The Impact of Commercial Television on Turnout and Public Policy: Evidence from Norwegian Local Politics

By

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Abstract

We investigate the impact of commercial television on political participation and local policy outcomes. Exploiting a geographically staggered expansion of cable television after the liberalization of Norwegian broadcasting in 1981, we show that higher cable television penetration significantly reduced turnout in municipal elections. Using individual-level data, we find that cable television coverage had a negative effect on the extent to which respondents were exposed to political information through mass media. The effect is more pronounced for individuals that on average watch more cable television; namely individuals with fewer years of schooling. Consistent with an increased difference in political participation and exposure to information between more and less educated groups, we find that commercial television led to reduced public spending and increased the share spent on education. The results are evidence that commercial mass media can influence electoral politics by reducing political participation and exposure to information of its target audiences.

Keywords: Media, Voting, Inequality, Local government, Public Economics

JEL Classification: D70, H72, L82

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1 Introduction

Informed citizens are more likely to vote, hold politicians accountable, and influence policy making (Snyder and Strömberg, 2010). Since mass media are the most important source of information for many voters, the introduction of new mass media can have effects on politics. The literature emphasizes two opposing effects of introducing new mass media on voters' exposure to political information. While new mass media may increase voters' exposure to information by facilitating access (Besley and Burgess, 2002; Strömberg, 2004b), they may also lower exposure to information by inducing substitution towards content with less political information. In a media environment characterized by a varied supply of content, individual preferences can play a crucial role in determining who is informed and who participates in politics (Prior, 2007). If voters differ in their demand for media content, an increased supply of low-information content may exacerbate differences in turnout and exposure to information among different groups of voters. The aim of this paper is to shed light on these issues by exploiting plausibly exogenous variation in local cable network penetration following the deregulation of Norwegian broadcasting in the 1980s. Did the diffusion of commercial television influence political participation and exposure to political information for different groups of voters, and did it thereby influence policy outcomes?

We study these questions formally with a probabilistic voting model where preferences over mass media content affect the extent to which voters are informed about policy platforms, a framework inspired by Strömberg (2004a) and Prat and Strömberg (2005). When commercial television is introduced, some individuals adjust their television consumption towards less politically informative commercial television content. This leads groups with a stronger preference for commercial television to become less exposed to relevant political information and to vote less. Further, the model offers several predictions depending on the audience shares of commercial television for different groups. Groups with a higher share of commercial television viewers experience a greater reduction in turnout and exposure to political information when cable television is introduced. Moreover, since politicians choose policy platforms to maximize their vote share, they spend less on categories targeted to groups with higher audience shares.

We test these predictions by estimating the impact of the rollout of cable television on various local political outcomes in Norway. The content broadcast through cable was markedly different from the universally available public broadcaster which operated under a broad public service mandate. The rollout provided easy access to new forms of content, with potentially detrimental effects on exposure to relevant information about politics. To address the potential endogeneity of commercial television access, we exploit particularities of the rollout of cable television after the end of the Norwegian broadcasting monopoly in 1981. In short, the rollout of cable network infrastructure initiated by the liberalization was driven by factors on the supply side, which meant that the expansion pattern was determined by topographical constraints and economies of scale related to population density. Our identifying assumption is that the geographical rollout of cable television infrastructure was uncorrelated to unobservable factors that could have generated local variation in the development of turnout, conditional on time invariant municipality characteristics and population density. We present a range of robustness checks and other evidence in support of our identifying assumption. Moreover, for all our main estimates we employ a baseline specification that in addition to municipality and time fixed effects includes a wide range of time-varying socioeconomic and demographic controls as well as allows for differentiated time trends depending on pre-reform differences in population density.

We find that increased cable television coverage caused turnout to drop in municipal elections, and to a lesser extent, in national elections. In our preferred specification, the change from zero to full coverage is associated with a 2.5 percentage points drop in average turnout in municipal elections. Motivated by survey evidence showing that low education was an important predictor for whether the commercial channels were actually watched, we partition municipalities into high- and low-education groups, and find that the negative estimated effect is around twice as large in municipalities with a relatively low education level. Consistent with cable television access having stronger negative effects on the political participation for certain groups, we find effects on policy outcomes. Increased cable television coverage is associated with lower municipal government spending per capita. In addition, it increased the share spent on education and reduced the share spent on social expenditures.

Next we investigate the mechanism in more detail using individual-level data from the official local election surveys and from media use surveys. First, we find that at the individual level too, the negative impact of access to cable television on turnout is stronger for individuals with fewer years of schooling. Second, we find that the impact via consumption of television news shows is ambiguous, as people on average watched somewhat more news, however of a light, tabloid kind which contained little political information. Further, we find a negative effect of increased cable television coverage on reported exposure to information about local elections from television. This effect is also stronger for less-educated individuals. These findings indicate that the entry of cable television increased the difference in turnout and exposure to political information of high- and low-educated individuals. The results support the predictions of the model and are consistent with the hypothesis that less politically informative media can decrease the relative political influence of their audience.

This paper is closely related to a working paper by Prat and Strömberg (2005), which found evidence that commercial television increased political participation and knowledge in national elections in Sweden. Our paper differs in several ways. First, we study the effect of commercial television on inequality in participation and exposure to political information. Second, we exploit plausibly exogenous variation in cable network penetration. Third, our analysis uses aggregate data to study the effects on turnout and policy, as well as individual-level data to conduct a detailed examination of the mechanisms. In addition, we are able to study a much longer time period. Prat and Strömberg (2005) found that commercial television increased political knowledge and participation by attracting new audiences to watching television news. We are not able to examine that hypothesis in detail, but our finding that commercial television reduced political information acquired from television goes in the opposite direction. One plausible explanation for this difference is that the content of commercial channels may be more politically relevant for national elections, as studied by Prat and Strömberg (2005), than for local elections, which we emphasize. This highlights the importance of substitution between more- and less-informative television content in shaping political behavior and outcomes.

Our paper contributes to a literature in economics on the effects of television on political participation and information. Gentzkow (2006) studies the introduction of television on voter turnout in US counties and finds that the introduction of television reduced turnout. He finds evidence that substitution away from other media with more political information was an important mechanism. On the other hand, Sørensen (2016) estimates that the introduction of public television in Norway in the 1960s increased turnout and became an important source of political information. Findings in Prior (2005) potentially explain the discrepancy between these results by pointing to the salience of consumers' content choice set. He argues that increases in consumers' content choice set can reduce political knowledge and turnout for people with less interest in politics, since the probability of accidental exposure to political information is lowered. He finds supportive evidence for this in survey data with detailed measures of political knowledge and content preferences. Our results support this view. We contribute to the literature by studying the increase in inequality in turnout and exposure to political information by using plausibly exogenous variation in access to commercial television and by showing that the effects documented in Prior (2005) are not unique to the United States. Importantly, we add to this literature by studying the consequences of these effects on policy outcomes. Moreover, our results contribute by presenting evidence on the political impacts of the diminished role of public service broadcasting experienced by many countries in the last decades.

More generally, our paper is related to the literature studying the effects of entertainment media on politics.[1] Campante and Hojman (2013), DellaVigna et al. (2014), Miner (2015), Enikolopov et al. (2016), and Durante et al. (2015) show that entertainment media can have unintended effects on political outcomes ranging from political polarization, ethnic animosity, democratization, protest participation, and support for populist policy platforms respectively. Gavazza et al. (2016) study the effect of internet penetration on local politics in the United Kingdom. In line with our findings, they find that internet penetration makes policies less favorable to poorer and less-educated voters. We complement their findings by showing similar effects in a different setting and for a different mass medium. In addition, we extend their findings by using individual-level data on exposure to political information to show evidence related to the mechanism through which media are likely to affect turnout and policy.

Lastly, our paper is related to the literature on inequality and redistribution. Classical approaches such as Meltzer and Richard (1981), Lindbeck and Weibull (1987), and Strömberg (2004b), emphasize the role of inequality in influencing policy through altering the preferred redistribution of voters. Petrova (2008) argues that economic inequality increases the incentives of the rich to capture mass media in order

[1] Even more generally, we contribute to the empirical literature in economics that studies media effects on various outcomes. This literature is too large to summarize here. See, for example DellaVigna and Ferrara (2015), and Puglisi and Snyder Jr. (2015) for recent surveys of this literature.

to reduce political support for redistribution and finds evidence for this mechanism in a cross-country analysis. We study how mass media can reduce support for redistribution through a different channel. We contribute to this literature by presenting evidence on how less informative media can increase inequality of political knowledge and participation, and the potential consequences this has for policy-making both theoretically and empirically.

The rest of the paper is structured as follows. In Section 2, we discuss the historical background of commercial television in Norway and the institutional structure of Norwegian local politics. In Section 3, we outline the model as well as the empirical predictions. We describe the empirical strategy and data sources in Section 4. Section 5 presents the aggregate-level results, while the individual-level results are presented in Section 6. Section 7 concludes.

2 Institutional background

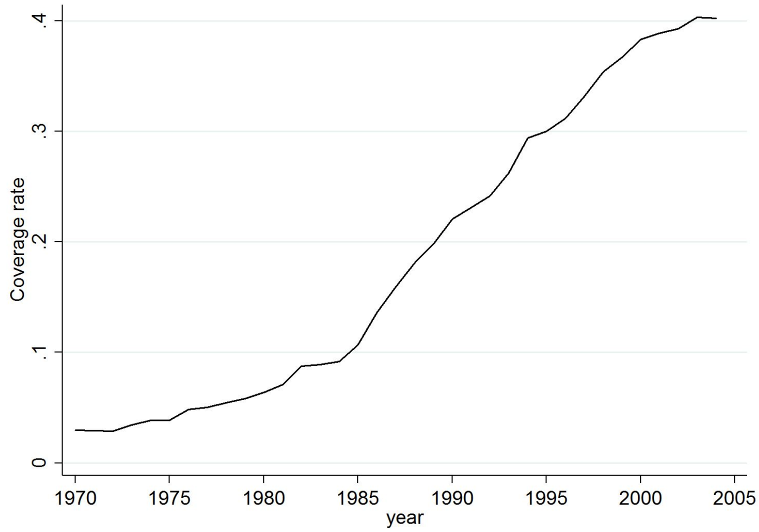
2.1 Media environment

When television was introduced in Norway in the 1960s, the state-controlled Norwegian Broadcasting Corporation (NRK) held a legal monopoly on broadcasting. In the 1970s, technological developments made it possible to broadcast television signals via satellite; however, receiver equipment for these signals was quite expensive. A much more cost-effective solution was forwarding the satellite signals in cable networks on the ground, but that was illegal under Norwegian law. Since for most Norwegians, only a single TV-channel was available, pressure began to mount on the public monopoly. Despite this pressure, a liberalization did not occur until December 1981, when the newly elected government announced that 30 new agents would obtain broadcasting licenses the following year. It then became legal to forward television signals broadcast by satellites in local cable networks, all of which had to register with the Post- and Telecommunications Authority. The legalization in 1981 initiated a large-scale rollout of local cable networks. Because of economies of scale in laying the necessary cables, the rollout took place primarily in densely populated areas (Norwegian Ministry of Culture, 1995). Mandatory registration continued until 2004, at which point 40% of the population was registered as covered. The aggregate evolution of the share of households covered is shown in Figure 1.

Although this coverage rate is low compared to the US, it is not an outlier within OECD countries (OECD, 2009, p. 193). The explanation for the low rate is the low population density. In 2005, Norway's population density was the third lowest in Europe (World Bank, 2016), and it is one of the OECD countries with the lowest percentage of the population living in predominantly urban regions (OECD, 2016). Norway has also in general been slow at taking up new developments in broadcasting, introducing television 20 years later than in the US, not introducing a second public radio channel until 1984, and in 1972 being one of the last countries in Europe to allow color television (Enli et al., 2013).

