NTV is a proxy for the level of education which, in turn, has an effect on voting behavior. We cannot directly control for education level of population at the aggregate level as there are no such data for subregions. There are, however, two reasons to believe that this is not what is driving our results. First, if the former educational channel were important, one would expect it to affect vote choices in 1995 and 2003 elections in addition to 1999 elections; and this is not the case. Second, individual-level results in which we control for the level of education of voters (presented below) are similar to the aggregate-level results. Furthermore, education of the voter does not affect the likelihood of voting for OVR or Unity during the 1999 elections, although it does affect the vote for liberal parties.

6. Individual-level results

The analysis of individual-level data adds to the aggregate-level results in the following important respects. First, it allows us to estimate the persuasion effect of NTV controlling for individual characteristics. Second, it gives us an opportunity to examine the mechanism of the NTV effect. In particular, we look separately at the effect of NTV on the voting decisions of undecided voters and those voters who had well-defined voting intentions during the pre-election survey. We also examine how the effect of NTV depends on individual characteristics of voters.

Our basic model to estimate the effect of watching NTV on the reported vote is the following probit model:

$$\Pr(\text{vote}_{i,1999}^j = 1) = \Phi(\beta_0 + \beta_1 \text{WatchesNTV}_{i,1999} + \beta_2' X_{i,1995} + \varepsilon_{ij}) \quad (2)$$

where i indexes individual respondents and j indexes parties. Dummy variable $\text{vote}_{i,1999}^j$ equals 1 if respondent i reported voting for party j and zero if the respondent reported voting for some other party. $\text{WatchesNTV}_{i,1999}$ equals 1 if the respondent i reported watching news programs on NTV in 1999 and zero otherwise. $X_{i,1995}$ is a set of individual and subregional level

characteristics.²² Since self-reported measure of media exposure (i.e., $WatchesNTV_{i,1999}$) is subject to significant reporting biases and may be endogenous to vote choice (Price and Zaler 1993, Prior 2007), one cannot consistently estimate the effect of watching NTV without a source of exogenous variation. To cope with this problem we instrument reported exposure to NTV programs by our measure of the geographical availability of NTV signal. Thus, $WatchesNTV_{i,1999}$ is instrumented by the availability of the NTV signal in the home subregion of individual i .

Table 7 presents the results of the first stage regressions for two specifications: controlling and not controlling for voting intention before 1999 elections. In both specifications, the availability of the NTV signal is a strong predictor for the respondents' exposure to NTV programs (F-statistics for the excluded instrument is 21.9 without the controls for voting intention and 7.26 with the controls for voting intentions).

Table 8 presents the results of the second stage regressions. The coefficients on our main variable of interest, $WatchesNTV_{i,1999}$, in the second stage are the estimates of the causal effect of watching NTV on the reported vote for a particular party. There is a significant effect of watching NTV on the reported vote for the main opposition party supported by NTV (OVR) and the pro-government party opposed by NTV (Unity). Marginal effects imply that survey respondents who watched NTV were 49 percentage points more likely to vote for OVR, and 42 percentage points less likely to vote for Unity. The coefficients of interest for votes for other parties and election turnout are insignificant.

Note that individual-level results presented in Table 8 differ from the aggregate-level results presented in Table 3 in several important respects. First, the results for the effect of watching NTV on the reported vote for OVR and Unity are substantially larger in magnitude than aggregate-level (reduced form) effects of the NTV signal on official voting results. Second, in the aggregate-level results, the effect of the NTV signal on the actual vote for the main opposition party, OVR, is the smallest in magnitude, whereas in the individual-level analysis the marginal effect of NTV on the reported vote for OVR is the largest. Third, in contrast to the aggregate-level results, using the survey data, we find that the reported vote for the liberal parties was not significantly affected by watching NTV. There are several potential methodological explanations for these discrepancies between the aggregate- and individual-level results:

(1) Most importantly, the individual-level results represent the local average treatment effect (Imbens and Angrist, 1994), *i.e.*, the effect of watching NTV only on those people who

²² Individual social and demographic characteristics include: sex, age, marital status, dummy for ethnic Russian, education (dummy for college education or higher), religiosity (answer to the question: Do you attend regularly religious services?), dummy for former membership in CPSU, and consumption index. We follow Colton and McFaul (2003) to construct the consumption index as the sum of the answers to the following consumption questions: Do you own a car? A dacha (summer home)? A computer? A phone? An automatic washing machine? Do you have Internet access? Have you ever been abroad?

watched NTV just because it was available, in other words, only for those individuals whose viewing habits were affected by the availability of NTV. It is reasonable to expect that the effect of NTV for this particular group of people is higher than for the average for the whole population, which may explain the difference in the magnitudes of the effects.

(2) In contrast to the aggregate-level analysis, in the individual-level regressions we cannot control for regional fixed effects as the survey typically was administered in only one subregion of each region, so that there is no within-region variation of NTV availability in the individual-level sample. Unobserved regional variation is likely to play an important role, since there is a substantial difference in ethnic, religious, economic, and political characteristics among Russia's regions. For example, most regional governors were active supporters of either the main opposition party, OVR, or the government-supported party. Thus, the political preferences of the governor could have had a noticeable effect on the outcome of the election in the respective region and on the preferences of the regional population over which TV channels to view. The comparison of the aggregate-level results with and without regional fixed effects (results are not reported) indicates that the omission of regional fixed effects leads to a twofold increase in the estimated effect of the NTV signal on the vote for OVR and a fourfold increase in the effect on the vote for Unity. Therefore, omitting regional fixed effects can explain some differences in magnitude between aggregate and individual level results.

(3) Since the individual-level data are available only for a subsample of regions, one should worry about whether the sample of regions is representative, as the survey designers claim. To verify the representativeness of the survey data, we checked that aggregate-level results for the subsample of regions where survey data were collected are quantitatively very similar to the results for the whole sample.

