

Media and Political Persuasion: Evidence from Russia

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Web Appendix

Table A1. Summary statistics. Intention to vote and reported vote,
December 1999 Duma elections

	Obs.	Mean	Std. Dev.
Watches NTV	1148	0.61	0.49
NTV available	1148	0.73	0.44
Intention to vote for OVR (centrist, opposition)	764	0.13	0.34
Intention to vote for Unity (centrist, pro-government)	764	0.11	0.32
Intention to vote for SPS (liberal)	764	0.07	0.26
Intention to vote for Yabloko (liberal)	764	0.11	0.31
Intention to vote for KPRF (communist)	764	0.31	0.46
Intention to vote for LDPR (nationalist)	764	0.04	0.21
Intended to participate in elections	1069	0.91	0.29
Vote for Unity (centrist, pro-government)	901	0.28	0.45
Vote for OVR (centrist, opposition)	901	0.09	0.28
Vote for SPS (liberal)	901	0.10	0.31
Vote for Yabloko (liberal)	901	0.06	0.24
Vote for KPRF (communist)	901	0.31	0.46
Vote for LDPR (nationalist)	901	0.04	0.20
Turnout	1148	0.81	0.39
Male	1148	0.40	0.49
Age	1148	29.04	16.56
Finished high school	1148	0.80	0.40
Married	1148	0.67	0.47
Consumption index	1148	1.56	1.35
Political knowledge	1148	6.87	2.49
Reads newspapers	1148	0.31	0.46
Listens to radio	1148	0.37	0.48

Survey weights are applied.

Table A2. Summary statistics, socio-economic characteristics of sub-regions

	Low Availability of NTV			High Availability of NTV			p-value of difference	Official Results of Elections
	Mean	St. dev.	Obs.	Mean	St. dev.	Obs.		
Socio-economic characteristics								
Population, thousands	31.24	41.75	1146	74.04	149.05	1146	[0.000]***	
Population change	-0.34	2.52	1028	-0.25	2.19	1053	[0.412]	
Migration rate, %	-0.28	1.46	1028	0.22	0.87	1053	[0.000]***	
Average wage, thousands of rubles	846.45	643.54	1031	806.95	535.22	1055	[0.000]***	
Average pension, thousands of rubles	405.91	79.13	955	393.52	48.22	965	[0.128]	
Retired, %	25.13	9.81	1026	25.76	11.33	1051	[0.179]	
Unemployed, %	2.03	1.99	1028	1.55	1.48	1053	[0.000]***	
Population employed in farms, %	0.23	1.46	1028	0.26	1.71	1053	[0.665]	
Crime rate, per 10000	148.55	176.93	1028	179.16	248.16	1053	[0.001]***	
Vote in parliamentary elections in Duma, 1995								
Vote for NDR (pro-government), %	8.31	8.98	947	8.53	7.32	991	[0.554]	10.13
Democratic Russia's Choice (liberal), %	1.60	2.58	947	2.16	2.90	991	[0.000]***	3.86
Vote for Yabloko (liberal), %	2.86	2.48	947	4.19	3.51	991	[0.000]***	6.89
Vote for KPRF (communist), %	24.98	11.20	947	26.57	12.48	991	[0.003]***	22.30
Vote for LDPR (nationalist), %	14.03	6.53	947	12.92	5.91	991	[0.000]***	11.18
Voter turnout, %	70.46	8.80	947	67.53	8.47	991	[0.000]***	64.38
Vote in parliamentary elections in Duma, 1999								
Vote for Unity (centrist, pro-government), %	30.44	11.04	1146	25.61	10.65	1146	[0.000]***	23.32
Vote for OVR (centrist, opposition), %	9.45	14.99	1146	10.48	12.96	1146	[0.077]*	13.33
Vote for SPS (liberal), %	4.51	4.09	1146	6.02	4.01	1146	[0.000]***	8.52
Vote for Yabloko (liberal), %	2.45	2.01	1146	4.13	3.13	1146	[0.000]***	5.93
Vote for KPRF (communist), %	27.12	10.50	1146	28.01	10.79	1146	[0.046]**	24.29
Vote for LDPR (nationalist), %	7.50	3.30	1146	6.68	2.68	1146	[0.000]***	5.98
Voter turnout, %	58.34	10.28	1146	55.14	9.39	1146	[0.000]***	61.85
Vote in parliamentary elections in Duma, 2003								
Vote for United Russia (centrist, pro-government), %	41.98	13.79	1148	39.42	13.27	1322	[0.017]**	37.57
Vote for SPS (Liberal), %	2.15	2.67	1148	3.09	2.79	1322	[0.000]***	3.97
Vote for Yabloko (Liberal), %	1.90	1.36	1148	3.28	2.41	1322	[0.000]***	4.30
Vote for KPRF (communist), %	14.08	5.91	1148	13.52	5.18	1322	[0.025]**	12.61
Vote for LDPR (nationalist), %	12.53	5.14	1148	12.07	4.21	1322	[0.040]**	11.45
Voter turnout, %	61.65	12.37	1148	56.94	11.51	1322	[0.000]***	55.75

