-Not for Publication-

Online Appendix to
Telecracy: Testing for Channels of Persuasion

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Additional Evidence and Results

In this appendix, we provide additional evidence in support of our test design and assumptions, as well as additional results.

1. (Non-)Sorting into new information sources

In the paper, we claim that an omission bias is not likely to explain our evidence. This is only true if, after the shock to exposure, individuals do not sort into information sources they were not accessing before the shock. Figure A1 shows that viewers who moved from news programs to digital TV massively sorted into all-entertainment channels and not into digital news channels. The top panel of Figure A1 shows the change in the viewing shares of the two major Italian news programs, TG1 and TG5, over time. TG1 dropped from 30 percent of viewers to 24 percent. Over the same period, TG5 dropped from 26 percent of viewers to about 22 percent. The bottom panel of Figure A1 plots the viewing share of new digital channels over the same period, for the corresponding daily time slot when TG1 and TG5 are aired. The share of non-news new digital channels soared from about 1 percent in September 2008 to more than 10 percent in December 2010. At the same time, the share of all-news channels, or channels where a news program is aired, barely increased over the same period. Hence, our results cannot be driven by voters who accessed new sources of information on digital TV.

Before the 2010 regional elections, Piedmont viewers who went digital did not sort into two alternative information sources either. In Figure A2, we compare the average daily number of purchased and freely-distributed daily newspapers per hundred inhabitants for Switch-off (black histograms) and No

Switch-off (gray histograms) provinces in 2008, 2009 and 2010.[1] The number of newspapers per 100 inhabitants decreased in Switch-off provinces from 2008 to 2010. Moreover, this decrease was greater than the decrease observed in No Switch-off provinces over the same period. Both facts are inconsistent with Western Piedmont voters sorting into reading newspapers after the switch to digital TV. In Figure A3, we plot the Search Volume Index (SVI)[2] for searching the names of three major Italian newspapers' websites: La Repubblica, Corriere della Sera, and La Stampa. The top graph shows the evolution of the SVI in the province of Alessandria (control), while the bottom graph refers to the province of Turin (treatment).[3] Elections were held on March 28th and March 29th 2010. The search volume in Turin barely increased during the electoral campaign (January-March 2010). If anything, the search volume in the control area increased more than in Turin over the same period.[4] The same is true for unreported SVI for other terms related to elections, such as the Italian for elections and candidates, the surnames of Piedmont regional election candidates, the surname of national political leaders, and party names. Online newspapers or other election-related terms do not exhaust possible sources of information on the web. As shown in Figure A4, youngsters are more likely to access the internet than the elderly, and we do not find any mediating role of youngsters on the electoral behavior of towns, which adds to the irrelevance of internet-based information as an explanation of our results. We then look at the incapacitation channel: households who

[1] Source: Accertamenti Diffusione Stampa (ADS), available at http : //www.adsnotizie.it/

[2] SVI is computed by Google Analytics. It assigns a value of 100 for the week when an item was searched the most. For all other weeks in the search period, the index is the ratio of searches that week over the searches in the maximal week.

[3] There is a minimal number of searches needed to compute the index. None of the other Piedmont provinces has enough volume of searches to compute the SVI in the period we look at.

[4] All SVI series peak in the week immediately after elections. This is at odds with the idea that users look for online newspapers to get informed before voting in an election. Elections were held on a Sunday and a Monday morning, until 3pm. If voters wanted to know exit polls and results of elections, they had to connect to the internet, given that 3pm is a working hour.

do not switch to digital TV by the deadline cannot access any TV signals: they are incapacitated to bias exposure. If this channel is relevant, households may sort into alternative information sources as a consequence of their TVs being blank. In Figure A5, we reproduce a picture in "Rapporto Digitale 2011 -Capitolo Terzo: I nuovi consumi digitali", p. 78. The picture plots the ratio of the weekly percentage of households accessing any TV signals to the analogous percentage for the same week in the previous year, for the three regions that switched to digital TV in Autumn 2009. Switch-off weeks refer to the 2009 wave, when Campania, Lazio, and Western Piedmont moved to digital TV. If no households were subject to incapacitation, we should observe a ratio constantly around 100, even in the switch-off period. As is apparent from Figure A5, access to TV signals dropped by about 10 percentage points compared to the previous year, during the switch off period. But the incapacitation effect was too short-lived: two weeks after the switch, the effect had halved. 10 weeks after the switch, access rates were back to normal. This was before the electoral campaign for 2010 regional elections started (mid-January 2010).