The liberalization in 1981 meant leaving behind a regime in which television had a broad public service mandate, for one where light entertainment was much more easily available. In the articles of association of

Figure 1: Share of households covered by cable television 1970-2005.



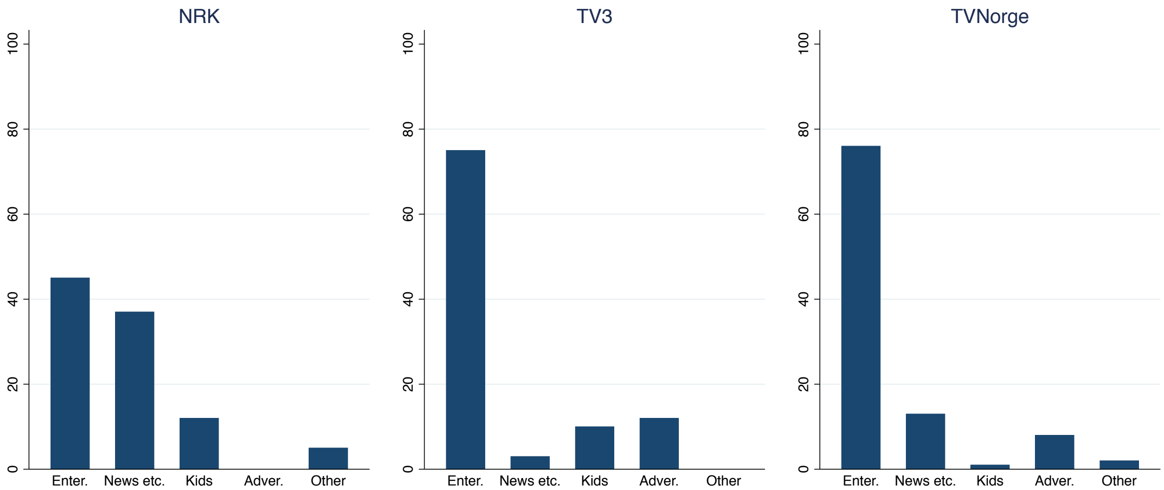
Note: The figure shows the share of households in Norway with access to cable television networks for 1971-2005. The cable television data consist of the universe of Norwegian local cable networks and they contain the number of households covered, the first date of operation, and the municipality. We combine this with data on the number of households in a municipality to obtain the yearly coverage rate. Source: Norwegian Post and Telecommunication Authority.

the NRK, it is stated that "The purpose of the NRK's overall public media services is to meet democratic, social and cultural needs in society (NRK, 1996). Further, "the NRK should promote public debate and play its part in ensuring that the entire population receives sufficient information to enable it to actively participate in democratic processes", "offer services which can be a source of inspiration, reflection, experience, and knowledge through programs of high quality", and "contribute to public education and learning." The new channels that arrived with cable television had no public service mandate, and no regulation of content other than pornography and violence (Regulations Relating to Broadcasting, 1997). A comparative analysis undertaken in 1993 (NRK, 1993) demonstrated that their program profiles were indeed markedly different: Figure 2 displays the average share of air time for types of content for the state channel (NRK) and the two main commercial channels (TV3 and TVNorge) for the year 1993.[2] The differences are quantitatively significant. The main Scandinavian cable channels in Norway (TVNorge and TV3) showed 75% entertainment and 10% advertisements, while NRK showed almost 40% news, documentaries, science, nature, or similar, almost three times as much news related content (37%) than TVNorge (13%) and more than ten times as much as TV3 (3%), and no advertisements. It is also clear that the new channels were watched – in 1992, the NRK's share of total viewing time was down to 64 % (NRK, 1992).

Of the new channels, TVNorge had the largest news coverage. Their news programs were actually produced by the commercial public broadcaster TV2 (Waldahl et al., 2002), a commercial channel licensed

[2]Unfortunately, data on the content of commercial channels is only available for the years 1993-1994.

Figure 2: Average content shares for NRK, TV3, and TVNorge 1993-1994.



Note: The figure shows the average fraction of air time for different types of content for the state channel (NRK) and the two cable channels TV3 and TVNorge for the years 1993-1994. Entertainment is the sum of the entertainment content, drama and sports categories. News etc. is the sum of the news, society, religion, regional content, science, education, culture and lifestyle categories. Source: Medienorge.

to use the network of the regular public broadcaster NRK. TV2 and NRK had markedly different profiles – summarizing research on differences in news coverage between the two channels, (Syvertsen, 1997, p. 174) writes: "TV2 had more crime, accidents, consumer material, and curiosities than NRK, who on their side had more foreign affairs, politics, economics, work life and heavier social society material." This fits very well with the large literature concerned with how commercial news are different from public service news. This research has found that commercial news typically downplay background knowledge and broad, generalizable topics, and in stead spends more time on crime, often from a personalized angle, and celebrities and sports, see e.g. Postman et al. (1992), Langer (1998), and Sparks and Tulloch (2000). Incidentally, the most popular news show from TV2 in the early 2000s was literally named "Tabloid" (Skaalmo and Eckblad (2012)).

Who did the new channels appeal to? Table 1 shows the relationship between viewership of the most important television channels in this period and some socioeconomic and demographic characteristics, based on the media survey of Statistics Norway for the years 1992-2004.[3] The dependent variable is a dummy variable indicating whether an individual watched the channel in the heading the day before the survey. TVNorge and TV3 were the two main new channels made available by cable television, while NRK was the traditional public channel. TV2 was a commercial channel licensed to use the network of the public broadcaster from 1992. TV2 shared some similarities with other commercial channels in that

[3]This data source do not contain a municipality identfier, hence the only geographic control included is fixed effects for four degrees of rurality ("Area FE").

it carried advertisements and was largely free to decide the type and form of its programming, but it was also subject to some regulations regarding language, content, and localization of headquarters.

From the first three rows, the most important aspect is that people with higher education tended to watch the new channels less, and the public broadcaster more. Watching the new channels was also associated with lower income and age, while the opposite was the case for the public broadcaster. Reassuringly, the results for the commercial channel TV2, the second channel operating on the national network, largely mirror those for the cable channels.

Table 1: Audience profile cable channels vs. national channels

	(1)	(2)	(3)	(4)
	Cable channels		Nationally available	
	TVNorge	TV3	NRK	TV2
Less than high school	0.001	-0.004	-0.048***	-0.024*
	(0.010)	(0.008)	(0.013)	(0.014)
University, 3 years	-0.016	-0.007	0.045**	-0.029
	(0.013)	(0.012)	(0.018)	(0.018)
University, 4+ years	-0.068***	-0.033***	0.031**	-0.070***
	(0.008)	(0.007)	(0.012)	(0.012)
Househhold income, mill. USD	-0.163	-0.102	0.228	0.019
	(0.120)	(0.081)	(0.155)	(0.147)
Age	-0.002***	-0.002***	0.008***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Female	0.008	-0.018***	-0.024***	-0.010
	(0.006)	(0.005)	(0.008)	(0.008)
Constant	0.126***	0.158***	0.377***	0.135***
	(0.012)	(0.011)	(0.020)	(0.018)
Observations	13,062	13,062	13,062	13,062
R-squared	0.035	0.033	0.089	0.129
Mean	0.13	0.10	0.61	0.42

Note: The dependent variable is whether or not the channel in the column heading was watched the preceding day. All specifications use year area type fixed effects. Four area types: population>100 000, 20 000-100 000, <20 000 and "rural". People with a high school education provide the reference category. Source: Media survey 1992-2004, Statistics Norway. Linear regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

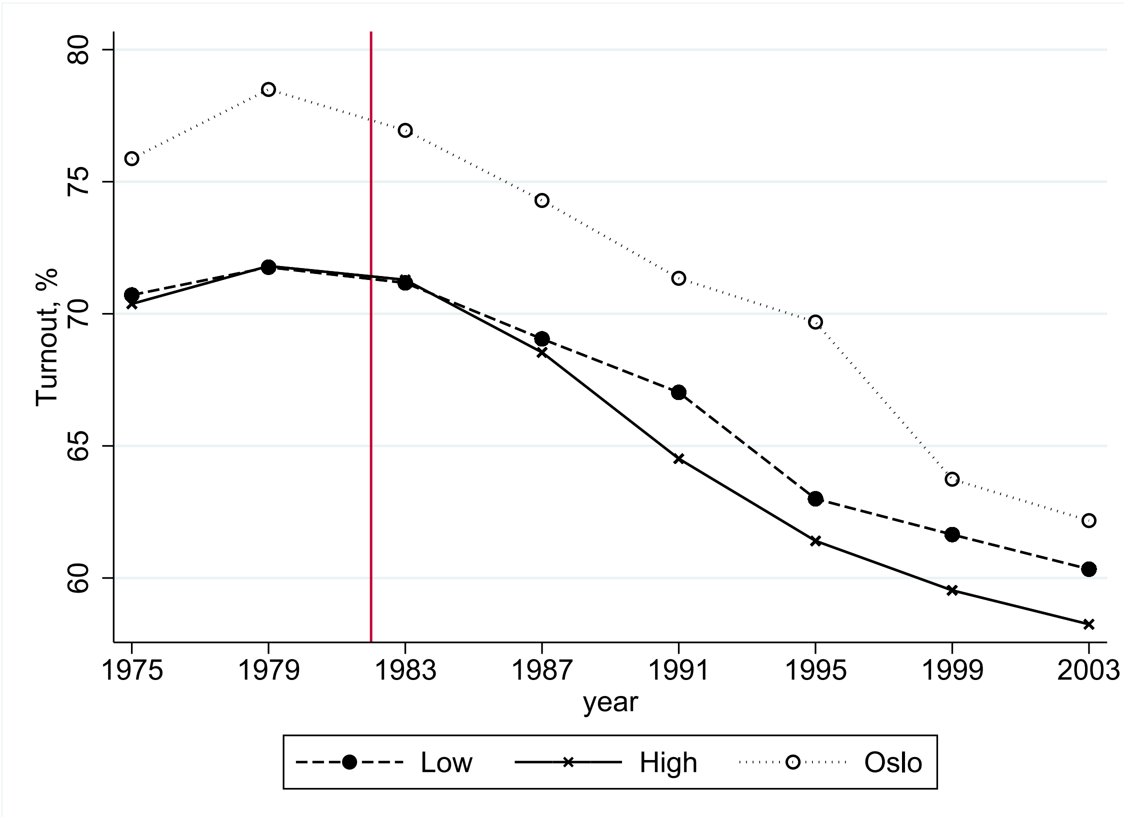
2.2 Local municipal politics

The municipality is the lowest administrative level in Norway. There are 426 municipalities[4] governed by municipal councils elected every four years in an at-large, open list, proportional electoral system. In general, the largest parties at the national level also run for election at the local level. Municipalities greatly differ in size; in 2005 the average population was around 10 000 while the median population

[4]As of 1.1.2017.

was around 5 000. At the time of the media market liberalization in 1981, the biggest municipality had around 450 000 inhabitants while the smallest had 270 inhabitants.

Figure 3: Turnout in local elections 1975-2003 by cable television coverage in 2005.



Note: The figure shows the average turnout in municipalities partitioned by cable television penetration. “Low” and “High” indicate below and above median cable coverage in 2005, respectively. The cable television data consist of the universe of Norwegian local cable networks and they contain the number of households covered, the first date of operation, and the municipality. We combine this with data on the number of households in a municipality to obtain the coverage rate. Source: Norwegian Post and Telecommunication Authority.

Local governments have a significant amount of discretion in determining public spending and financing. They are the main provider of a range of public services like local infrastructure, child care, primary and lower secondary education, welfare, and culture, as well as parts of the health care and care for the elderly. Municipalities are mainly financed by national transfers. Part of these transfers are earmarked specific purposes in line with national policy goals while part of the transfers can be allocated by the municipal government subject to various constraints. However, local taxes on income, private, and commercial property as well as user charges on public services are also important sources of revenue for the municipalities. Subject to upper and lower bounds on tax rates set by the national government, the municipality can decide tax rates on private property. At the end of our sample in 2005, around 65 percent of all municipalities derived revenue from property taxation.