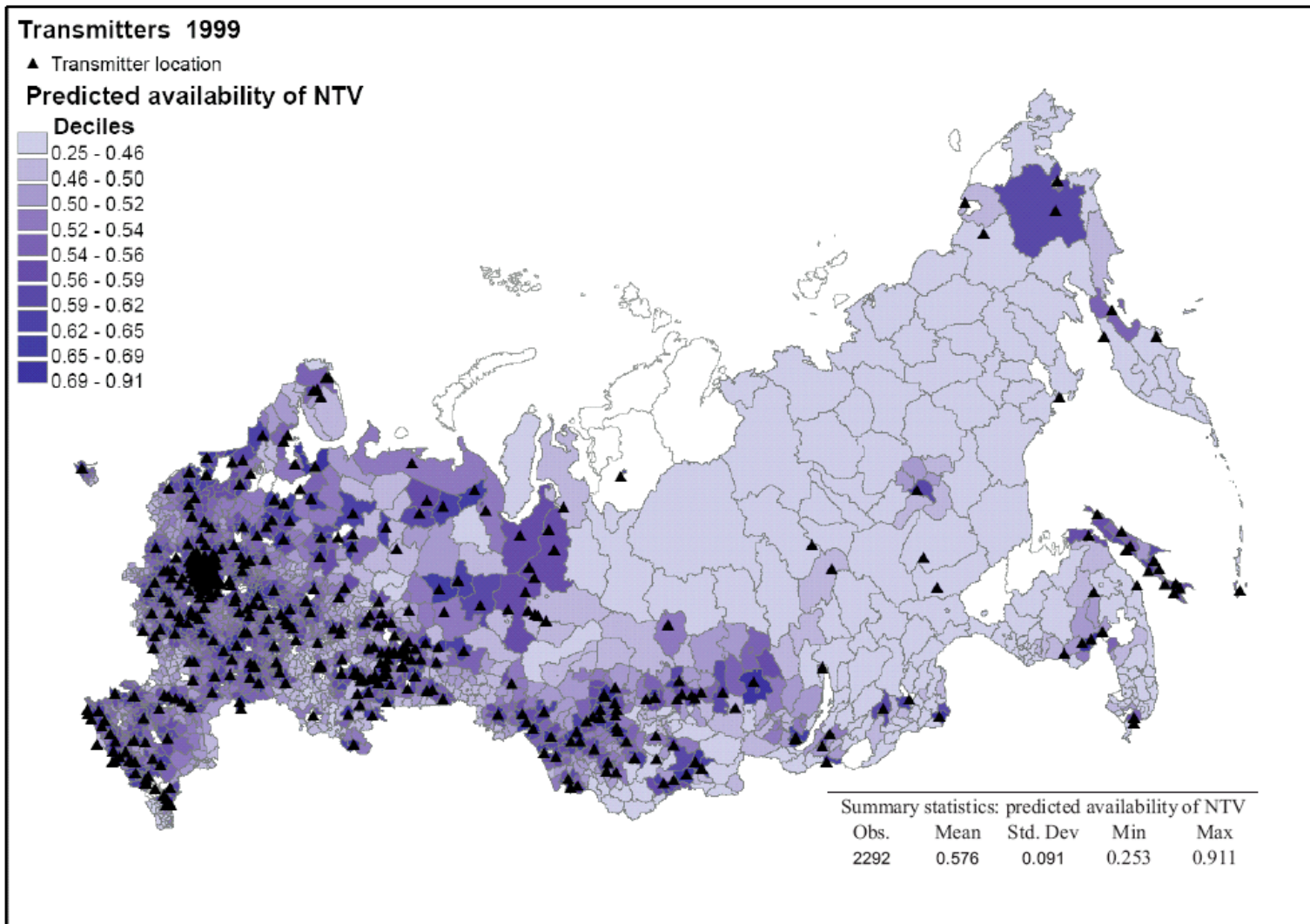


Figure A1. Predicted probability that NTV is available in 1999 by sub-region and the location of NTV transmitters. White areas indicate missing election data.