Overall, the evidence is inconsistent with Western Piedmont voters moving into alternative sources of information after going digital.

2. Additional Specification Tests and Robustness

We provide additional specification tests and robustness to alternative explanations in Table A 1. In panel A, we use a quadratic RD polynomial in the distance from the border. Magnitude of coefficients and statistical significance are similar to those reported in the paper. We do not report results for higher-order polynomials, since an overfitting problem at the boundary may arise. However, coefficients and significance do not change. In

panel B, we allow for heterogeneous effects based on the distance from the border. Results are similar to those in the baseline specifications. Finally, in panel C, we exclude all towns close to the border in both directions (less than 5km). Results are similar to those in the baseline specifications.

3. Exposure to information of elderly and youngsters

In our analysis, we argue that the elderly are more exposed to TV than others. Also, we argue that the youngsters access the internet more than any other age group. These claims are supported by evidence in Figure A4, based on data from Istat. We plot the percentage of Italians who watch TV daily (left y-axis), and who access the Internet more than once a week (right y-axis), against age brackets. Exposure to TV is captured by the solid line. 95% of retirement-age individuals (i.e. those individuals aged 60 or higher) watch TV daily. This share drops to 92% for individuals aged 20 to 44. The dashed line plots exposure to the internet by age group. Exposure to the internet steadily decreases with age, moving from about 80% of people between 20 and 24 to less that 10% of people aged 65 or more.

4. Placebo Interaction Effects

In the paper, we show that the effect of the shock to bias exposure is stronger in towns with more elderly and least educated voters, while it does not differ in towns with more (less) youngsters, or higher (lower) social capital. We interpret this as suggesting that cognitive biases are relevant to explain our findings. To corroborate this interpretation, Table A2 estimates additional interaction effects of our treatment indicator with several variables. None of these interactions are significantly different

from zero. Treated towns above the top tercile or below the bottom tercile, when sorting by the variables in the captions, do not vote differently from other treated towns. Sorting variables include: income per capita, unemployment rate, TV subscriptions per household (intensity of TV usage), number of farms per capita (rural areas), number of pharmacies per capita (level of services), percentage of kids below age 6 who attend kindergarten (working mothers) and average tax rate.

5. Effect of switch to digital TV on competitors of Berlusconi's candidate

In Table A3, we estimate Equation 1 in the paper using the change in vote share of the main opponent of Berlusconi's candidate (columns (1) and (2)), of a novel party candidate (columns (3) and (4)) and of the extreme right candidate (columns (5) and (6)) as dependent variables. The main opponent has benefitted the most from the drop in the vote share of Berlusconi's candidate. The effect is statistically less robust than in Table 2 of the paper and magnitudes differ. The center-left candidate gained 3.3 and 3.8 percentage points, while the Berlusconi candidate lost 4.5 and 5.4 percentage points. Results and comparisons are similar in panel B. None of the other candidates seem to have gained from the drop in the vote share of Berlusconi's candidate. Thus, results are hardly consistent with Berlusconi supporters from 2005 consistently voting for one of the other candidates on the ballot in the 2010 elections.

6. External validity

In the paper, we discuss results for regressing the change in the vote share of Berlusconi's coalition candidate between Piedmont (Cuneo), which switched to digital TV before 2010 elections, and Liguria (Imperia and Savona), which switched only after the elections. This analysis provides

evidence for the validity of our results across regions. In Figure A6, treated towns are assigned a positive distance. The change in vote share averages around zero in Liguria towns and around -4 percentage points in Piedmont, which is consistent with our main results within Piedmont..