Policy choices at the local level in Norway have economic significance. Total municipal spending is around 18% of Norwegian mainland GDP and around 17.7% of the total workforce are employed by the municipality, as of 4. quarter 2014. Moreover, Aaberge et al. (2010) show that spending and financing choices at the municipal level have a significant impact on redistribution and poverty rates when adjusting for differences in needs among different groups.

Although turnout in local elections has historically been high in Norway, there has been a decline in recent decades. In most the post-war years until the beginning of the 1980s, it was between 70% and 80%. However, from the mid-1980s, turnout started to fall dramatically, dipping consistently below the earlier floor of 70%, and approaching a level of around 60%. In Figure 3 we have charted this trend for municipalities differentiated by whether they in 2005, the final year of the cable network data, had cable television coverage below or above the median level. We have separated the capital Oslo since it is an outlier in particular with respect to population. The municipalities that ended up with relatively low cable television coverage ("Low") and the group that ended up with relatively high coverage ("High") follow very similar trends in the end of the 1970s. Turnout in both groups drops markedly later, however with a pronounced steeper drop for the "High" group.

3 A simple model of commercial media and politics

To study the effects of increased cable television coverage on local politics, we extend a standard probabilistic voting model with commercial mass media in the spirit of Strömberg (2004a). This model differs in emphasizing how the demand for commercial television content and the associated lower coverage of politically relevant information affects local politics. The model also captures the potentially different impacts on groups of voters depending on viewership patterns of commercial television. This allows making predictions about differences in turnout and exposure to political information between groups and hence effects on policy outcomes.

3.1 Setup

There are N groups of voters. Voter j in group i derives utility from a public good g_i, private consumption c_i^j, and watching television with utility function,

$$c_i^j + u(g_i) + \tilde{v}_i(q_i) + (\beta_i^j + \delta)\mathbf{1}_{p=I}. \tag{1}$$

When commercial television enters the municipality the voter can choose to watch commercial television or to keep watching only state television, $q_i \in \{q_i^c, q_i^s\}$. The utility derived from watching each alternative depends on the extent to which content is adapted to the group in question, as measured by q_i. β_i^j and δ are preference shocks in favor of the incumbent politician.[5]

[5] β_i is distributed as $U[-\frac{1}{2\phi}, \frac{1}{2\phi}]$. δ is distributed as $U[-\frac{1}{2}, \frac{1}{2}]$. $\mathbf{1_I}$ is a dummy that is equal to one if the incumbent wins. The voters budget constraint is given by $c_i^j \leq (1-\tau)w_i$. Hence preferred spending on public goods is decreasing in income.

A fraction s_i of the voters in group i are exposed to relevant information about politics, becoming politically informed and therefore observing the proposed policy g_i. The share of voters exposed to relevant information about politics in group i is a function of the share in group i watching commercial television, γ_i. We assume that the share of politically informed voters is decreasing in the share of commercial television viewers, $s'(\gamma_i) < 0$. Further, t_i is the probability that a member of group i votes and we assume that turnout is higher among individuals more exposed to political information, $t'(s_i) > 0$.

The incumbent politician, I, and challenger, C, choose the allocation of public goods and the tax rate to maximize the probability of winning the election subject to the government budget constraint. The problem of each politician is given by,

$$\max_{g} \quad P_j R \quad s.t \quad \sum_{i=1}^{N} g_i^j \leq \tau \sum_{i=1}^{N} w_i, \tag{2}$$

where τ is the tax rate and $j \in \{I, C\}$. P_j is the probability that politician j wins the election and he derives an exogenous rent R from winning the election. The politicians choose a policy vector g to maximize their expected utility.

Groups also differ in how strongly they prefer commercial television content. Since it is costly to adapt content to accommodate the preferences of different groups, commercial television firms face a tradeoff in which groups to accommodate when maximizing profits. The commercial television firms' problem is given by the following equation,

$$\max_{q} \quad \sum_{i=1}^{N} \alpha_i \gamma_i - \sum_{i=1}^{N} q_i. \tag{3}$$

The revenue of adapting content to a group depends on the value of the group for advertising, α_i, and the demand for commercial television content in each group as captured by the audience share of group i, γ_i. State television content q_i^s is assumed exogenous.[6]

The timing proceeds as follows. First, commercial television firms maximize profits and the distribution of information among the groups is determined. Next, politicians propose policy platforms. Then, voters select their preferred candidate. Finally, the winner implements the proposed policy.

3.2 Equilibrium

Given the policies proposed by the incumbent and the challenger, politically informed voters vote for the incumbent if,

$$V(g_i^I(s_i)) + \beta_i + \delta \geq V(g_i^C(s_i)), \tag{4}$$

where $V(g_i)$ is the indirect utility function of the part of utility depending on g_i. Uninformed voters vote for the incumbent if $\beta_i + \delta \geq 0$. Solving the incumbent's utility maximization problem gives the following

[6] It is also assumed throughout that the cost of adapting content is the same for all the groups. This cost equals one.

condition for the proposed policy in equilibrium,

$$g_i^* = u'^{-1}\left(\frac{\sum_{i=1}^N w_i s_i}{t_i s_i \sum_{i=1}^N w_i}\right), \tag{5}$$

which shows that more politically informed groups with higher turnout receive more targeted spending. When a party increases transfers to group i it wins over some politically informed members. The marginal benefit of winning over these voters depends on the turnout of the group. In this sense, groups with politically informed voters and high turnout are attractive targets for politicians seeking to maximize their probability of winning the election.

Media choices determine how much political information each group is exposed to on average. A consumer watches commercial television if

$$v_i(q_i^c) + e_i^j \geq v_i(q_i^s), \tag{6}$$

where e_i is a group specific preference shock for television consumption commercial television consumption.[7] The audience share of group i follows from this expression and the equilibrium level of adapted content and is given by,

$$q_i^{c*} = v_i'^{-1}\left(\frac{1}{\alpha_i \xi_i}\right). \tag{7}$$

The share in group i watching commercial television content depends on the utility difference between commercial and state television as well as the receptiveness of group i to targeted content, ξ_i. Intuitively, accommodating a groups' content preferences increases the share of the group watching commercial content. The stronger preferences for commercial television content within a group, the higher the marginal revenue of adapting content in its favor.[8]

3.3 Empirical predictions

As in Strömberg (2004a), the model predicts groups that are valuable for commercial television to become targeted by commercial media. Moreover, it also predicts less politically informed groups to receive less targeted spending. Our framework introduces two new predictions suitable for our empirical setting. Consider the model's first prediction, the effect of commercial television penetration on turnout and exposure to political information.

Proposition 1. *If $s'(\gamma_i) < 0$ and $t'(s_i) > 0$, then introducing commercial television reduces turnout and the share of politically informed voters, that is $\frac{\partial s_i}{\partial q_i^c} < 0$ for all i. Moreover, the reduction is higher for groups deriving more utility from commercial television content.*

Proof. The proof can be found in Section A.2.1 of the appendix. □

[7] e_i is a group specific preference shock for television consumption distributed as $U[-\frac{1}{2\xi_i}, \frac{1}{2\xi_i}]$.

[8] The derivations of equation (5) and (7) can be found in Section A.2 of the appendix.

When commercial television enters the municipality, exposure to political information is lowered and turnout is reduced for all groups of voters. The strength of the effect on different groups depends on the share of commercial television viewers, which in turn depends on supply and demand factors of commercial television content. Supply factors include the advertisement value of a given group. Demand factors include the utility derived from watching commercial content. The reduction in exposure to political information and turnout is larger in groups with stronger preferences for commercial content. Our empirical application also looks at the consequences of increased inequality in participation and exposure to information between groups for policy outcomes, which we examine more closely next.

Proposition 2. *If $s'(\gamma_i) < 0$ then groups with more commercial television viewers receive less targeted spending, that is $\frac{\partial g_i^*}{\partial \gamma_i} < 0$ for all i. Moreover, increasing the difference in the share of politically informed voters or the turnout between two groups, increases the difference in targeted spending received by the two groups.*

Proof. The proof can be found in Section A.2.2 of the appendix. □

When the audience share of a group increases, they become less informed about the proposed policies. Moreover, less politically informed groups are also less likely to vote. Intuitively, both these factors make the group less attractive targets for politicians seeking to maximize their vote share. In sum, differences in viewership of commercial media content between groups is a key factor determining the political consequences of introducing local cable television networks in the municipality.

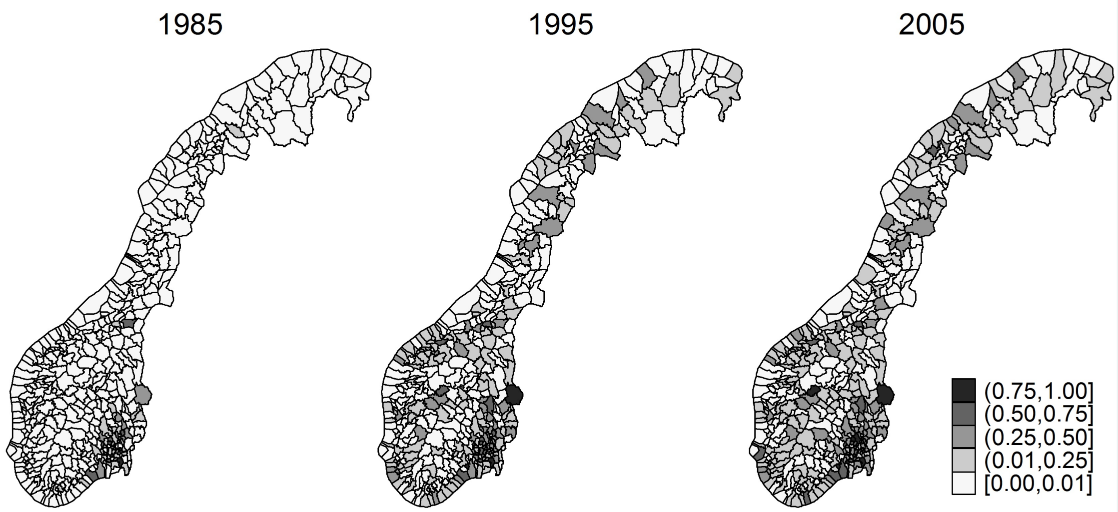
As can be seen in Table 1, commercial television watching is concentrated among younger age groups and individuals with less education. Therefore we expect younger and less educated individuals to be more affected by introduction of commercial mass media by becoming less exposed to relevant political information through media and as a result participating less. Moreover, we expect policies to become more favorable to groups with higher incomes and education, while becoming less favorable for poorer, younger and less educated groups. We proceed by taking these predictions to the data.

4 Empirical strategy

4.1 Data

To test these predictions we combine data from various sources. The cable television data consist of the universe of Norwegian local cable networks from 1971 up to 2005. They contain more than 11,000 unique networks, each with the number of households covered, the first date of operation, and the municipality. We combine this with data on the number of households in a municipality to obtain the yearly coverage rate in each municipality up to 2005. The maps in Figure 4 show three snapshots of coverage rates across the country between 1985 and 2005. They illustrate the considerable geographical disparities in the rollout process, with cable networks first established in the Oslo-area, and then expanded to other densely populated areas throughout the country. As population is quite spread out in Norway, all municipalities include at least some people living in rural areas. Thus, even if there is a small town in a municipality, a substantial share of the inhabitants will typically live more remotely and not be connected. This means that municipalities typically do not transition quickly to full coverage.[9]

Figure 4: Cable television coverage by municipality, 1985-2005.