In Tables 9 and 10, we report the results of our investigation of the mechanisms behind the NTV influence on political persuasion. In Table 10, we decompose the effect of NTV into the effect on those voters who had formulated some voting intentions before the 1999 elections and on undecided voters (*i.e.*, those voters who did not answer which party they were going to vote for in the pre-election survey, but answered which party they voted for in the post-election survey). The results indicate that even after we control for voters' intention to vote just a month before the election, the exposure to NTV made people 51 percentage points more likely to vote for OVR, the main opposition party supported by NTV. In contrast, for government-supported Unity, the similar result, controlling for pre-election voting intentions, is insignificant. Whereas, for the subsample of undecided voters, the effect of NTV on the vote for Unity is large and significant at 1% level. The marginal effect implies that the exposure to NTV made undecided viewers 47 percentage points less likely to vote for Unity.

Finally, we investigate how the effect of watching NTV on the reported vote depends on individual characteristics of respondents. We focus only on the effect of NTV on the reported vote for OVR and Unity, the main parties for which NTV affected individual votes in our data. Table 10 presents the results of this analysis.²³ First, we look at how the effect of NTV depends on whether respondents use other sources of political information. Results indicate that the effect of NTV on the vote for OVR and Unity is lower for people who read political articles in newspapers (columns 1 and 2). However, the effect is the same for people who receive political information from radio (columns 3 and 4). This difference can be explained by the fact that on most radios the coverage of political news is very short and superfluous, whereas newspaper articles are usually more informative. As a result, only information received from newspapers serves as a real alternative to the information received from TV.

Columns 5 and 6 explore the effect of political knowledge which the respondents possess prior to elections.²⁴ The effect of NTV on the vote for OVR was smaller for people with a high level of prior political knowledge. The effect on the vote for Unity is also smaller for the respondents with a high level of political knowledge, but not statistically significant. These results are also consistent with our hypothesis that people who have better political knowledge and thus stronger prior opinions are less influenced by mass media.

The results in columns 1-6 cannot be unambiguously interpreted as the evidence of causal relationship, since the fact that a person uses alternative sources of political information or has better political knowledge is itself endogenous. They do, however, provide suggestive evidence consistent with the premise that people with access to additional sources of information are more difficult to persuade.

Next we examine how the effect of NTV depends on such individual characteristics as education, age, and whether a person is retired. The results are presented in the last six columns of Table 10. There is some evidence that the effect of NTV on the vote for OVR was smaller for people who have finished high school, although there is no significant effect for the vote for Unity. The results also indicate that the effect of NTV on the vote for OVR was significantly stronger for both older and retired voters. The likely reason for such an effect is that older and especially retired people in Russia tend to watch more TV and, as a result, the effect of NTV for

²³ We report the results of the reduced-form model in which we use dummy variable for the availability of NTV as a regressor instead of using it as an instrument since we could not achieve convergence in the instrumented regressions. The reason for this seems to be the binary nature of both our measure of NTV availability and individual characteristics used in the interaction term. The first stage for the interaction term in instrumental regressions can not be robustly estimated.

²⁴ Political knowledge is measured as the number of correct answers to ten questions that inquired about the office that a certain politician occupied and the identity of recent prime ministers.

them is stronger. Note that our data indicates that older and retired people are less likely to switch their vote from their intended vote prior to the election.

In sum, the results for the individual preferences over major political parties are consistent with those for the aggregate level data. IV regressions show that the effect of exposure to NTV on the vote for OVR was positive, and the effect of exposure to NTV on the vote for Unity was negative. NTV was able to affect the vote choice even during only one month of political campaign before the elections. Voters were 51 percentage points more likely to vote for OVR if they were exposed to NTV even controlling for their voting intentions just a month before the elections. Also, undecided voters were 47 percentage points less likely to vote for Unity if they watched NTV. Prior political knowledge and exposure to alternative sources of political news decreased the persuasion effect of NTV, whereas the extent of the exposure (proxied by retirement) increased the persuasion effect of NTV.

7. Conclusions

In this paper, we document the effects of media on voting outcomes in Russia's parliamentary elections of 1999. We base our identification on the variation in the geographical availability of NTV, the only major TV channel which at that time was independent from the government. This allows us to isolate the effect of exposure to media on voting behavior and to avoid endogeneity biases inherent in survey-based studies. At the aggregate level of analysis, we find that the effect of NTV was positive and significant for three parties supported by NTV. Together, these parties got 2.1 percentage points more votes in an average subregion with the NTV signal. This amounts to an additional one tenth of the combined vote received by these parties as a result of the NTV broadcast. At the same time, pro-government Unity party got 2.5 percentage points fewer votes in an average subregion with the NTV signal. This amounts to a total loss of about one tenth in the total vote received by the pro-government party.

Using survey data, we find that even controlling for the voting intentions just a month before the elections, NTV had a substantial effect on the vote for the major opposition party supported by NTV. Thus, NTV was able to persuade its viewers to vote for this party despite their initial voting intentions just before the elections. We also find that NTV prevented undecided voters from voting for the pro-government party criticized by NTV. Finally, we show that reading newspapers, better political knowledge, and higher education decreased the size of the NTV effect and that the effect of NTV was larger for retired individuals who watch more TV.

Our results suggest that the media possesses a substantial power of political persuasion in countries characterized by weak democratic institutions such as Russia. By comparing our results

with other findings in the literature, we conclude that the power of political persuasion of the media can be much larger in environments with weak democratic institutions than in established democracies. It would be too quick, however, to conclude that it is the case in any imperfect democracy or any other country at a similar stage of institutional development. Media effects in Russia are large due to the combination of such factors as the unstable party system, weak partisan attachments, the lack of prior information about the performance of politicians in office, unclear policy positions, the importance of valence or candidates' individual traits, and the lack of competitiveness in the media market. We expect media effects to be large in countries with all these conditions in place. Further research is needed to estimate the relative importance of these conditions and the magnitudes of media effects in other countries.