We then check if the results survive across elections, by looking at 2011 and 2006 provincial elections for the nine provinces where elections were held in May 2011. Some provinces switched in Autumn 2010. We compare them to those still allowing for both analog and digital TV in May 2011. Rules for provincial and regional elections are very similar, which makes it easy to interpret results in light of our discussion so far. In Figure A7, we plot the vote share of Berlusconi's candidates in May 2011 against the equivalent measure in May 2006[6]. Black bubbles are provinces that were allowing for analog TV in May 2011[7]. Gray bubbles are provinces that had switched to digital TV in Autumn 2010[8]. The square is Macerata, where elections were held and won by Berlusconi's candidate in 2009, then voided due to irregularities. They were repeated again in 2011[9]. The dashed line plots the predicted relationship if vote shares were the same in the two elections. Provinces still allowing for analog TV lie above the line. All but one of the provinces that had switched to digital TV before 2011 elections lie below the line, suggesting that Berlusconi's candidates in these regions, and there only, performed worse in 2011 than in 2006.

TABLE A1−ADDITIONAL SPECIFICATION TESTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full Sample		< 50 km		< 25 km		< 15 km	
A. Quadratic polynomial, distance from the border								
Switch off	-0.047	-0.045	-0.055	-0.053	-0.060	-0.056	-0.076	-0.072
Clust. Province	0.009***	0.009***	0.011***	0.011***	0.010***	0.011***	0.005***	0.006***
R^2	0.397	0.394	0.424	0.418	0.439	0.437	0.532	0.440
B. With interactions border segment*distance polynomial (cubic)								
Switch off	-0.052	-0.049	-0.045	-0.043	-0.052	-0.049	-0.052	-0.051
Clust. Province	0.011***	0.011***	0.010***	0.009**	0.010***	0.010***	0.012***	0.011***
R^2	0.422	0.418	0.445	0.443	0.471	0.473	0.579	0.575
C. Excluding towns close to border (OLS specifications)								
Switch off	-0.030	-0.028	-0.030	-0.028	-0.056	-0.053	-0.060	-0.058
Clust. Province	0.010**	0.009**	0.011**	0.010**	0.013***	0.012***	0.007***	0.007***
R^2	0.408	0.407	0.439	0.432	0.465	0.466	0.525	0.520
Observations	1,120	1,120	842	842	466	466	258	258
Electoral controls	yes	yes	yes	yes	yes	yes	yes	yes
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes
Border segment f.e.	yes	yes	yes	yes	yes	yes	yes	yes
Weighted LS	no	yes	no	yes	no	yes	no	yes
Observations	1,206	1,206	1,161	1,161	928	928	552	552

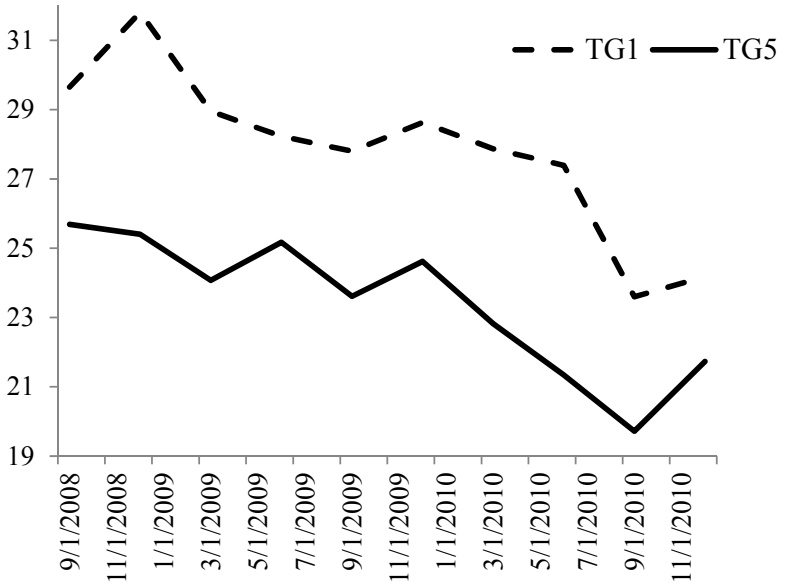
TABLE A2−PLACEBO INTERACTION RESULTS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Income p.c.		Unemployment		TV subscriptions p.h.h.		Farms p.c.		Pharmacies p.c.		% Kids in kindergarten		Average Tax Rate	
Switch off	-0.053	-0.043	-0.054	-0.045	-0.052	-0.043	-0.059	-0.046	-0.064	-0.054	-0.061	-0.053	-0.058	-0.046
Clust. Province	*0.012***	*0.012***	*0.011***	*0.011***	*0.011***	*0.014***	*0.012***	*0.011***	*0.011***	*0.015***	*0.012***	*0.012***	*0.011***	*0.013***
Switch off*Top 3	-0.002	-0.004	0.005	0.004	-0.003	0.001	0.005	-0.003	0.011	0.015	0.003	0.008	0.007	0.001
Clust. Province	*0.006*	*0.006*	*0.005*	*0.007*	*0.004*	*0.004*	*0.004*	*0.004*	*0.008*	*0.008*	*0.005*	*0.006*	*0.006*	*0.005*
Switch off*Bottom 3	-0.007	-0.008	-0.006	-0.003	-0.012	-0.014	-0.001	0.001	0.007	0.002	0.004	0.003	-0.002	-0.005
Clust. Province	*0.006*	*0.006*	*0.006*	*0.008*	*0.007*	*0.009*	*0.009*	*0.011*	*0.012*	*0.014*	*0.003*	*0.004*	*0.006*	*0.011*
T3, B3, ratio	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Electoral controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Socio-dem. controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Border segment f.e.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
< 50 km	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	1,206	928	1,206	928	1,206	928	1,206	928	1,206	928	1,206	928	1,206	928
R^2	0.400	0.421	0.401	0.420	0.402	0.429	0.400	0.420	0.400	0.421	0.401	0.422	0.402	0.422