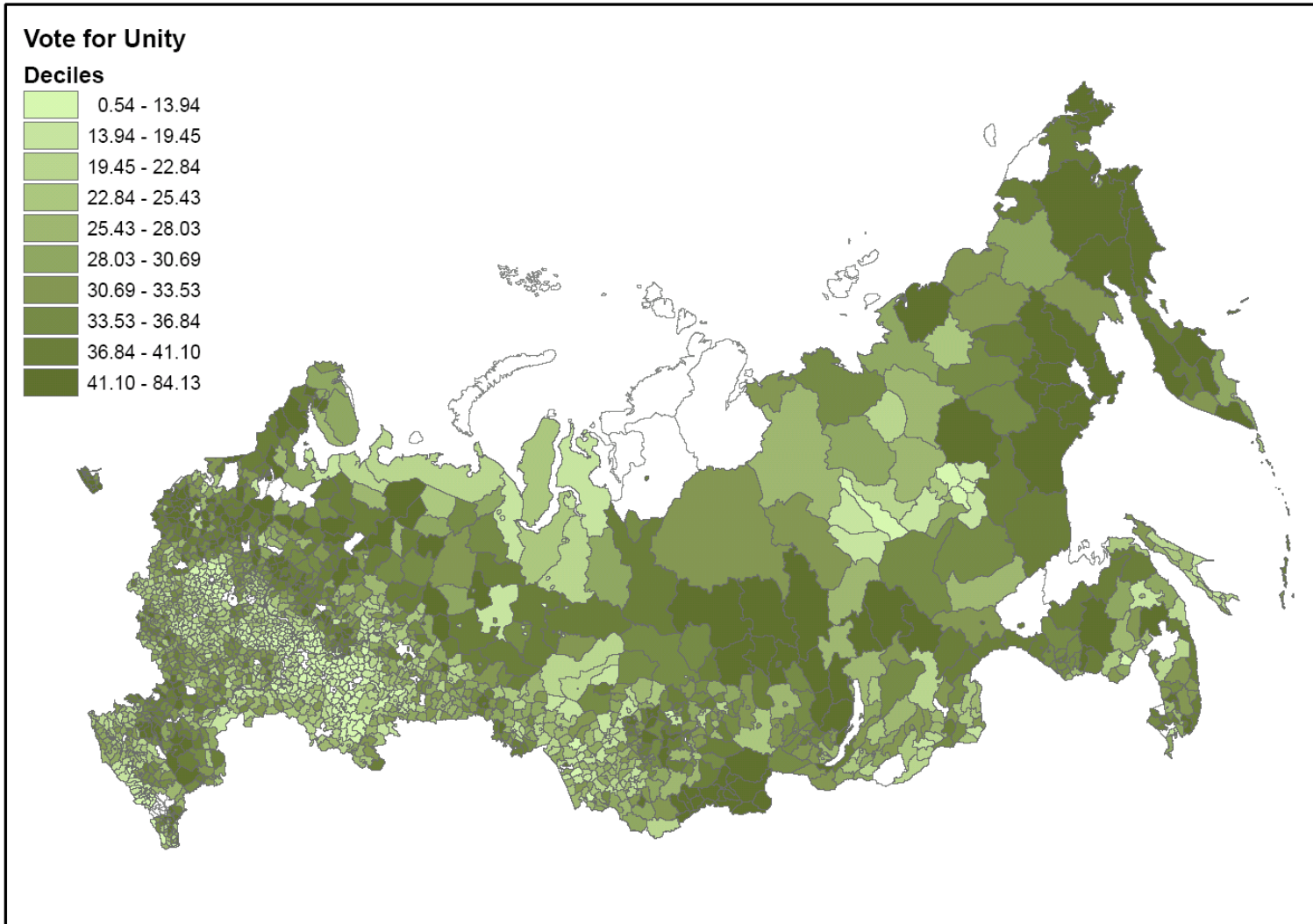


Figure A2. Vote for Unity (pro-government party opposed by NTV) by sub-regions, Russian parliamentary elections, 1999. White areas indicate missing election data.