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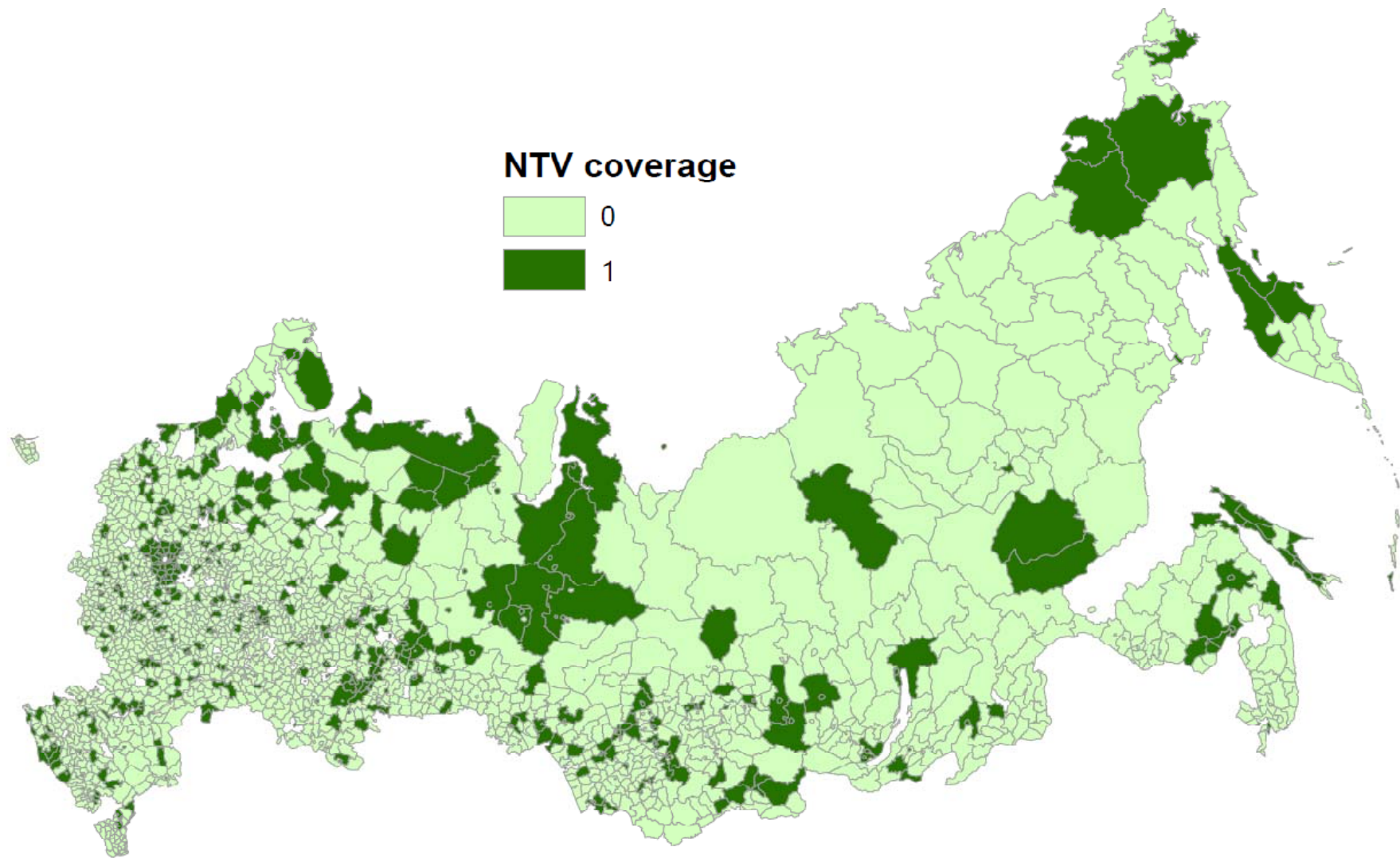


Figure 1. NTV signal availability in 1999 by subregion.