Note: The maps show three snapshots of coverage rates across the country between 1985 and 2005. The cable television data consist of the universe of Norwegian local cable networks and they contain the number of households covered, the first date of operation, and the municipality. We combine this with data on the number of households in a municipality to obtain the yearly coverage rate. Source: Norwegian Post and Telecommunication Authority.

Next, we match the data on local cable network penetration with data from various sources. Data on municipal politics and local public finance is from Fiva et al. (2015),[10] and covers the period 1972-2015. The number of municipalities varied from 428 to 454 in this period. We restrict the sample to municipalities that existed through the whole period with the same municipality identifier. This amounts 390 municipalities. The first local election held in our sample was in 1975 and the last in 2003. Since local elections are held every four years this amounts to eight election years. We further supplement these data

[9]Figure A1 in the appendix shows a histogram of the within-municipality election-to-election (4 years) changes in coverage greater than zero. This is essentially the identifying variation we are exploiting in our analysis. As can be seen, only very few municipalities became fully, or nearly fully, connected between elections and most of the increases were up to 10 % of the population, with also quite a few in the range between 10 and 60 %.

[10]Available at `www.jon.fiva.no/data.htm.`

with socioeconomic variables from Statistics Norway and the Norwegian Social Science Data Service.

To examine the mechanisms we use data at the individual level. Individual-level data on political behavior, exposure to political information through mass media and demographic controls come from the Local Election Surveys. The surveys are conducted every fourth year to cover each municipal election from 1995 to 2007. Data on media consumption are from the Norwegian media use survey with annual data for the years 1991-2004. Unfortunately the media use data do not come with a municipality identifier, inhibiting us from employing the identification strategy including municipality fixed effects as elsewhere in the paper. The survey data are all gathered and compiled by Statistics Norway, and distributed and made publicly available by the Norwegian Social Science Data Service. Summary statistics and variable descriptions can be found in Tables A1 to A4 in the online appendix.

4.2 Identification

To deal with the potential endogeneity of exposure to cable television, we exploit the fact that the roll out of cable television was driven by the supply side on the basis of settlement patterns and physical and topographical constraints.[11] The amount of time between when access to more channels became technologically feasible and when they actually became available meant that excess demand had built up everywhere at the time of the liberalization. Moreover, building cable networks required heavy investment in infrastructure, and was only profitable in densely populated areas. Given the large excess demand, the actual expansion pattern was determined by economies of scale and physical/topographical constraints. Participants from the supply side of the cable television market in this period have confirmed that it is hard to see any factors other than suppliers' capacity and population density that had an impact on where networks were built, and that the deregulation suddenly allowed suppliers to cater to a demand that had been present for a long time (Hernæs et al., 2016).[12]

As early as 1995, a government report predicted that the ongoing cable coverage expansion would plateau due to the outspread settlement pattern in Norway (Norwegian Ministry of Culture, 1995, p. 11). A few years later, a government White paper concluded that "significant development of cable networks beyond today's level will most likely not be profitable (Norwegian Ministry of Culture, 1999, Ch. 2.2)," and that "one does not expect significant further development of cable utilities beyond today's coverage of around 38 % (Norwegian Ministry of Culture, 1999, Ch. 2.3.2)." From Figure 1 it is clear that these predictions proved correct. The report cites topographical and physical barriers as reasons for why full coverage would not be possible.

Further evidence for the exogeneity of coverage comes from considering the size and distribution

[11] This identification strategy has previously been employed by Hernæs et al. (2016), who found a negative effect on IQ of childhood exposure to cable television for young men, an effect which is unlikely to be important for the mechanisms studied in the present paper.

[12] Thus, like Gentzkow et al. (2011), who analyze the effect of newspapers on electoral outcomes, we exploit supply-side decisions made for commercial reasons as a source of variation in media exposure. Unlike these authors, however, we also analyze effects on policy and use individual-level data to examine mechanisms.

of the networks. Many networks in a locality were constructed at the same time as parts of the same development. The average number of new households gaining access conditional on expansion in any given municipality-year, which is our observational unit, is 691. Thus it is clear that access was determined at a quite different level than the household. The fact that cable networks did not operate in almost 40 % of municipalities also shows that whether to obtain access was clearly not an individual-level decision.

If the rollout pattern of cable networks was driven by population density and topographic constraints, then the residual variation in coverage once measures of population density and fixed effects are accounted for should be largely idiosyncratic. Figure 5 displays the distribution of the residual from a regression where local cable television coverage is regressed on variables that account for population density and topographic variation (municipality and year fixed effects, the number of inhabitants, the share of population living in densely populated areas and a trend interacted the urban share around the time of the liberalization).[13] For each year (1975, 1985, 1995 and 2005) we calculate the quintiles of the residuals and display these on maps containing municipal borders. As can be seen in Figure 5, within each year there is no clear geographical pattern of the distribution of the residuals.[14] There is also not much systematic variation in the residuals over time and most of the residuals change quintiles. Taken together, the residual variation appears idiosyncratic and is supportive of the narrative evidence above.

To exploit these features, we employ an empirical strategy where we regress the outcomes on the share of households with cable television access, while controlling for population density and other time-invariant municipality characteristics. The identifying assumption is that the geographical rollout of cable television was uncorrelated to unobservable factors that could have generated local variations in the development of turnout, conditional on the control variables we use in the analysis.

4.3 Econometric specification

The empirical framework of the analysis is given by the following specification,

$$y_{it} = \alpha_i + \gamma_t + \rho TV_{it} + \mathbf{x'}_{it}\beta + \lambda m_{i,1980} \times t + \epsilon_{it}. \tag{8}$$

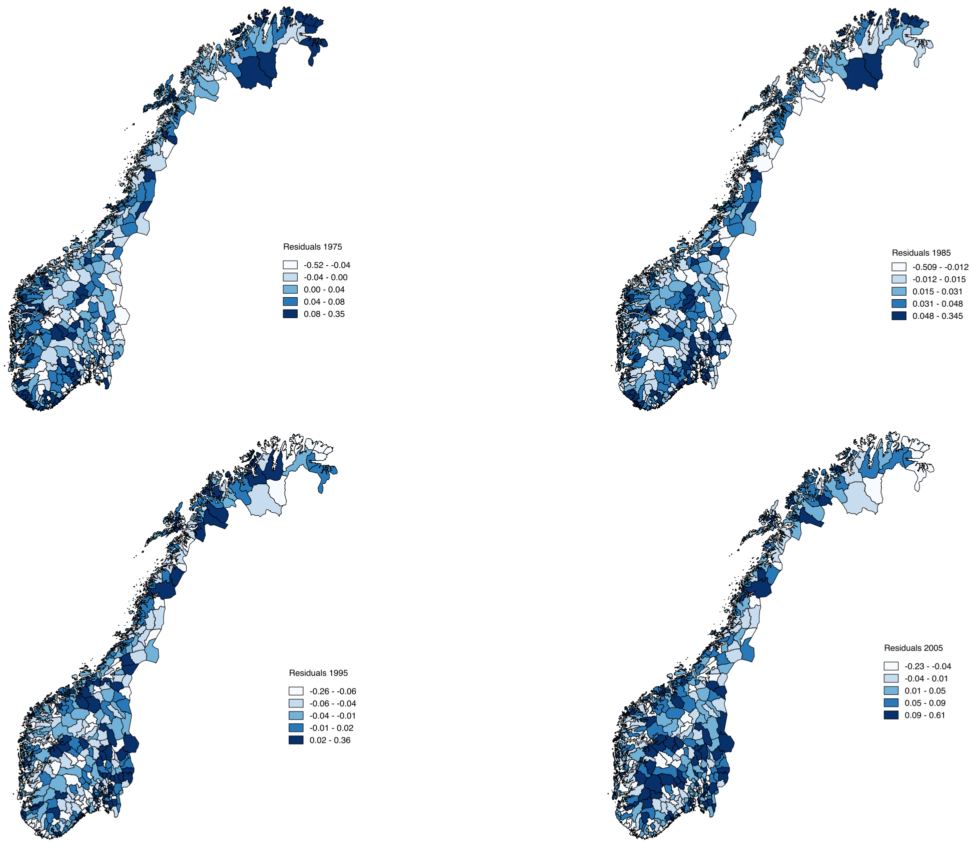
Here y_{it} is the outcome of interest in municipality i at time t. The specification includes two sets of fixed effects: Municipality fixed effects α_i capture factors within each municipality that are constant over time, and year fixed effects γ_t absorb yearly shocks that are common for all the municipalities. TV_{it} is the share of households in a municipality with access to cable television. We control for differential time trends using pre-reform characteristics of the municipality, $m_{i,1980}$, interacted with a linear time trend. The parameter of interest is ρ, which we aim to give the interpretation of the causal effect of cable television on the outcome.

Based on the arguments that the rollout of cable television was determined by settlement patterns and geographical constraints that were largely fixed in time, a minimalistic specification including only

[13] Maps of the distribution of the population can be found in Figure A3 in the online appendix.

[14] More formally we calculate the distance between the average coordinate of each municipality and calculate the correlation of the residuals for different bins of distances. This gives correlation coefficients very close to zero for all bins.

Figure 5: Residuals of cable television access.



Note: The figures show the residuals partitioned in quintiles by year when the share of households with television access in each municipality is regressed on variables that account for population density and topographic variation (municipality and year fixed effects, the number of inhabitants, the share of population living in densely populated areas and a trend interacted the urban share in 1980). The observations are weighted by population in each municipality. The residuals are grouped by quintiles and shown for the years 1975, 1985, 1995 and 2005.

municipality and time fixed effects and possibly population density would provide valid identification. However, this cannot be taken as given, as it is still possible for the rollout to have been correlated to other factors that may have impacted turnout. One such channel would be through the cable operators' expansion decisions, despite market participants' admission that is was hard to see relevant factors other than capacity constraints and population density. Another would be the possibility that turnout in more urban areas developed differently than in more rural ones during this period. We therefore include a vector $\mathbf{x}_{it}$ of time varying socioeconomic and demographic municipality characteristics, both to control for potential selection based on these variables and to improve efficiency. This vector includes average income, education (share of population over 16 having finished high school), share of population living in densely populated areas, age structure (share of children (pre-school age), young people (school age), elderly (age 66+)), unemployment, gender ratio, and population size.

As population density was a particularly important factor for the cable network expansion, we interact 1980 municipality-level population density with a linear time trend to account for the possibility of differential time trends depending on this variable. Moreover, as robustness checks we include polynomials of income and population to rule out that non-linear effects are biasing the estimates, as well as municipality-specific linear time trends. Standard errors are clustered at the municipal level. Observations are weighted by municipality population.[15]

The presentation of the results are made up of two main parts. In the first part we explore the political effects of cable television using aggregate data with municipality-level averages. In the second section of the results we look at mechanisms using individual-level data.

5 Results

5.1 Turnout

We begin by presenting the estimates of the effect of cable television penetration on voter turnout in municipal elections, see Table 2. Column (1) shows the results from the minimalistic specification including only municipality and year fixed effects, suggesting a strong negative relation between increases in cable television coverage and turnout. As expected, the vector of time-varying socioeconomic characteristics added in Column (2) is relevant in explaining turnout, and the precision of the main estimate is increased when this is included. The same holds for including interactions between time trends and the level of population density or education in 1980 (Columns (3), (6), (7)), which we do due to the possibility that trends in turnout may be different in areas with differential access to cable television.[16] It is reassuring that the estimate of the effect of cable coverage is stable across these specifications. Moreover, the estimate is also robust to adding polynomials of population and income per capita (Column (4)) or municipality specific time trends (Column (5)). [17]

A municipality getting full coverage causes turnout to drop 2.5 percentage points in our baseline specification displayed in Column (3). This constitutes around a quarter of the average drop in turnout in the sample over this time period. We find less robust evidence of a negative effect of cable television on turnout in national elections, see Table A12. For national elections point estimates are lower and less robust over the various specifications. This is in line with the idea that market size matters for coverage of local political news. Commercial media outlets have weaker incentives to cater small geographic units and mainly cater political news of national interest relevant for participation in national elections.