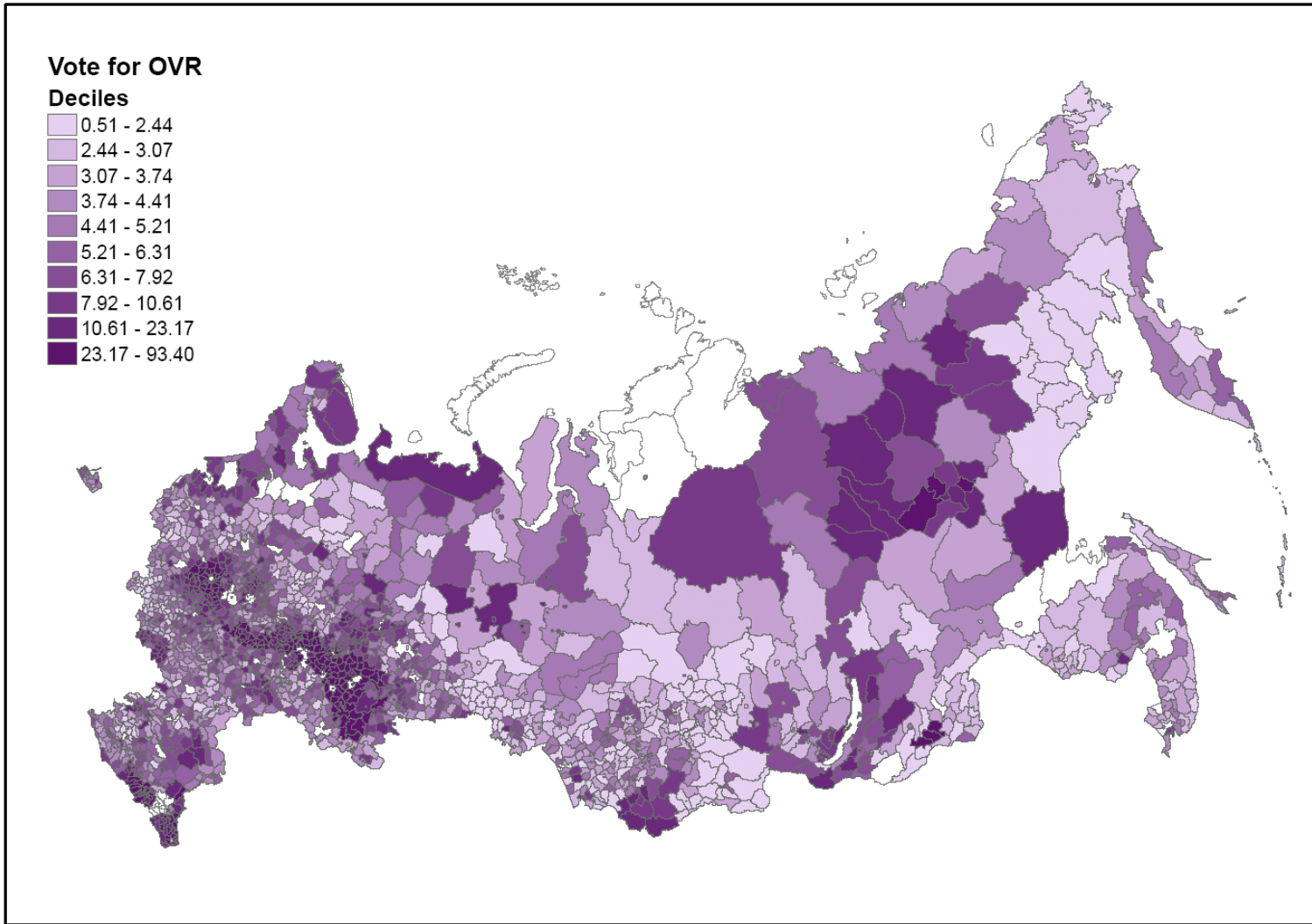


Figure A3. Vote for OVR (centrist opposition party supported by NTV) by sub-regions, Russian parliamentary elections, 1999. White areas indicate missing election data.

The calculation of the persuasion rates

For a positive message, the basic formula we start with is $y = y_0 + (1 - y_0)ef$, here y_0 is the number of people who would have voted for parties supported by a media outlet (DellaVigna and Gentzkow 2010), e is the exposure to the message. Like DellaVigna and Kaplan (2007) we implicitly assume that persuasion applies equally to supporters of other parties and to non-voters. What we do differently is that we do not apply the restriction that turnout should necessarily increase after receiving the message, i.e., some people who would have voted for other parties do not necessarily turn up to vote. In addition, we look at the infinitesimally small change in exposure, which is driven by our empirical approach.

From the baseline formula, it follows that $dy = (1 - y_0)def$, and, consequently,

$$f = \frac{1}{1 - y_0} \frac{dy}{de} \text{ (a corresponding formula in the discrete case is } f = \frac{1}{1 - y_0} \frac{y_T - y_C}{e_T - e_C} \text{).}$$

Note that as $y = vt$, where t is turnout and v is the share of the vote for supported parties, one can rewrite the formula as

$$f = \frac{1}{1 - y_0} \frac{d(vt)}{de} = \frac{1}{1 - y_0} \left(t \frac{dv}{de} + v \frac{dt}{de} \right).$$

Thus, the persuasion rate is equal to the sum of the effects of the message on the vote share

and on turnout. (The analogues formula in the discrete case is: $f = \frac{1}{1 - y_0} \frac{v_T t_T - v_C t_C}{e_T - e_C}$.)

For a negative message, $z = z_0 - z_0 ef = z_0(1 - ef)$ (here z is the number of

people who would vote for parties opposed by NTV if exposure is e and persuasion

rate is f), as persuasion affects those who would have voted for parties opposed by the

media outlet in the absence of the message. Similarly, we obtain: $f = -\frac{1}{z_0} \frac{d(\mu t)}{de} =$