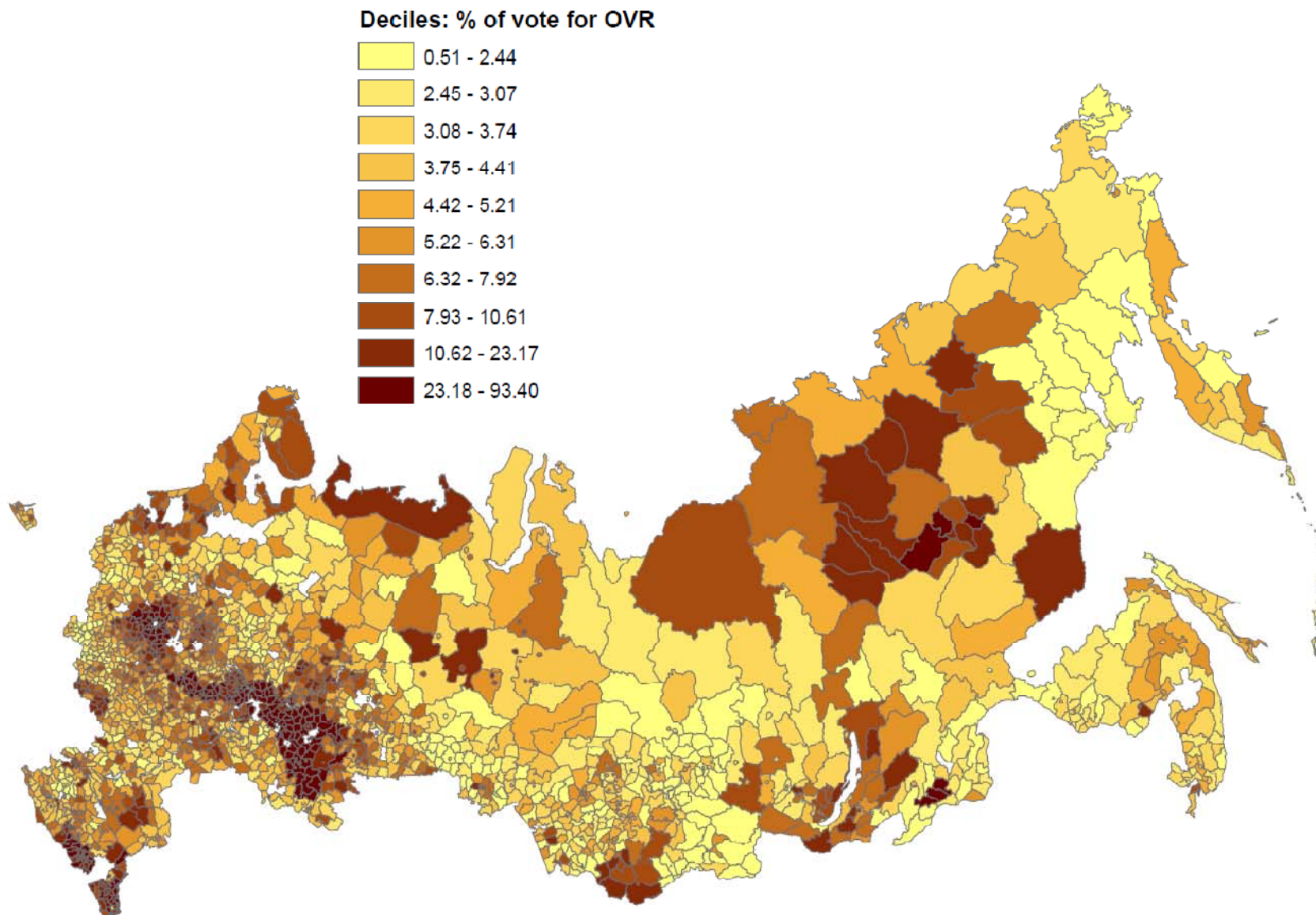


Figure 2. Vote for OVR (main centrist opposition party supported by NTV) by subregions, Russian parliamentary elections, 1999.

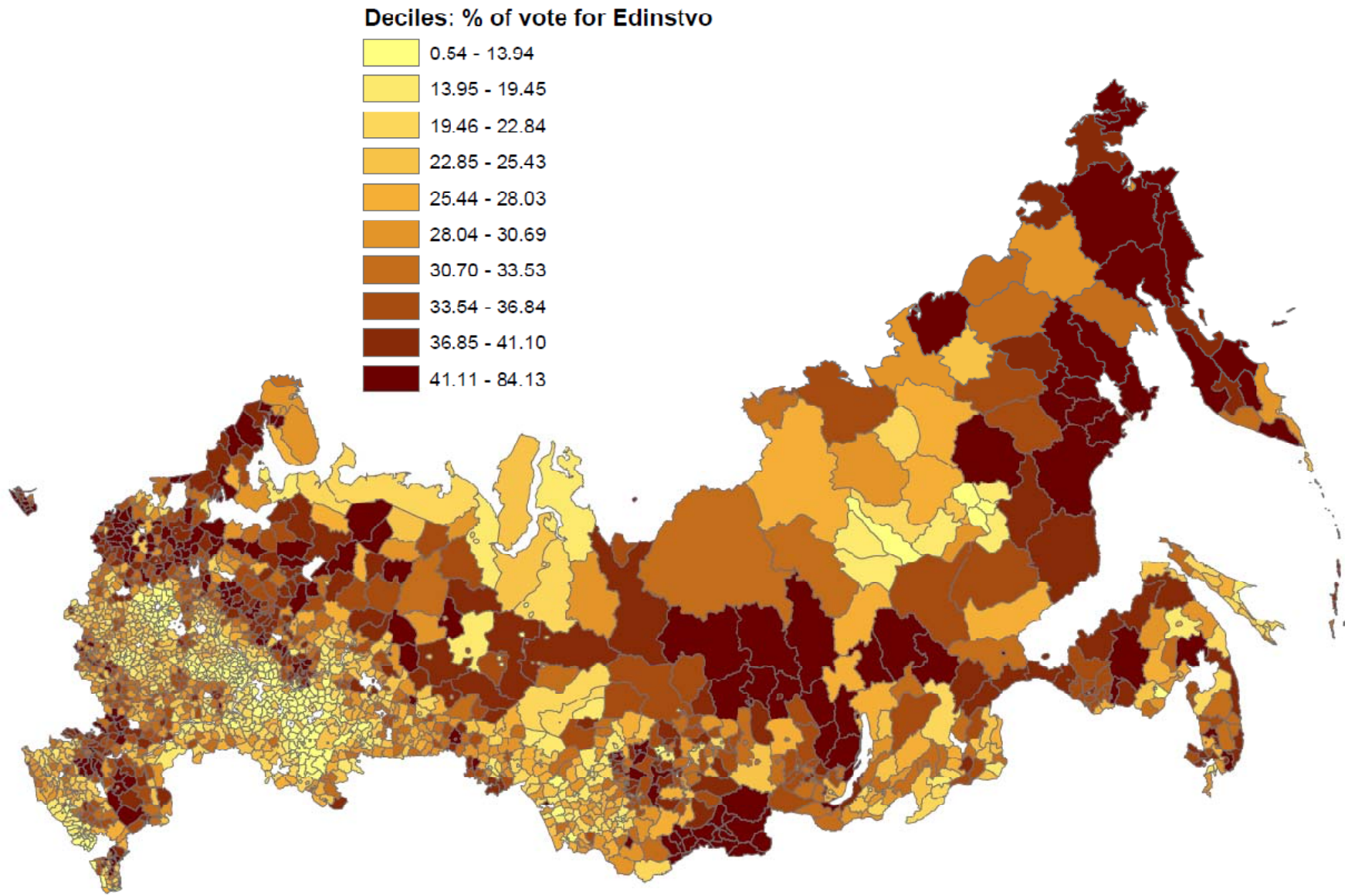


Figure 3. Vote for Unity (pro-government party opposed by NTV) by subregions, Russian parliamentary elections, 1999.