[15] Unweighted results are similar and can be found in Table A5 to Table A7 the online appendix.

[16] In the appendix Table A8 we show further interactions with population, ruggedness, share of women, children, young, elderly, income, unemployment, share of welfare recipients, turnout in municipal, national elections, vote shares to left, and right wing parties. The estimates are highly robust to these inclusions.

[17] In the appendix we also present unweighted estimates in Table A5 to A7. Both the sign and significance remain the same, however, the magnitudes are larger, suggesting the effect to be stronger in less populated areas.

Table 2: Cable television and turnout in local elections

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-2.41**	-2.98***	-2.49**	-3.29***	-2.11***	-2.99***	-3.08***
	(1.09)	(1.01)	(0.98)	(0.91)	(0.73)	(1.00)	(0.99)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	2,920	2,920	2,920	2,920	2,920	2,920	2,920
R-squared	0.87	0.88	0.88	0.89	0.94	0.88	0.88
Mean	66.19	66.19	66.19	66.19	66.19	66.19	66.19

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

5.2 Robustness

5.2.1 Satellite television

Satellite TV subscription was another option for access to commercial channels. Unfortunately, we do not have municipality-level data on coverage by direct satellite television subscription using parabolic antennas (satellite dishes). For the main part of our time period, satellite television was either not available or very rare. Even as late as the early 1990s, when Statistics Norway started their media survey, less than 10% of households subscribed to satellite television. During the 1990s, this share expanded to almost 30%. Whether this could bias our results depends on how the satellite subscription expansion correlated with the cable access expansion in this period. It is clear from the media survey data that parabolic antennas and cable television were substitutes at the individual level. In 2004, 41% of respondents had access to cable television, 28% had a satellite TV subscription, 29% had neither, and 2% had both.

The satellite subscription expansion occurred over the whole country, but to the largest extent in rural areas. Although the media surveys do not contain a municipality identifier, respondents' residences are classified according to four indicators of rurality. The data clearly show that cable and satellite television were also negatively correlated across rurality – cable television was dominant in areas with many people living close to each other, while satellite television was primarily an option in scarcely populated areas. Figure A2 in the appendix shows this graphically. This negative correlation means that areas with little or no cable coverage are likely to have been subject to greater exposure to commercial television than what what we can observe, and thus the true difference in exposure is smaller than observed. Consequently, it is likely that the presence of satellite television, if anything, will tend to attenuate our estimated effects of access to commercial television, as we implicitly assume that cable networks are the only providers of such channels.

Despite the fact that we do allow for differential time trends in turnout based on population density, and include a wide range of observables that could pick up selection into satellite television, and even though the potential impact of the satellite option would likely tend to attenuate our estimates, we would like to assess the sensitivity of our estimates in this regard. As a robustness check, we therefore use information about satellite coverage from the media surveys 1991-2003 to simulate satellite subscription shares.[18] We merge satellite coverage information by year and the aggregate rurality indicators provided in the media survey data and use the probability of coverage to simulate satellite coverage for each municipality. The sum of this simulated satellite coverage and the actual cable coverage should provide a more complete measure of coverage by commercial channels. To account for the uncertainty in the measure of satellite coverage, this procedure is bootstrapped with 200 replications; i.e. we repeatedly sample the data, simulate satellite shares, and compute the point estimate of the combined coverage, before using the resulting distribution of estimates to construct standard errors. The bootstrap samples are clustered at municipality in order to still account for possible clustering at this level. The results are provided in Table A9 in the appendix. It is reassuring that the estimated coefficients are very similar to the main results.

We also provide our main results without parts the of the data where satellite television would be expected to be important. First, we exclude the final election in our sample, since satellite television grew in importance over time. Second, we estimate without municipalities in the first quartile of the distribution of population density in 1980. In this group of municipalities, cable expansion was minimal, as coverage had only reached 2.5% by 2003, but satellite subscription would be expected to be high, in light of the pattern described above. These municipalities would therefore be the clearest source of bias. It is reassuring that the results from these two exercises are very similar to the main results, see Tables A10 and A11 in the appendix.

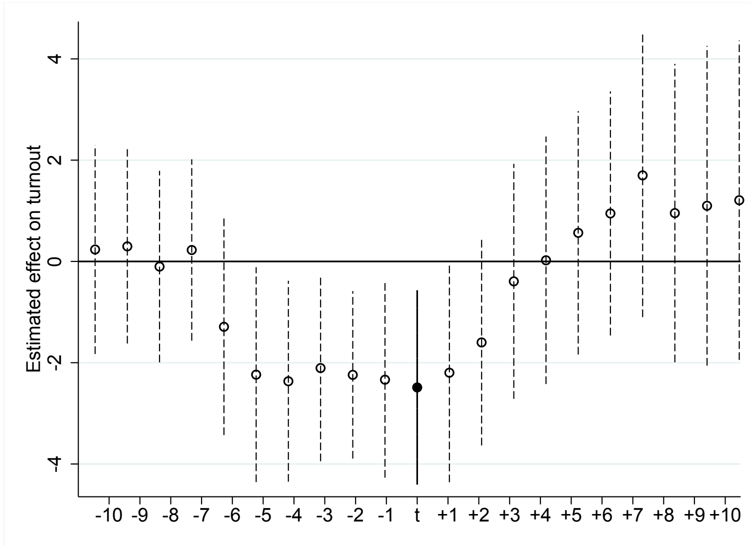
5.2.2 Placebos

As a check of whether the timing of the estimated effect occurs at the right time, we perform a series of placebo regressions where we gradually move the actual coverage data backwards or forwards in time. The results are plotted in Figure 6. Time t at the midpoint on the x-axis corresponds to the actual data, while the numbers on each side indicate how many years we have lagged or forwarded the data. Elections only take place every four years, so small changes preserve most of the identifying variation, however it is reassuring that the estimated effect becomes smaller and approaches 0 as we move away from the correct values, in particular for the forwarded values.

Relatedly, Figure 7 displays the coefficient resulting from including cable coverage in also the previous and the next election in the baseline model. The negative coefficient on coverage in the previous election indicates that there may be an important dynamic effect as well, an issue to which we return in Subsection

[18] We are grateful to an anonymous referee for this suggestion.

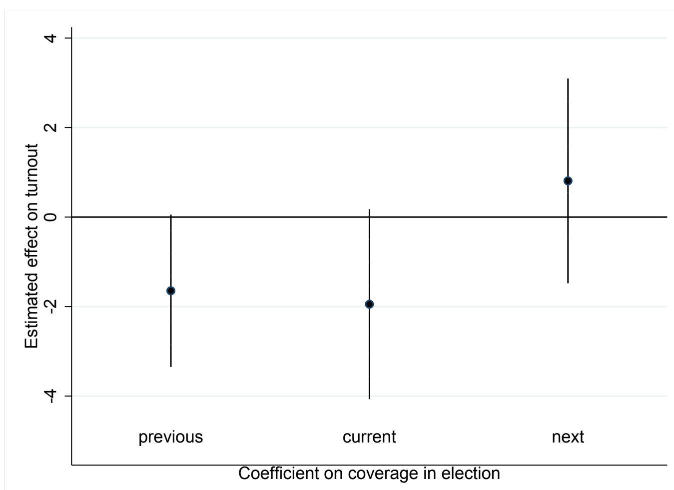
Figure 6: Placebo - move timing.



Note: t corresponds to the true timing. Numbers indicate how many years the cable television coverage data are misplaced by lagging (-) or forwarding (+). The specification includes municipality fixed effects, year fixed effects, demographic and socioeconomic controls (population density; log population; education; income per capita; share of children, young people and elderly people; unemployment), population density in 1980 interacted with time trend. Vertical bars indicate 95 % confidence intervals.

5.6. It is reassuring that the coefficient on future coverage is close to 0.

Figure 7: Placebo - including leads and lags of coverage.



Note: Baseline model including cable television coverage also in the previous and the next election. The specification includes municipality fixed effects, year fixed effects, demographic and socioeconomic controls (population density; log population; education; income per capita; share of children, young people and elderly people; unemployment), population density in 1980 interacted with time trend. Vertical bars indicate 95 % confidence intervals.

5.2.3 Selection on unobservables

Since we cannot completely rule out unobservable characteristics that are both correlated with changes in cable television access and changes in turnout to bias the results, it is reassuring that estimated coefficients are stable when adding time-varying controls in Table 2. A more formal approach is proposed in Altonji et al. (2005) and Oster (2016). Following this approach, we calculate the required degree of selection on unobservables in order for the treatment effect to be zero. In light of the identifying assumption, we compare a specification where we control for variables that account for population density and topographic variation (controlling for municipality and year fixed effects, share of population living in densely populated areas and a time trend interacted with population density in 1980) with and without further inclusion of time-varying controls.[19] As a result we use the same variation in cable television coverage as in the baseline specification (without socioeconomic and demographic controls) to recover the uncontrolled estimate.

The extent of selection on unobservables required for a treatment effect of zero suggests it is unlikely for the effect of cable television access on municipal turnout to be driven solely by unobservables. For the uncontrolled coefficient the estimate is given by -2.182, while the estimate of the controlled coefficient is -2.767. This gives, $\delta = -7.1$, showing that selection on unobservables must be strong in order to have an effect size of zero.[20]

5.3 Results on subsamples

We continue by looking at heterogeneous effects for socioeconomic groups that should be differentially affected, according to the model and viewership patterns. Table 1 shows that cable television viewership is concentrated among less educated and younger viewers. We therefore partition the sample for various thresholds of the pre-reform levels of education and the share of young people. In particular, the sample is divided based on the education level and the share of the total population of school age in 1980. We proceed by estimating the impact of cable television coverage separately for the municipalities above and below the threshold. In Table 3, Columns (1) and (3) give estimates for samples below, while Columns (2) and (4) give estimates for samples above the given thresholds.

Table 3 shows that the estimated effects differ according to the average level of education in the municipality. In general, municipalities with lower average education experience an around twice as high drop in turnout when cable television penetration increases. In particular, municipalities below the 40th percentile are more affected. However, except for the partition at the 40th percentile the differences are not statistically significant at conventional levels, possibly due to the loss in precision from the reduced

[19]We include the full set of socioeconomic controls in Table A1. This includes income per capita, share of population over 16 having completed high school, share of population over 16 having completed college, population, unemployment, share of population living in densely populated areas, share of population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio.

[20]Both the estimates in the controlled and uncontrolled specification are significant at the 0.01 percent level.

Table 3: Heterogenous effects

	(1)	(2)	(3)	(4)
	Education		Age	
Turnout municipal	Low	High	Low	High
60. percentile	-4.06**	-2.11**	-2.23*	-1.79
	(2.02)	(0.95)	(1.20)	(1.39)
50. percentile	-4.10*	-2.16**	-2.02*	-2.64
	(2.28)	(0.96)	(1.19)	(1.64)
40. percentile	-6.61***	-1.81*	-1.68	-3.38**
	(2.03)	(0.96)	(1.22)	(1.48)
N_{60}	1,607	1,313	1,619	1,301
N_{50}	1,456	1,464	1,475	1,445
N_{40}	1,139	1,781	1,189	1,731

Note: All specification include year fixed effects, municipality fixed effects, socioeconomic and demographic controls, and a time trend interacted with population density in 1980. Socioeconomic and demographic controls include income per capita log of population, unemployment, share of population living in densely populated areas, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio. The sample is divided in various percentiles based on education level/share of young in 1980. Then separate regressions are estimated for the municipalities above and below the threshold. Column (1) and (3) give estimates for samples below while (2) and (4) for samples above the given thresholds. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

sample size. There is no clear difference in the effect between municipalities with different shares of young people.