TABLE A3– EFFECT OF SWITCH-OFF TO DIGITAL TV ON COMPETITORS' VOTE SHARES

	(1)	(2)	(3)	(4)	(5)	(6)
	Main Opponent		New Political Offer		Extreme right	
	A. Distance from the border					
Switch off	0.033	0.038	-0.005	-0.002	-0.001	0.001
Clust. province	*0.019*	*0.013***	*0.012*	*0.009*	*0.002*	*0.001*
Wild Bootstrap	*0.028*	*0.016***	*0.023*	*0.004*	*0.003*	*0.001*
Spatial HAC	*0.009****	*0.008****	*0.006*	*0.005*	*0.002*	*0.002*
R^2	0.386	0.413	0.329	0.274	0.305	0.355
	B. Cubic polynomial, distance from the border					
Switch off	0.044	0.026	-0.006	0.003	0.001	0.002
Clust. province	*0.015***	*0.012**	*0.013*	*0.005*	*0.003*	*0.002*
Wild Bootstrap	*0.023**	*0.017*	*0.009*	*0.006*	*0.003*	*0.002*
Spatial HAC	*0.009****	*0.009****	*0.008*	*0.004*	*0.003*	*0.002*
R^2	0.402	0.419	0.370	0.285	0.308	0.361
Electoral controls	yes	yes	yes	yes	yes	yes
Socio-dem. controls	yes	yes	yes	yes	yes	yes
Border segment f.e.	yes	yes	yes	yes	yes	yes
< 50 km	no	yes	no	yes	no	yes
Observations	1,206	928	1,206	928	1,260	928