$$\frac{-1}{\mu_0 t_0} \left(t \frac{d\mu}{de} + \mu \frac{dt}{de} \right) \text{ (here } \mu \text{ is the share of vote for opposed parties). In the discrete case,}$$

$$\text{this formula takes the form: } f = -\frac{1}{\mu_0 t_0} \frac{\mu_T t_T - \mu_C t_C}{e_T - e_C}.$$

Comparison of aggregate- and individual-level results

In this section we compare the magnitude of the effects of NTV from the individual-level survey data and from the aggregate official election data (Table 2 vs. Table 7). The persuasion rate of the negative message estimated using individual data is similar to the one estimated using the aggregate-level data, whereas the persuasion rate of the positive message implied by the individual-level results is substantially higher. There are several potential methodological explanations for this discrepancy between the aggregate- and individual-level results.

First, 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 sub-region 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 pro-government party Unity. 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 watch. The comparison of the aggregate-level results with and without regional fixed effects (not reported) indicates that the omission of regional fixed effects leads to a two-fold increase in the estimated effect of the NTV availability on the vote for OVR, Unity, and SPS, whereas the results for Yabloko remain similar in size. Therefore, omitting regional fixed effects can explain some of the difference in magnitude between aggregate and individual results.

Second, since the individual-level data are available only for a subsample of sub-regions, one should worry about whether the sample is representative, as the survey designers claim. To verify the representativeness of the sample of sub-regions included into the survey, we checked that aggregate-level results for the subsample of sub-regions where survey data were collected are only slightly larger as compare to the results for all sub-regions and, therefore, differences in the samples cannot explain differences in the estimated effects.