5.4 Party choice

Next, we examine wether the changes in coverage favored some political parties over others. To do that we use data on vote shares for different party blocks in municipal elections. *Left* consists of the sum of vote shares in municipal elections to left wing parties,[21] *Right* the sum of vote share to right wing parties,[22] and *Other* the vote share of independent parties.[23] Our theoretical framework does not predict any particular effects on party shares of changes in the composition of the electorate.

Table A13 shows the results from regressing the party vote shares on cable television penetration using the baseline specification. We find little evidence of commercial television to have favored vote shares of particular parties. The signs of the estimates suggests commercial television to have favored right wing parties, although the results are not statistically significant. To investigate this further we also regressed the vote shares of individual parties using the same specification without this yielding any further results.[24] This contrasts with the findings of Durante et al. (2015) that commercial television

[21]The Red Electoral Alliance (RV), The Socialist Left Party (SV) and The Norwegian Labor Party (DNA).

[22]The Conservative Party (H), The Christian Democratic Party (KRF), The Liberal Party (V), The Center Party (SP) and The Progress Party (FRP).

[23]Various parties obtaining little nationwide support. For example The Norwegian Communist Party (NKP).

[24]We report these findings in Table A18 and Table A19 the online appendix.

channels in Italy favored some political parties above others. We cannot rule out effects on political preferences and party composition, however, as parties can change their political platform in response to the appearance of commercial television.[25]

5.5 Spending, composition, and taxes

A key prediction of the model is that groups with a higher share of commercial television viewers should receive less favorable policies. In this section we test this prediction by looking at policy outcomes at the municipality level. Using spending shares, we examine the extent to which spending targeted towards various socioeconomic groups changes. *Total* denotes the yearly spending of the municipality per capita. *Tax* is the yearly per capita revenue from property taxation. The spending shares denote the percentage of total spending devoted to various categories.

Table 4 reports the results for the baseline specification. Most notably, introduction of cable television is associated with less public spending. The estimates suggest that going from zero to full coverage in a municipality reduces total spending per capita of around 6.5 percent from the 2004 average. Increased cable television penetration is also associated with small shifts in the spending shares of municipalities and with less revenue per capita from property taxation. More resources are devoted primary education, while less is allocated to social expenditures. All the results are significant at the five percent level.

In combination with the differences in viewing patterns among different groups, the model provides a framework to interpret the patterns in Table 4. It is plausible that the different spending categories target and benefit different socioeconomic and demographic groups. As more educated individuals earn more on average, it is likely that these groups are less supportive of redistributive policies such as high government spending, taxation of property, and social spending. These results are therefore consistent with a larger negative effect of cable television on turnout among less educated individuals.

We also find a negative effects of cable television coverage on the share of spending devoted to primary education. This is consistent with a stronger negative effect on less educated individuals if more educated individuals prefer higher spending on education. As pointed out in Gavazza et al. (2016), highly educated individuals spend more time with their children even though their opportunity cost of doing so is higher (Guryan et al. (2008) and Ramey and Ramey (2010)). This is line with the view that highly educated individuals invest more in their children and gives reason to believe that highly educated individuals are also more likely to support policy platforms with higher spending on education. To explore if this is likely to be the case in Norway, we again use data from the local election survey. In 2007 the survey asked respondents how they would allocate their taxes on the various budget posts of the municipality if it were up to them. The results show that highly educated individuals are much more prone to report high values on education spending. These results are reported in Table A16 of the online appendix.

[25] We thank an anonymous referee for pointing this out.

Table 4: Cable television and policy

Policy	(1) Total	(2) Tax	(3) Education	(4) Elderlycare	(5) Childcare	(6) Healthsoc.	(7) Culture	(8) Transport	(9) Adm.	(10) Other
Cable coverage	-5.20**	-0.98**	2.43**	0.25	0.06	-2.16**	0.34	-1.97	1.25**	-0.20
	(2.21)	(0.46)	(1.14)	(0.86)	(0.33)	(0.99)	(0.58)	(1.38)	(0.64)	(1.70)
Observations	11,936	5,715	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936
R-squared	0.87	0.92	0.79	0.88	0.89	0.76	0.51	0.64	0.54	0.85
Mean	40.46	0.88	23.45	16.90	4.76	13.95	5.64	3.81	6.21	25.29

Note: All results include municipality fixed effects, year fixed effects, time trend times population density in 1980, and socioeconomic and demographic controls (income per capita, education, log of population, unemployment, share of population living in densely populated areas, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio). Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

5.6 The Dynamics of political participation

In this paper we analyze the effects of contemporaneous coverage, following the majority of papers in the related literature. However it is also possible to think of political participation as the outcome of a dynamic process involving investment in information and political knowledge, as suggested by Gentzkow (2006). Gentzkow (2006), and later Campante and Hojman (2013), model the effect of television by regressing their outcomes of interest on the number of years of coverage in a given county, i.e. the number of years since television was introduced in the county. This allows the effect of television to be a gradual process, with past differential coverage still impacting outcomes today.

To explore some of these dynamics, we implement a related specification. Since we have data on the share of people who were covered in each year, we are able to compute a more accurate measure of an area's cumulative coverage than simply employing a dummy variable for whether there was some coverage or not. Thus we weight each year of coverage with the share covered to arrive at a municipality's "effective" years of coverage in any given year. The results of implementing this specification, which except for the coverage variable is identical to our preferred specification from before, are shown in Tables A14 and A15. The results imply that one effective year of cable television coverage reduces turnout by around 0.27 percentage points. This helps explain the negative effects of lagged coverage that were found in the placebo analyses in Section 5.2.2. The effects on policy also go in the same direction as in the main analysis.

6 Mechanisms

6.1 Television consumption

From the media surveys of Statistics Norway, we have information about how much television people watched the day before and what type of television they have access to. Respondents are also asked what type of programs they watched. Note that these data do not have a municipality identifier, thus it is not possible to employ the same empirical strategy as in the rest of the paper, using the geographically staggered rollout of cable networks as source of identification. Nevertheless, by including fixed effects for area type (population>100 000, 20 000-100 000, <20 000 and "rural"), we can hopefully approximate a similar strategy. However, the results must be interpreted with caution.

In Table 5, we examine the relationship between cable television access and minutes spent watching television and the number of news or other programs watched. Column (1) shows that cable access is associated with a substantial increase in the amount of hours spent watching television, on average more than a quarter of an hour every day. Column (2) shows a quite steep education gradient in this relation, with each additional year of education reducing it with almost 2 minutes. Columns (3) and (5) show that people with cable television access also watch more of both news programs and other programs. Thus, even though 85 percent of the increase in the number of shows watched is due to other programs, cable access seems to have expanded the television market for both these two types of content.

Further, although the increase in news consumption is relatively small – 0.05 more programs per day amounts to around one more program every three weeks – it is interesting to note that the coefficient on the interaction with education is very close to zero, suggesting that everyone with cable television access watches somewhat more news, regardless of education. Since news often is an important source of political information, which is the mechanism suggested by the theoretical model, it is necessary to examine the content of the increased supply of news.

Recall from section 2 Institutional background that commercial news in Norway as elsewhere was relatively shallow and low in political information. To verify that it was this content that actually made up the small increase in television news watched, the final three columns in Table 5 disaggregate the news measure from Column (6) by channels – the governmental public broadcaster NRK, the commercial public broadcaster TV2, and other channels. The results show that news on the public broadcaster NRK is somewhat crowded out, though less so for the higher educated, while news on the commercial channel TV2, which should be a close substitute for other commercial news, as expected is not affected. The final column shows that the crowding out of NRK and the whole aggregate increase from Column (6) is made up of news on other channels, also with a strong education gradient.

6.2 Exposure to political information

We continue studying the mechanisms in more detail using data from the local election surveys about individual-level turnout, exposure to political information, and a summary measure of different of types political participation. There are two substantial advantages with this data set: It asks specifically about exposure to political information, which is our main concern, and it contains geographical identifiers, which allows for merging with the external cable networks data and using an empirical specification consistent with the analyses in Section 5. The drawback is that it is relatively small, and thus analyses may be hampered by statistical uncertainty. The empirical specification in this analysis contains everything from our preferred specification from Section 5, i.e. year fixed effects, municipality fixed effects, municipality-

Table 5: Cable television and media consumption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	TV, minutes		Non-news, shows		News, shows		News, shows, by channel		
							NRK	TV2	Other
Cable coverage	15.9***	17.5***	0.280***	0.312***	0.049**	0.051**	-0.015	-0.001	0.067***
	(3.3)	(3.6)	(0.033)	(0.037)	(0.022)	(0.023)	(0.013)	(0.011)	(0.012)
Cable coverage ×		-1.863*		-0.030***		-0.002	0.008*	-0.002	-0.008**
years of schooling		(0.997)		(0.011)		(0.007)	(0.004)	(0.003)	(0.004)
Observations	21,844	21,844	14,301	14,301	14,301	14,301	14,301	14,301	14,301
R-squared	0.117	0.117	0.033	0.034	0.113	0.113	0.146	0.109	0.063
Mean	112.5	112.5	1.46	1.46	0.95	0.95	0.52	0.28	0.15

Note: Television consumption yesterday, individuals aged 18 or more. All models include fixed effects for area type, year, and age, and a dummy variable for a connection parabolic antenna. Four area types: population>100 000, 20 000-100 000, <20 000 and "rural". Source: Media Use Survey 1991-2004. Observations are weighted by sampling probability. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

level socioeconomic and demographic controls, as well as individual controls for age, age^2, education, income and gender. It should be noted that this is a quite demanding specification when using survey data – in particular, for many municipalities the estimates will be based on quite few observations, thus the uncertainty will be substantially greater than with the results based on aggregate data. We estimate average effects and the interaction between cable television coverage and years of schooling of the respondent. In light of our theoretical model and the evidence on viewing patterns that the commercial channels appealed more to people with lower education, we expect the effect of cable access to be lower for people with more years of schooling. The results are shown in Table 6.

First, we look at the effect of cable television on turnout. The survey records actual voting behavior by confirming responses in official voting registries.[26] Column (1) shows that the effects of cable television coverage are in line with the effects from the analysis using aggregate level data. Cable television coverage has a negative effect on the probability of voting, although the effect is not statistically significant. This might be due to the fact that the uncertainty is inherently greater in the survey data, as noted above, or that there is less variation in television coverage between the survey years than in the full sample, which should also decrease precision. Column (2) shows that as in the analysis using aggregate data, the effects depend on the level of education: the negative effect of cable access on turnout is smaller for respondents with more years of schooling.

Next we look at the effect of cable coverage on exposure to political information through mass media. In the local election surveys, respondents are asked if they have heard or read statements made by local political candidates through various mass media.[27] The results are displayed in Columns (3) to

[26] When an individual casts his or her vote on election day, that is noted in a (still largely non-electronic) registry by the election officer at the voting booth. For any individual sampled to the election survey, Statistics Norway contacts the local authorities at his or her municipality of residence to get the actual voting record.

[27] *Newspapers*, *radio* and *television* are the only media for which questions are asked several years.