FIGURE A1– FROM SLANTED INFORMATION TO ALL-ENTERTAINMENT



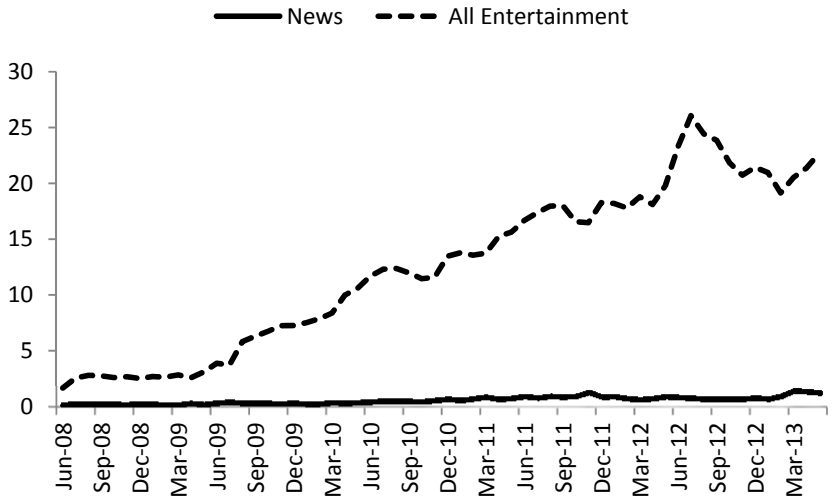


FIGURE A2–(NON-)SORTING INTO NEWSPAPERS AFTER SWITCH TO DIGITAL TV

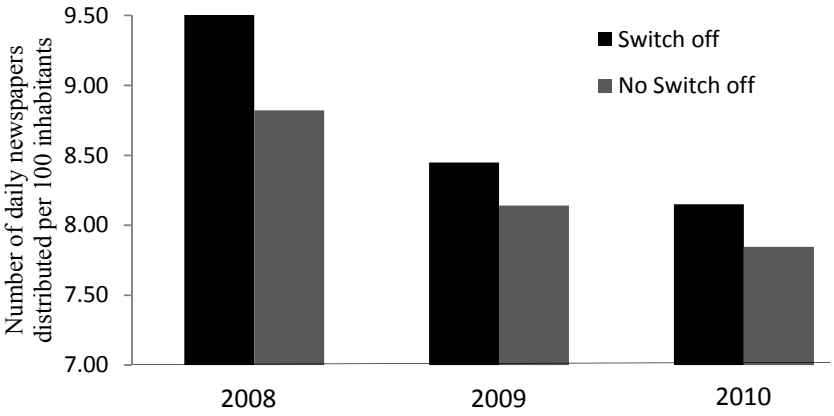
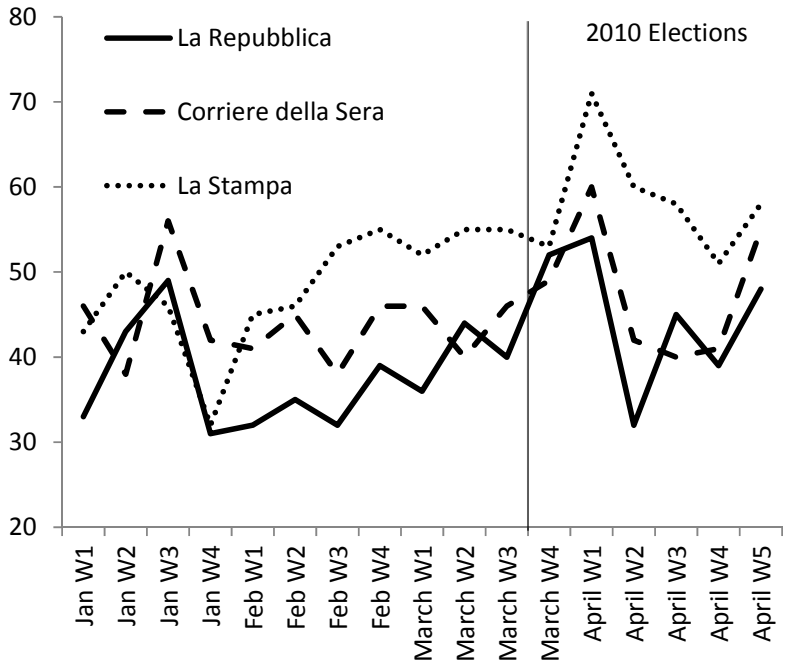