Table 1. Summary statistics, socio-economic characteristics of subregions with and without NTV signal

	NTV=0			NTV=1			p-value of difference	Official Results of Elections
	Mean	St. dev.	Obs.	Mean	St. dev.	Obs.		
Socio-economic characteristics								
Population, thousands	35.68	32.98	1617	134.75	219.62	468	0.000***	
Population change	-0.28	2.27	1617	-0.33	2.64	468	0.711	
Migration rate, %	-0.06	1.26	1617	0.06	1.28	468	0.067*	
Average wage, thousands of rubles	749.53	512.32	1629	1112.10	778.16	466	0.000***	
Average pension, thousands of rubles	394.40	63.27	1486	417.78	70.54	435	0.000***	
Retired, %	25.76	10.61	1614	24.18	10.71	467	0.005***	
Unemployed, %	1.80	1.81	1617	1.77	1.62	468	0.724	
Population employed in farms, %	0.23	1.50	1617	0.31	1.87	468	0.412	
Crime rate, per 10000	163.48	223.05	1617	165.34	191.27	468	0.858	
Vote in parliamentary elections in Duma, 1995								
Vote for KPRF (communist), %	26.49	12.07	1503	23.10	10.99	445	0.000***	22.30
Vote for LDPR (nationalist), %	13.84	6.33	1503	12.15	5.81	445	0.000***	11.18
Vote for NDR (pro-government), %	8.18	8.77	1503	9.36	5.62	445	0.001***	10.13
Vote for Yabloko (liberal), %	2.96	2.64	1503	5.60	3.86	445	0.000***	6.89
Democratic Russia's Choice (liberal), %	1.60	2.63	1503	2.89	2.96	445	0.000***	3.86
Voter turnout, %	70.33	8.53	1503	64.40	7.89	445	0.000***	64.38
Vote in parliamentary elections in Duma, 1999								
Vote for Unity (centrist, pro-government), %	29.17	10.95	1792	24.10	10.88	531	0.000***	23.32
Vote for OVR (centrist, opposition), %	9.62	14.59	1792	11.34	11.99	531	0.006***	13.33
Vote for SPS (liberal), %	4.61	3.94	1792	7.59	3.83	531	0.000***	8.52
Vote for Yabloko (liberal), %	2.60	2.10	1792	5.84	3.35	531	0.000***	5.93
Vote for KPRF (communist), %	28.23	10.91	1792	24.48	9.50	531	0.000***	24.29
Vote for LDPR (nationalist), %	7.24	3.17	1792	6.75	2.67	531	0.000***	5.98
Voter turnout, %	63.98	9.85	1792	58.82	7.63	531	0.000***	61.85
Vote in parliamentary elections in Duma, 2003								
Vote for United Russia (centrist, pro-government), %	0.42	0.14	1768	0.39	0.11	510	0.000***	37.57
Vote for APR (Agrarian Party of Russia), %	0.06	0.06	1768	0.04	0.04	510	0.000***	3.64
Vote for SPS (Liberal), %	0.02	0.02	1768	0.03	0.02	510	0.000***	3.97
Vote for Yabloko (Liberal), %	0.02	0.01	1768	0.04	0.02	510	0.000***	4.30
Vote for KPRF (communist), %	0.14	0.06	1768	0.12	0.05	510	0.000***	12.61
Vote for LDPR (nationalist), %	0.12	0.05	1768	0.13	0.04	510	0.057*	11.45
Voter turnout, %	0.61	0.12	1768	0.55	0.10	510	0.000***	55.75

Table 2. Summary statistics. Intention to vote and reported vote, December 1999 Duma elections.

	Mean	Obs.	Mean	Obs.	p-value of difference
	NIV=0		NIV=1		
Watches NTV	0.49	678	0.69	751	0.004***
Intention to vote for OVR (centrist, opposition)	0.08	433	0.16	536	0.000***
Intention to vote for Unity (centrist, pro-government)	0.12	433	0.10	536	0.440
Intention to vote for SPS (liberal)	0.08	433	0.07	536	0.670
Intention to vote for Yabloko (liberal)	0.05	433	0.14	536	0.000***
Intention to vote for KPRF (communist)	0.42	433	0.23	536	0.000***
Intention to vote for LDPR (nationalist)	0.04	433	0.05	536	0.443
Intended to participate in elections	0.88	685	0.89	776	0.616
Vote for OVR (centrist, opposition)	0.07	572	0.11	586	0.059*
Vote for Unity (centrist, pro-government)	0.30	572	0.24	586	0.129
Vote for SPS (liberal)	0.05	572	0.14	586	0.002***
Vote for Yabloko (liberal)	0.04	572	0.08	586	0.022**
Vote for KPRF (communist)	0.39	572	0.25	586	0.001***
Vote for LDPR (nationalist)	0.04	572	0.04	586	0.730
Turnout	0.81	730	0.79	786	0.423
Male	0.38	753	0.40	822	0.565
Age	47.90	753	28.89	822	0.402
Finished high school	0.74	751	0.81	819	0.023**
Married	0.70	752	0.63	818	0.049**
Consumption index	1.38	743	1.64	812	0.041**
Political knowledge	6.64	753	6.49	822	0.179
Reads newspapers	0.31	753	0.27	822	0.084*
Listens to radio	0.31	753	0.39	822	0.004***

* significant at 10%; ** significant at 5%; *** significant at 1%.

Survey weights, designed to make the sample nationally representative, are used to construct this table.