Table 6: Cable coverage, exposure to political information, and political participation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Turnout		Newspaper		Radio		Television		Participation	
Cable coverage	-0.016	-0.124	0.125	0.171	-0.064	-0.489*	-0.016	-0.520*	-0.016	0.307
	(0.115)	(0.158)	(0.149)	(0.190)	(0.165)	(0.294)	(0.203)	(0.308)	(0.138)	(0.188)
Cable coverage ×		0.008		-0.003		0.031*		0.037**		-0.023**
years of schooling		(0.007)		(0.008)		(0.016)		(0.019)		(0.009)
Observations	7,797	7,797	4,407	4,407	4,325	4,325	4,404	4,404	7,797	7,797
R-squared	0.132	0.132	0.166	0.166	0.198	0.199	0.355	0.357	0.093	0.094
Mean	0.73	0.73	0.78	0.78	0.43	0.43	0.41	0.41	-0.02	-0.02

Note: All specifications include year fixed effects, municipality fixed effects, municipality-level socioeconomic and demographic controls, and individual controls for age, age^2, education, income and gender. Municipality controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio. The dependent variable for various media m is the answer to the question "Have you heard/read statements of local political candidates using media m". The answer is coded as a dummy variable. Participation is a summary measure of the responses to the questions if the respondent discusses local politics with friends and family on some occasions, has contacted a local or county level politician or administration to influence policy, has signed a petition, wether they are a member of a political party, wether they are interested in politics, and whether they have participated in a demonstration. The measure is constructed by turning the six variables into z-scores and taking the average of the non-missing observations. Source: Local Election Survey 1995-2007. There are 390 municipalities in the sample. Linear regression. Observations and reported means are weighted by the sampling probability. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

(8). The point estimates suggest that people are less likely to be exposed to political information from radio and television, but not newspapers, when cable television coverage is higher. Again, the average effects are not very precise. Adding the interaction with years of schooling shows that as expected, education substantially offsets the negative effects of commercial television. For information from radio or television, the interaction is also statistically significant at conventional levels. In sum, higher cable television coverage is associated with less exposure to relevant local political information from both radio and television, but less so for more educated individuals.

Finally, we examine the effect of cable television access on political participation more broadly. In the election surveys, respondents are asked if they have contacted a local or county level politician or administration to influence policy, whether they participated in a protest, discuss politics with friends and family on some occasions, if the respondent is interested in politics in general, wether they are member of a political party, and wether they have signed a petition. Based on these variables we construct a summary measure, *Participation*. Following Kling et al. (2007) the measure is constructed by turning the six measures into z-scores and taking the average of the non-missing observations. The formulation of the questions and what years they were asked can be found in Table A4 of the online appendix. We find a very small average effect of cable television access on *Participation*, see Column (9). Column (10) shows that the estimated effect is actually positive for individuals with very little education, and less so for more educated individuals. In Section A.6 of the appendix, we explore this finding further, and find that the estimated effect is not robust to slight changes in the specification of the summary measure. Further, the estimate of the interaction term is driven by a single variable prone to floor effects caused by less educated individuals already being at such a low level that further reductions are not feasible. We therefore think this particular estimate should be interpreted with caution.

Taken together, Table 6 points towards exposure to relevant political information through television being an important mechanism explaining the results in Section 5. Consistent with a comprehensive literature on the importance of information for the voting decision, we find the effects of cable television coverage on exposure to political information through media to mirror those we find on turnout using both aggregate and individual-level data.

7 Conclusion

In this paper, we have investigated the impact of commercial television on political participation and local policy outcomes. We present a simple model in which mass media affects turnout and local policy outcomes by making groups with a higher demand for commercial television content less exposed to relevant information about politics through mass media. The predictions of the model find support in the data. Increased cable television penetration reduced average turnout in municipal elections. Further, increased cable television coverage is associated with less governmental spending targeted groups with lower educational levels and incomes, such as education and social expenditures. Using individual-level data, we find that cable television coverage has a negative effect on the extent to which respondents are exposed to political information through mass media. The effect is more pronounced for individuals that on average watch more cable television; namely individuals with fewer years of schooling. Taken together, our findings show that commercial mass media can affect local politics by reducing participation and reducing its target audiences' exposure to information.

Our approach has strengths and limitations. Norway is a well-functioning democracy with relatively high political participation. Therefore, we believe that our estimates are conservative compared to what one might find in other settings. However, the implications of our findings for welfare are not easy to assess. While increased media choice and access to entertainment content is likely to have a direct positive effect on welfare, this is less clear for changes in turnout, exposure to political information, or induced changes in policy. Moreover, we only measure access to the cable television network and not take-up. Our estimates of the impact of cable television can thus be interpreted as being measures of the intention to treat rather than the effect of actual watching of commercial television. Finally, our estimates are average effects of increased access to commercial television, bundling together access to several television channels. Therefore, we cannot rule out that entry of individual channels had different effects than the average effects of access to commercial television we estimate. Future work should investigate the external validity of our findings, as well as closely examine the quantitative significance of individual-level take-up.

Notwithstanding these limitations, we think the mechanisms studied in this paper are salient features of contemporary mass media markets, where choice plays an ever more important role. The results presented in this paper may therefore also be relevant for other forms of mass media that share these features. Investigating the extent to which the mechanisms studied in this paper are relevant for other forms of mass media, in other settings, is an important area for future research.

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A Appendix – for online publication

A.1 Figures

Figure A1: Distribution of election-to-election differences in coverage.

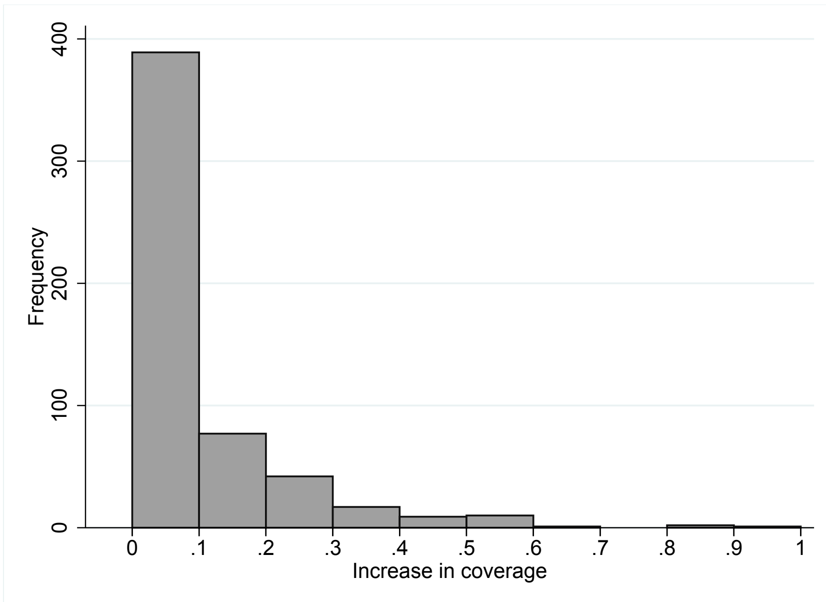
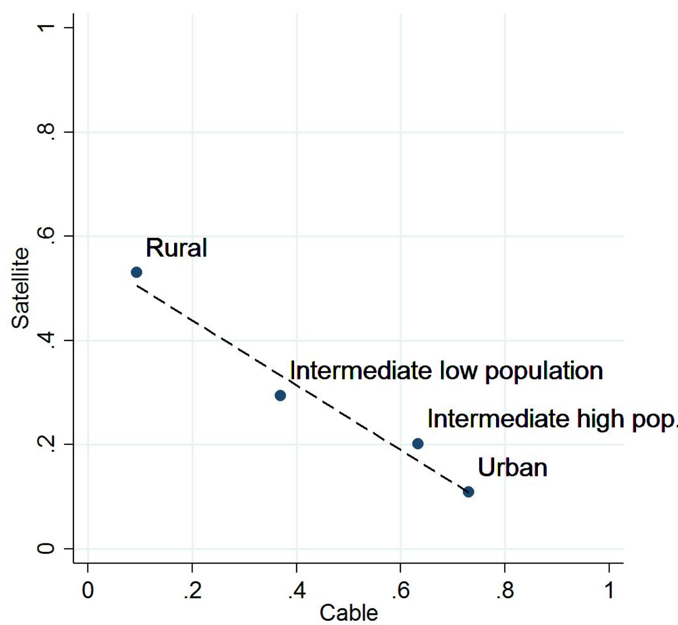
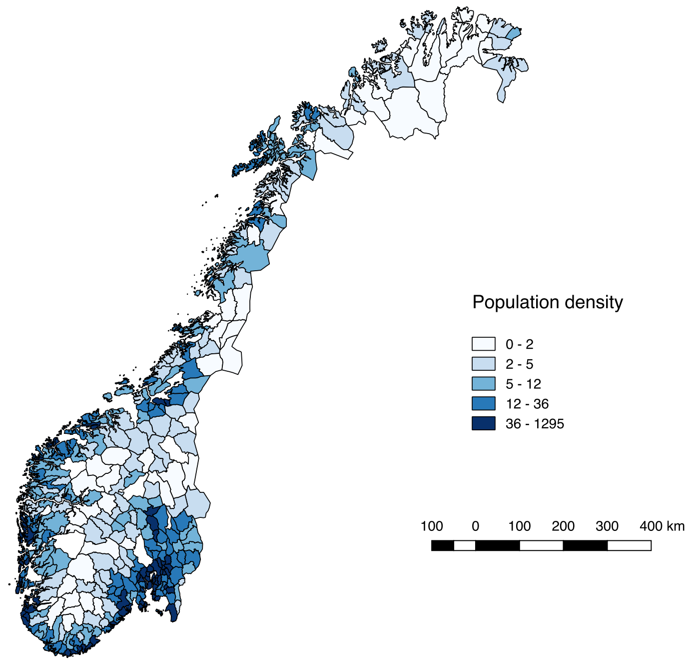


Figure A2: Share of households with cable television or satellite subscription by urbanity, 2003.



Note: Each category comprises approximately one fourth of the total sample. Source: Media use survey 2003, Statistics Norway.

Figure A3: Population density in Norway 1981.



Note: The above map shows population density in municipalities as measured by number of inhabitants per square kilometer.

A.2 Derivations

A.2.1 Proposition 1

If content accommodates the preferences of a group, then information and turnout is reduced. If the municipality does not have access to commercial television then $q_i^c = 0$ for all i. Therefore, introducing commercial television amounts to increasing targeted commercial content q_i^c for all groups i. Since a person watches commercial channel if $v_i(q_i^c) + e_i^j \geq v_i(q_i^s)$ and e_i^j is uniform, the audience share in group i is $\frac{1}{2} + \xi_i(v_i(q_i^c) - v_i(q_i^s))$. Solving the commercial television firms problem gives the first order condition in equation (7) of the paper, $q_i^{c*} = v_i'^{-1}\left(\frac{p}{\alpha_i \xi_i}\right)$. The change in information when a group becomes more targeted is given by $\frac{\partial s_i^{c*}}{\partial q_i^c} = s'(\gamma_i)\frac{\partial \gamma_i}{\partial q_i^c} = s'(\gamma_i)\xi_i v_i'(q_i^c) < 0$, which is negative since $s'(\gamma_i) < 0$. Moreover, the effect increases in the marginal utility of targeted commercial content, hence $\frac{\partial s_i^{c*}}{\partial q_i^c}$ is larger for groups with higher v_i', all else equal. The effect is increasing in the extent to which groups are receptive to entertainment content, as captured by $\xi_i v_i'(q_i^c) < 0$.

To see the effect on content from the groups advertisement value increasing consider the derivative. Taking the derivative wrt. α_i gives $\frac{\partial q_j^{c*}}{\partial \alpha_i} = \frac{1}{v_i''}\left(\frac{-p}{\alpha_i^2 \xi_i}\right) > 0$ which follows from concavity of v_i and the inverse function theorem. From this it follows that groups become less informed when their advertisement value increases or when their marginal utility of entertainment increases. As a consequence turnout is lower. It follows that commercial television increases the difference in exposure to political information and turnout for groups with different consumption of commercial content.