FIGURE A3– ACCESS TO INTERNET INFORMATION SOURCES DURING THE 2010 ELECTORAL CAMPAIGN

A. Control area



B. Treatment area

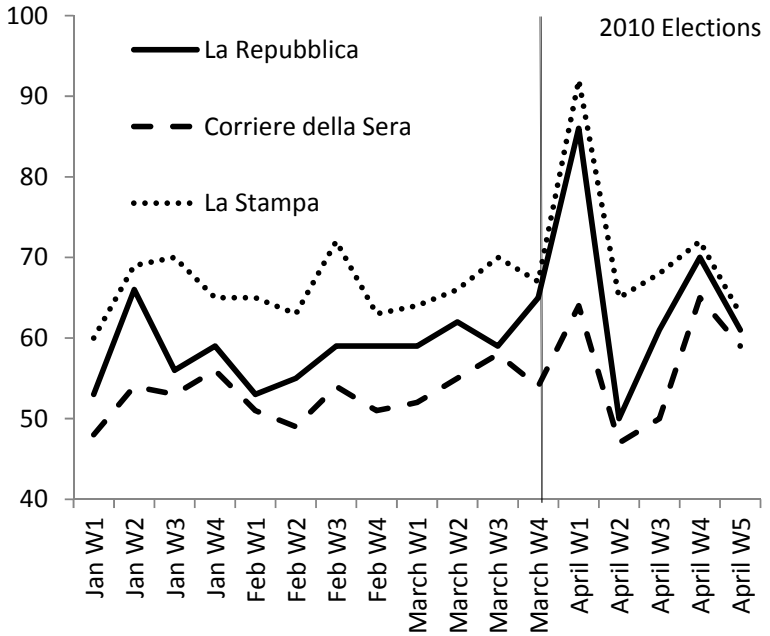
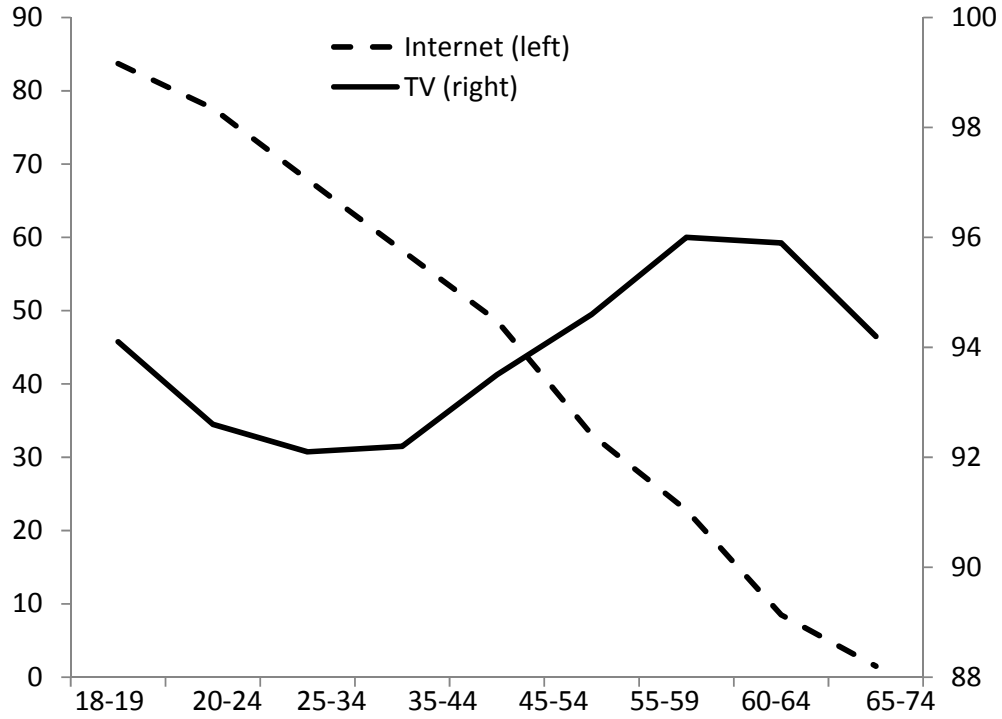
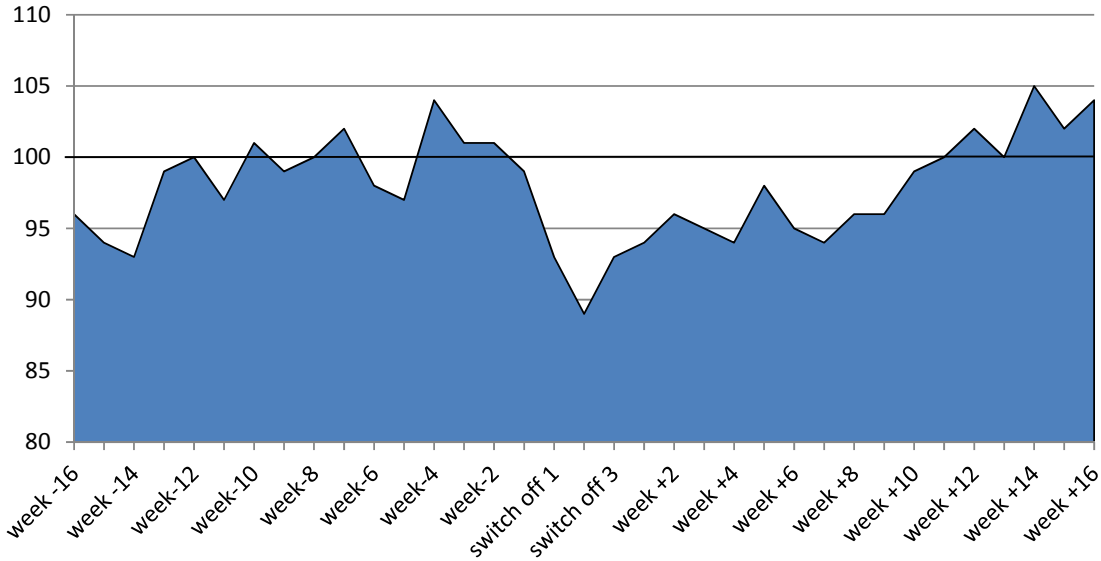