Table 3. Effect of NTV on voting behavior, aggregate data

	Opposed by NTV		Supported by NTV			
	Vote for Unity (centrist, pro-government)		Vote for OVR (centrist, opposition)		Vote for SPS and Yabloko (liberal parties)	
NTV1999	-2.577 [0.5103]***	-2.5198 [0.5260]***	0.5457 [0.2382]**	0.5726 [0.2497]**	1.8154 [0.2622]***	1.5691 [0.2322]***
Electoral controls from 1995	No	Yes	No	Yes	No	Yes
Socioeconomic controls	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1869	1568	1869	1568	1869	1568
R-squared	0.67	0.68	0.79	0.82	0.76	0.84
Number of regions	80	78	80	78	80	78

	No bias by NTV				Voter turnout	
	Vote for KPRF (communist)		Vote for LDPR (nationalist)			
NTV1999	0.1081 [0.3761]	0.2368 [0.2979]	-0.1949 [0.1280]	-0.1867 [0.1142]	-0.6489 [0.3064]**	-0.4218 [0.2620]
Electoral controls from 1995	No	Yes	No	Yes	No	Yes
Socioeconomic controls	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1869	1568	1869	1568	1869	1568
R-squared	0.73	0.82	0.73	0.78	0.68	0.8
Number of regions	80	78	80	78	80	78

All variables are measured in percentages. Electoral controls include the results of Duma elections in December 1995, in particular vote for KPRF (Communists), vote for Yabloko, vote for NDR (Our Home is Russia), vote for LDPR (Liberal-Democratic Party of Russia), vote for Women of Russia, vote for Communists of USSR, vote for KRO (Congress of Russian Communities), vote for PST, vote for DVR (Democratic Russia's Choice), vote APR (Agrarian Party of Russia), vote "against all," voter turnout. The set of socioeconomic controls includes log of population, population change, migration rate, log of average wage, average pension, fraction of retired people, fraction of unemployed, number of people employed in farms, crime rate. We do not have electoral controls for Taymyrsky AO and Nenetsky AO for 1995, and this explains why specification with 1995 controls has 78 regions instead of 80. Robust standard errors clustered by region in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4. Correlates of availability of NTV signal in 1999.

	Availability of NTV signal in 1999 (0 or 1)			
	(1)	(2)	(3)	(4)
Vote for KPRF (Communists) in 1995, %	0.001 [0.0026]	0.0006 [0.0021]	0.0009 [0.0027]	-0.0005 [0.0022]
Vote for LDPR (Nationalist) in 1995, %	-0.0009 [0.0032]	0.0005 [0.0025]	-0.0036 [0.0034]	-0.0018 [0.0026]
Vote for NDR (Pro-government) in 1995, %	0.0014 [0.0027]	0.0011 [0.0023]	-0.0005 [0.0029]	-0.0017 [0.0025]
Vote for Yabloko (Liberal) in 1995, %	0.0213 [0.0072]***	0.001 [0.0045]	-0.003 [0.0075]	-0.008 [0.0047]*
Vote for Women of Russia in 1995, %	-0.0053 [0.0074]	0.0036 [0.0052]	0.0057 [0.0092]	0.0064 [0.0066]
Vote for Communists of USSR in 1995, %	0.0027 [0.0051]	-0.0005 [0.0041]	0.0054 [0.0054]	0.0005 [0.0042]
Vote for KRO (Nationalist) in 1995, %	0.0199 [0.0079]**	0.0096 [0.0054]*	0.0101 [0.0083]	0.007 [0.0059]
Vote for PST (Centrist) in 1995, %	0.0281 [0.0100]***	0.0212 [0.0064]***	0.0103 [0.0104]	0.013 [0.0066]**
Democratic Russia's Choice (Liberal), %	0.0069 [0.0061]	0.0016 [0.0057]	-0.0022 [0.0065]	-0.0041 [0.0064]
Vote for APR (Agrarian Party of Russia) in 1995, %	-0.0019 [0.0027]	-0.0016 [0.0021]	0.0005 [0.0029]	-0.0022 [0.0023]
Vote against all in 1995, %	0.01 [0.0125]	0.0068 [0.0091]	0.0181 [0.0159]	0.0058 [0.0114]
Voter turnout in 1995, %	-0.0057 [0.0016]***	-0.0021 [0.0012]*	0.0007 [0.0019]	0.001 [0.0015]
Availability of NTV in 1997		0.745 [0.0229]***		0.7222 [0.0278]***
Ln (Population), 1998			0.2063 [0.0162]***	0.0715 [0.0139]***
Population change, 1998			-0.0058 [0.0053]	-0.001 [0.0018]
Migration rate, 1998			0.0025 [0.0090]	-0.0027 [0.0075]
Ln(Average wage), 1998			0.1383 [0.4385]	-0.1369 [0.2765]
Average pension, in thousands of rubles, 1998			0.0151 [0.0455]	0.0374 [0.0297]
Fraction of retired people, 1998			-0.0018 [0.0022]	-0.0015 [0.0012]
Fraction of unemployed, 1998			0.0115 [0.0078]	-0.0057 [0.0055]
Fraction of population employed in farms, 1998			0.0085 [0.0112]	-0.0004 [0.0062]
Crime rate, 1998			0.0001 [0.0001]	0.000 [0.0001]
Region fixed effects	Yes	Yes	Yes	Yes
Observations	1948	1948	1568	1568
R-squared	0.30	0.68	0.38	0.69
F-statistics, electoral variables	14.99	5.28	0.85	1.33
F-statistic, socioeconomic variables			20.15	4.56

Linear probability model. Robust standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. Size of the sample shrinks to 1568 in the last two specifications because of some missing socioeconomic data for subregions.

Table 5. Placebo regressions for the elections of 1995.