Panel and placebo regressions for individual-level results

Just as in the aggregate-level analysis for four parties we can use difference-in-difference approach for individual-level data. The data on voting in 1995 come from the survey, similar to the one conducted in 1999, but with different respondents and, sometimes, in different regions. Thus, unlike the aggregate-level analysis we cannot include fixed effects for individuals or regions and we estimate probit regression that includes as the dependent variables only the measure of NTV availability, constant, and dummy for the year 1999. We cluster the error term at the sub-regional level. As in the case of aggregate-level analysis we code NTV availability to be equal to zero in all sub-regions in 1995, as the NTV audience at that time was negligible. Thus, we estimate the effect of the differential increase in NTV availability on the election results from 1995 to 1999 on the probability of voting for different parties. Table A3 presents the results. Just as in the aggregate-level analysis, NTV has a significant positive effect on the probability of voting for the two liberal parties. In addition, the negative effect of NTV on voting for KPRF and positive effect of voting on voter turnout become significant in the individual-level panel results.

Also, as in the aggregate-level analysis, we estimate placebo regressions using survey data from 1995 to test the validity of our main identification assumption.

Table A4 reports the results of this placebo experiment. We estimate the effect of NTV availability in 1999 (defined in the same way as in the aggregate-level analysis) on the probability of voting for each of the major parties during the 1995 election using a probit model with the same set of controls as in all other individual-level regressions, except for the consumption index, which cannot be calculated using the data from 1995 survey. Consistent with our assumption of idiosyncratic NTV availability in 1999, the estimated coefficients of interest are never statistically significant and the marginal effects are very close to zero.

Table A3. Self-reported vote and NTV, survey data

	Supported by NTV in 1999		Similar coverage by NTV and state TV in 1999		Voter turnout
	Vote for SPS and its predecessor Democratic Russia's Choice (liberal)	Vote for Yabloko (liberal)	Vote for KPRF (communist)	Vote for LDPR (nationalist)	
	(1)	(2)	(3)	(4)	(5)
NTV Availability	1.667 [0.620]***	1.278 [0.505]**	-0.795 [0.382]**	0.602 [0.620]	0.802 [0.369]**
Year dummy for 1999	0.16 [0.05]***	0.14 [0.06]**	-0.27 [0.13]**	0.06 [0.06]	0.21 [0.10]**
Constant	-4.458 [0.469]***	-2.986 [0.399]***	-0.178 [0.327]	-1.363 [0.407]***	0.22 [0.241]
Observations	1522	1522	1522	1522	1944

Probit model. Observations are weighted by sample survey weights. Vector of controls includes dummy variables for gender, age, marital status, education, logarithms of sub-regional population, and average wage. Robust standard errors adjusted for clusters by sub-region in brackets. *significant at 10%; ** significant at 5%; *** significant at 1%.

Table A4. Placebo regressions for self-reported vote in 1995, survey data

	Supported by NTV in 1999		Similar coverage by NTV and state TV in 1999		Vote for NDR in 1995 (pro-government)	Voter turnout in 1995
	Vote for SPS and its predecessor Democratic Russia's Choice in 1995 (liberal)	Vote for Yabloko in 1995 (liberal)	Vote for KPRF in 1995 (communist)	Vote for LDPR in 1995 (nationalist)		
	(1)	(2)	(3)	(4)	(5)	(6)
NTV Availability in 1999	0.175 [1.015]	-0.235 [0.673]	-0.113 [0.617]	0.589 [0.879]	0.554 [0.756]	0.429 [0.777]
Marginal Effect	0.01 [0.04]	-0.03 [0.09]	-0.04 [0.20]	0.08 [0.12]	0.09 [0.13]	0.10 [0.18]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	552	552	552	552	552	672
Number of sub-regions	38	38	38	38	38	38

Probit model. Observations are weighted by sample survey weights. Vector of controls includes dummy variables for gender, age, marital status, education, consumption index, logarithms of sub-regional population, and average wage. Robust standard errors adjusted for clusters by sub-region in brackets. *significant at 10%; ** significant at 5%; *** significant at 1%. Survey weights are applied.