FIGURE A4–EXPOSURE TO INFORMATION SOURCES BY ELDERLY AND YOUNGSTERS



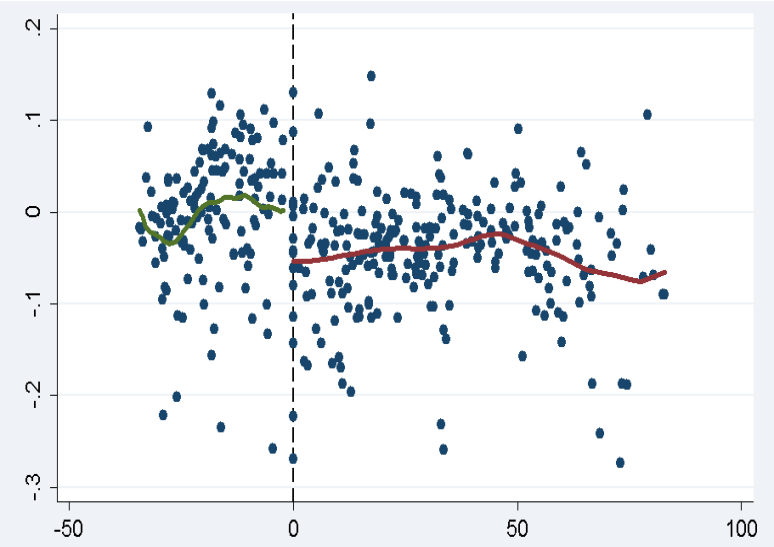
Notes. Source: Istat, Aspetti della Vita Quotidiana, 2010.

FIGURE A5– HOUSEHOLDS ACCESSING TV SIGNALS AROUND DEADLINES TO SWITCH TO DIGITAL TV COMPARED TO PREVIOUS YEAR (%)



*Notes.*One-to-one reproduction of "Rapporto Digitale 2011 – Capitolo Terzo: I nuovi consume digitali," p.78. Data refer to households in regions Piemonte, Campania and Lazio around the 2010 deadlines for the three regions.

FIGURE A6– EFFECT OF SWITCH TO DIGITAL TV ON THE CHANGE OF BERLUSCONI COALITION'S CANDIDATES VOTE SHARES BETWEEN 2005 AND 2010 ACROSS REGIONS



*Notes.*Points are towns in region Liguria (negative distance) and region Piedmont, Cuneo Province. Region Liguria was still allowing for analog TV transmission as of March 2010, while the Cuneo province was not.

FIGURE A7– EFFECT OF SWITCH TO DIGITAL TV ON BERLUSCONI COALITION'S CANDIDATES VOTE SHARES BETWEEN 2006 AND 2011 – PROVINCIAL ELECTIONS