	Vote for NDR (pro-government)		Vote for Democratic Russia's choice (liberal)		Vote for Yabloko (liberal)	
N'TV1999	-0.3654 [0.3426]	-0.1368 [0.2292]	-0.2291 [0.3774]	-0.0499 [0.1657]	-0.0802 [0.1890]	0.0354 [0.1841]
Socioeconomic controls from 1996	Yes	No	Yes	No	Yes	No
Socioeconomic controls from 1998	No	Yes	No	Yes	No	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	848	1568	848	1568	848	1568
R-squared	0.58	0.59	0.56	0.59	0.75	0.77
Number of regions	46	78	46	78	46	78

	Vote for KPRF (communist)		Vote for LDPR (nationalist)		Voter turnout	
N'TV1999	-0.2961 [0.7046]	-0.017 [0.4892]	-0.0456 [0.4207]	-0.5115 [0.3425]	-0.7811 [0.8235]	0.0188 [0.5551]
Socioeconomic controls from 1996	Yes	No	Yes	No	Yes	No
Socioeconomic controls from 1998	No	Yes	No	Yes	No	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	848	1568	848	848	848	1568
R-squared	0.78	0.73	0.62	0.64	0.58	0.63
Number of regions	46	78	46	78	46	78

All variables are measured in percentages. The set of socioeconomic controls includes log of population, population change, migration rate, log of average wage, average pension, fraction of retired people, fraction of unemployed, number of people employed in farms, crime rate. Unfortunately, the data on socioeconomic characteristics of subregions prior to 1996 is not available, and the coverage for 1996 is very limited. For this reason we report the results controlling for the characteristics both in 1996 and in 1998. The tables shows that the coefficients for N'TV remain insignificant regardless of the set of controls we use. Robust standard errors clustered by region in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 6. Placebo regressions for the elections of 2003.

	Vote for United Russia (pro-government, centrist, formed as the alliance of OVR and Unity)		Vote for APR (agrarian)		Vote for SPS and Yabloko (liberal parties)	
NTV1999	-0.0002	0.0074	-0.0008	0.0013	0.0052	-0.0015
	[0.0060]	[0.0061]	[0.0022]	[0.0021]	[0.0018]***	[0.0013]
Electoral controls from 1999	No	Yes	No	Yes	No	Yes
Socioeconomic controls from 1998	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1833	1833	1833	1833	1833	1833
R-squared	0.72	0.78	0.66	0.68	0.66	0.77
Number of regions	80	80	80	80	80	80

	Vote for KPRF (communist)		Vote for LDPR (nationalist)		Voter turnout	
NTV1999	-0.0041	-0.0034	-0.0035	-0.0006	-0.0028	0.0023
	[0.0030]	[0.0029]	[0.0022]	[0.0017]	[0.0042]	[0.0038]
Electoral controls from 1999	No	Yes	No	Yes	No	Yes
Socioeconomic controls from 1998	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1833	1833	1833	1833	1833	1833
R-squared	0.59	0.72	0.76	0.84	0.73	0.84
Number of regions	80	80	80	80	80	80

All variables are measured in percentages. Electoral controls from 1999 include the results of Duma elections in December 1999, in particular vote for OVR, vote for Unity, vote for SPS, vote for Yabloko, vote for KPRF, vote for LDPR, vote "against all," voter turnout. The set of socioeconomic controls includes log of population, population change, migration rate, log of average wage, average pension, fraction of retired people, fraction of unemployed, number of people employed in farms, crime rate. Robust standard errors clustered by region in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 7. Individual-level results. The first stage estimation.

	Watches NTV			
	OLS	Probit	OLS	Probit
Availability of NTV in 1999	0.1997	0.5616	0.1435	0.4062
	[0.0485]***	[0.1355]***	[0.0555]***	[0.1547]***
Sex (1 if male)	0.0658	0.2008	0.0336	0.111
	[0.0355]*	[0.1043]*	[0.0436]	[0.1236]
Age	-0.0021	-0.0062	-0.0019	-0.0056
	[0.0012]*	[0.0034]*	[0.0015]	[0.0041]
Finished high school	0.0721	0.1856	0.1032	0.2676
	[0.0486]	[0.1347]	[0.0561]*	[0.1546]*
Marital status (1 if married)	0.0298	0.0804	0.037	0.0988
	[0.0373]	[0.1068]	[0.0459]	[0.1264]
Consumption index	0.0271	0.0857	0.03	0.0911
	[0.0128]**	[0.0395]**	[0.0157]*	[0.0465]*
Ln (population), 1998	-0.0424	-0.1513	-0.0535	-0.1767
	[0.0151]***	[0.0504]***	[0.0195]***	[0.0640]***
Ln (Average wage)	0.193	0.6572	0.2458	0.7975
	[0.0435]***	[0.1625]***	[0.0574]***	[0.2128]***
Intention to vote for OVR in 1999			0.0521	0.1299
			[0.0789]	[0.2195]
Intention to vote for KPRF in 1999			0.1147	0.3295
			[0.0647]*	[0.1790]*
Intention to vote for Unity in 1999			0.0825	0.2275
			[0.0781]	[0.2155]
Intention to vote for Yabloko in 1999			0.0709	0.202
			[0.0808]	[0.2330]
Intention to vote for LDPR in 1999			0.0278	0.0523
			[0.1217]	[0.3246]
Intention to vote for SPS in 1999			0.1055	0.2934
			[0.0912]	[0.2617]
Intention to vote against all in 1999			-0.0628	-0.1758
			[0.1050]	[0.2748]
Observations	901	901	656	656
R-squared	0.11		0.10	
F-statistics for the exclusion of NTV1999	16.97		6.69	
χ^2 statistics for the exclusion of NTV1999		17.18		6.90

Robust standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. Availability of NTV alone explains 7% of variation in NTV exposure. Survey weights are used to make the sample nationally representative.

Table 8. Reported vote and NTV.

	Opposed by NTV		Supported by NTV			
	Unity (centrist, pro-government)		OVR (centrist, opposition)		SPS and Yabloko (Liberal)	
	IV probit	Probit	IV probit	Probit	IV probit	Probit
Watches NTV	-1.1887	-0.1385	1.8467	0.1347	0.464	0.2125
	[0.5290]**	[0.1284]	[0.3383]***	[0.1545]	[1.0862]	[0.1694]
Marginal effect	-0.42	-0.05	0.45	0.02	0.09	0.04
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	901	901	901	901	901	901
Number of subregions	41	41	41	41	41	41
χ^2 statistics for the exclusion of NTV1999 in the first stage	17.12		17.12		17.12	

	No bias by NTV					
	KPRF (Communists)		LDPR (Nationalists)		Voter turnout	
	IV probit	Probit	IV probit	Probit	IV probit	Probit
Watches NTV	-0.7144	0.0518	-1.0177	-0.1001	0.9397	0.9397
	[0.5143]	[0.1095]	[1.1215]	[0.1391]	[0.9350]	[0.9350]
Marginal effect	-0.25	0.02	-0.13	-0.01	0.27	0.27
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	901	901	901	901	1148	1148
Number of subregions	41	41	41	41	41	41
χ^2 statistics for the exclusion of NTV1999 in the first stage	17.12		17.12		21.92	

Probit model. In the IV regressions Watched NTV variable from the pre-election survey is instrumented by the presence of NTV dummy. Observations are weighted by sample survey weights. Vector of controls includes dummy variables for sex, age, marital status, education, consumption index, logarithm of subregional population and logarithm of average wage in subregion. Robust standard errors clustered by subregion in brackets. *significant at 10%; ** significant at 5%; *** significant at 1%

Table 9. Reported vote controlling for intention to vote and for undecided voters.

	Opposed by NTV		Supported by NTV			
	Unity (pro-government)		OVR (centrist)		SPS and Yabloko (Liberal)	
	Full sample	Undecided Only	Full sample	Undecided Only	Full sample	Undecided Only
Watched NTV	-0.5781 [1.1488]	-1.3069 [0.4701]***	1.9148 [0.2125]***	0.6178 [1.0290]	0.3631 [1.6358]	0.6789 [0.9573]
Marginal effect	-0.19	-0.47	0.51	0.07	0.04	0.13
Intention to vote	Yes	No	Yes	No	Yes	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	656	245	578	245	656	245
Number of subregions	41	39	41	39	41	39
χ^2 statistics for the exclusion of NTV1999 in the first stage	6.84	21.13	5.96	21.13	2.87	21.13

	No bias by NTV				Voter turnout	
	KPRF (communist)		LDPR (nationalist)		Full sample	Undecided Only
	Full sample	Undecided Only	Full sample	Full sample		
Watched NTV	-1.5878 [0.7172]**	0.3965 [0.7032]	-1.8251 [0.3755]***	1.1256 [0.5103]**	-0.8625 [1.1745]	0.8381 [0.5324]
Marginal effect	-0.56	0.11	-0.49	0.1	-0.17	0.3
Intention to vote	Yes	No	Yes	No	Yes	No
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	631	245	656	245	764	384
Number of subregions	41	39	41	39	41	39
χ^2 statistics for the exclusion of NTV1999 in the first stage	3.89	21.13	6.84	21.13	7.1	21.83

Probit model. Watched NTV variable from the post-election survey instrumented by the presence of NTV dummy. In columns marked “Undecided only” only respondents that did not report their intention to vote in the pre-election survey are included in the sample. Observations are weighted by sample survey weights. Vector of controls includes sex, age, marital status, education, consumption index, logarithm of subregional population and logarithm of average wage in subregion. Controls for intention to vote include dummy variables for intention to vote for 6 major parties and “Against all.” Robust standard errors clustered by subregion in brackets.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10. Effect of NTV on reported vote interacted with individual characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Vote for OVR	Vote for Unity	Vote for OVR	Vote for Unity	Vote for OVR	Vote for Unity	Vote for OVR	Vote for Unity	Vote for OVR	Vote for Unity	Vote for OVR	Vote for Unity
Reads Newspapers× NTV	-0.4944	0.4711										
	[0.2597]*	[0.2368]**										
Reads Newspapers	0.3901	-0.4486										
	[0.1964]**	[0.1511]***										
Listens to Radio× NTV			0.2578	0.0278								
			[0.3012]	[0.1978]								
Listens to Radio			-0.1315	-0.0634								
			[0.2126]	[0.1522]								
Political Knowledge× NTV					-0.1165	0.054						
					[0.0650]*	[0.0433]						
Political Knowledge					0.1226	-0.0448						
					[0.0576]**	[0.0312]						
Finished high school× NTV							-0.7317	-0.1546				
							[0.4399]*	[0.2627]				
Finished high school							0.4024	-0.0026				
							[0.4140]	[0.1837]				
Retired× NTV									0.5598	0.2861		
									[0.2598]**	[0.2240]		
Retired									-0.233	-0.1767		
									[0.2232]	[0.2546]		
(Age-18)× NTV											0.0273	0.0105
											[0.0081]***	[0.0065]
Age-18											-0.0159	-0.0216
											[0.0073]**	[0.0052]***
NTV	0.869	-0.4143	0.5777	-0.2781	1.573	-0.6672	1.2657	-0.1463	0.5035	-0.346	-0.1148	-0.5682
	[0.2360]***	[0.1429]***	[0.2349]**	[0.1197]**	[0.5063]***	[0.3195]**	[0.3899]***	[0.2604]	[0.1974]**	[0.1445]**	[0.3024]	[0.2135]***

All regressions contain 901 observations, cover 41 subregions, and include all control variables of the individual-level regressions. In particular, the vector of controls includes dummy variables for sex, age, marital status, education, consumption index, logarithm of subregional population and logarithm of average wage in subregion. Robust standard errors clustered by subregion in brackets. *significant at 10%; ** significant at 5%; *** significant at 1%