A.2.2 Proposition 2

A voter of group i votes for the incumbent if $V(g_i^I) + \beta_i + \delta \geq V(g_i^C)$. Therefore the share of informed votes in group i is $\frac{1}{2} + V(g_i^I) - V(g_i^C) + \delta$. Since the shocks are uniform the share of uninformed votes is $\frac{1}{2} + \delta$. Hence the total vote share of group i is $s_i\left(\frac{1}{2} + V(g_i^I) - V(g_i^C) + \delta\right) + (1 - s_i)\left(\frac{1}{2} + \delta\right)$. The probability the incumbent wins the election depends on the realization of δ, $P(\sum_{i=1}^N s_i\left(\frac{1}{2} + V(g_i^I) - V(g_i^C) + \delta\right) + (1 - s_i)\left(\frac{1}{2} + \delta\right) \geq 0.5) = P(\sum_{i=1}^N s_i(V(g_i^I) - V(g_i^C)) \geq \delta) = \frac{1}{2} + \phi\sum_{i=1}^N s_i(V(g_i^I) - V(g_i^C))$. Solving the incumbents problem gives first order condition in equation (5) of the paper, $g_j^* = u'^{-1}\left(\frac{\sum_{i=1}^N w_i s_i}{s_j \sum_{i=1}^N w_i}\right)$. Taking the derivative gives $\frac{\partial g_j^*}{\partial s_j} = \frac{1}{u''}\left(\frac{-\sum_{i=1}^N w_i \sum_{i \neq j} w_i s_i}{(s_j \sum_{i=1}^N w_i)^2}\right) > 0$, where the first term is negative by concavity and follows from the inverse function theorem.

Consider a case where one group becomes more informed and another group less. Here I assume turnout is the same for every group and independent of information. Then there is a direct and an indirect effect. An increase in inequality of information between two groups i and j can be interpreted as an increase in $\mid s_i - s_j \mid$. From the first prediction it follows that and reduction in s_i reduces g_i. The derivative g_i wrt. s_j is given by, $\frac{\partial g_i^*}{\partial s_j} = \frac{1}{u''}\left(\frac{w_j s_i \sum_{i=1}^N w_i s_i}{s_j \sum_{i=1}^N w_i}\right) < 0$. Hence an increase in the difference in exposure to political information or participation increases the difference in targeted transfers received by the two groups. If turnout decreases with information the effects are stronger.

A.3 Variable description and summary statistics

Table A1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Cable coverage	0.07	0.15	0	1	13,396
Politics					
Turnout municipal	0.68	0.07	0.40	0.90	13,396
Turnout national	0.79	0.05	0.14	0.91	13,396
Vote share right	52.15	17.14	0	92.72	13,380
Vote share other	8.36	14.40	0	100	13,380
Vote share left	39.48	14.94	0	100	13,380
Policy					
Total spending	41.65	17.97	15.68	244.1	13,296
Share childcare	4.02	2.96	0	19.63	13,296
Share education	25.96	6.49	6.14	57.15	13,296
Share elderlycare	18.37	9.97	0	57.65	13,296
Share healthsocial	10.94	5.34	0.86	47.4	13,296
Share culture	4.98	2.67	0.92	39.69	13,296
Share transport	3.71	2.84	0	42.95	13,296
Share centraladm	7.49	3.34	0.59	45.7	13,296
Share other	24.5	11.2	2.74	81.3	13,296
Revenue property taxation	1.5	4.05	0	49.8	6,295
Socioeconomic controls					
Population	9,617	28,701	209	538,411	13,396
Share children	0.09	0.01	0.03	0.18	13,396
Share young	0.13	0.02	0.06	0.21	13,396
Share elderly	0.15	0.04	0.04	0.29	13,396
Share women	0.49	0.01	0.41	0.53	13,396
Unemployment	0.02	0.01	0	0.12	13,396
Income per capita	922	491	31.2	3,724	12,423
Education - share highschool	0.33	0.05	0.13	0.74	10,638
Education - share university	0.07	0.03	0.01	0.21	10,638

Table A2: Summary statistics, media surveys 1992–2004

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
TV, minutes watched yesterday	129	115	0	1020	21,844
Cable access	0.39	0.48	0	1	21,844
No. of shows by content					
News	0.95	0.94	0	8	14,301
Not news	1.46	1.47	0	19	14,301
Information and documentaries	0.15	0.43	0	6	14301
Science	0.01	0.11	0	2	14,301
Nature	0.04	0.21	0	3	14,301
Film	0.20	0.47	0	4	14,301
Tv series	0.28	0.56	0	5	14,301
Pop music	0.02	0.15	0	4	14,301
Entertainment	0.23	0.50	0	7	14,301
Quiz	0.04	0.21	0	4	14,301
Sport	0.30	0.61	0	7	14,301
High culture	0.01	0.09	0	3	14,301
Classical music	0.01	0.08	0	2	14,301
Kids	0.08	0.29	0	3	14,301
Religious	0.00	0.07	0	2	14,301
other	0.07	0.31	0	4	14,301
No. of shows by channel					
NRK	1.26	1.40	0	21	14,301
TV2	0.68	0.97	0	7	14,301
TVNorge	0.17	0.47	0	7	14,301
Lokal	0.02	0.18	0	6	14,301
Sverige	0.03	0.23	0	10	14,301
TV3	0.11	0.37	0	4	14,301
Other Nordic	0.02	0.15	0	4	14,301
Other	0.10	0.43	0	9	14,301
Socioeconomic characteristics					
Age	44	16	18	80	21,844
Female	0.50	0.50	0	1	21,844
Less than high school	0.12	0.32	0	1	21,844
High school	0.38	0.48	0	1	21,844
University, 3 years	0.06	0.23	0	1	21,844
University, 4+ years	0.15	0.35	0	1	21,844
Education missing	0.29	0.45	0	1	21,844
Household income, 1000 USD	46	30	0	1000	16,742

Table A3: Summary statistics, local election surveys 1995, 1999, 2003 and 2007.

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Year	2000.29	3.73	1995	2007	13,727
Paper	0.79	0.407	0	1	6,523
Television	0.36	0.48	0	1	6,508
Radio	0.4	0.49	0	1	6,384
Member	0.13	0.34	0	1	7,249
Protest	0.13	0.33	0	1	9,787
Contact pol.	0.28	0.44	0	1	9,790
Contact adm.	0.17	0.38	0	1	8,605
Petition	0.30	0.46	0	1	8,580
Vote	0.71	0.45	0	1	11,603
Know	2.41	1.15	1	4	1,686
Same	2.19	1.09	1	4	1,677
Care	2.15	1.08	1	4	1,373
Time	2.48	1.32	1	4	1,384
Interest	2.58	0.69	1	4	8,409
Discuss	2.34	0.88	1	4	6,078
Socioeconomic controls					
Gender	0.48	0.5	0	1	11,603
Income	3.55	2.03	1	8	9,245
Age group	2.53	0.87	1	5	9,806
Years of schooling	12.95	2.39	0	20	8,566
Urban	0.64	0.47	0	1	7,972

Table A4: Variable description

Variable	Question	Years
Paper	Have you read statements of political candidates in the newspaper?/	1995, 2003, 2007.
	Is the newspaper an important source of political information?	
Radio	Have you heard statements of political candidates on radio?/	1995, 2003, 2007.
	Is radio an important source of political information?	
Television	Have you heard statements of political candidates on television?/	1995, 2003, 2007.
Discuss	How often do you discuss local politics with other people?	1995, 2003, 2007.
Petition	Have you in the course of the last four years signed a petition?	1995, 1999, 2003, 2007.
Member	Are you a paying member of a political party?	1995, 1999.
Contact pol.	Have you in the last four years contacted a local/county politician to influence political decisions?	1995, 1999, 2003, 2007.
Contact adm.	Have you in the last four years contacted the local/county administration to influence political decisions?	1995, 1999, 2003, 2007.
Demo	Have you ever taken part in a protest or demonstration?	1995, 1999, 2003, 2007.
Interest	How interested are you in municipal politics?	1995, 2003, 2007.
Interested	(Conditional on not voting) Does the following statement apply	2007
	to you? "I did not vote because I'm not interested".	
Know	(Conditional on not voting) Does the following statement apply	2003,2007
	to you? "I did not vote because I don't know the difference between candidates".	
Same	(Conditional on not voting) Does the following statement apply	2003, 2007
	to you? "I did not vote because all candidates are the same".	
Care	(Conditional on not voting) Does the following statement apply	2003, 2007
	to you? "I did not vote because the issues are not important to me".	
Time	(Conditional on not voting) Does the following statement apply	2003, 2007
	to you? "I did not vote because I did not have time".	

A.4 Unweighted results and robustness checks

Table A5: Cable television and turnout in local elections with unweighted regression

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-5.52***	-4.01***	-2.95***	-4.24***	-1.96*	-3.87***	-3.54***
	(0.99)	(0.98)	(1.02)	(0.99)	(1.01)	(0.98)	(0.99)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	2,920	2,920	2,920	2,920	2,920	2,920	2,920
R-squared	0.81	0.82	0.82	0.82	0.90	0.82	0.82
Mean	67.78	67.78	67.78	67.78	67.78	67.78	67.78

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Each observation is one municipal election. Unweighted OLS. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Cable television and turnout in national elections with unweighted regression

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-2.64***	-2.56***	-1.43**	-2.59***	0.11	-2.32***	-2.10***
	(0.63)	(0.63)	(0.61)	(0.64)	(0.51)	(0.65)	(0.68)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
R-squared	0.82	0.82	0.82	0.82	0.91	0.82	0.82
Observations	3,279	3,279	3,279	3,279	3,279	3,279	3,279
Mean	78.91	78.91	78.91	78.91	78.91	78.91	78.91

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Each observation is one national election in a given municipality. Unweighted OLS. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Cable television and policy with unweighted regression

Policy	(1) Total	(2) Tax	(3) Education	(4) Elderlycare	(5) Childcare	(6) Healthsocial	(7) Culture	(8) Transport	(9) Adm.	(10) Other
Cable coverage	-3.61*	0.13	4.32***	-0.05	-0.13	0.84	-0.45	0.02	0.73*	-5.29***
	(1.83)	(0.57)	(1.11)	(1.09)	(0.317)	(0.98)	(0.42)	(0.69)	(0.43)	(1.93)
Observations	11,936	5,715	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936
R-squared	0.86	0.94	0.63	0.78	0.83	0.42	0.35	0.43	0.46	0.75
Mean	41.54	1.55	25.80	18.43	3.99	10.90	5.01	3.66	7.55	24.66

Note: All results include municipality fixed effects, year fixed effects, time trend times population density in 1980, and socioeconomic and demographic controls (income per capita, education, log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women). Unweighted OLS. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Trend interactions

Turnout municipal		Observations	R-squared	Mean
Time trend × Population 1980	-3.66***	2,920	0.88	66.19
	(0.97)			
Time trend × Rugedness	-2.82***	2,920	0.88	66.19
	(0.97)			
Time trend × Share women 1980	-2.29**	2,920	0.88	66.19
	(0.93)			
Time trend × Share children 1980	-1.84**	2,920	0.88	66.19
	(0.76)			
Time trend × Share young 1980	-1.62**	2,920	0.88	66.19
	(0.78)			
Time trend × Share elderly 1980	-3.18***	2,920	0.88	66.19
	(0.92)			
Time trend × Income 1982	-2.32**	2,782	0.87	66.46
	(0.90)			
Time trend × Unemployment 1980	-2.92***	2,920	0.87	66.19
	(1.00)			
Time trend × Welfare recipients 1980	-3.57***	2,837	0.88	66.17
	(0.93)			
Time trend × Turnout municipal 1980	-2.46***	2,920	0.89	66.19
	(0.81)			
Time trend × Turnout national 1980	-2.11**	2,920	0.89	66.19
	(0.93)			
Time trend × Vote share left 1980	-1.88*	2,920	0.89	66.19
	(0.98)			
Time trend × Vote share right 1980	-2.37**	2,920	0.88	66.19
	(1.00)			

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Cable television and turnout in local elections, including simulated satellite coverage

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Commercial coverage	-2.78***	-2.90***	-2.44**	-2.35***	-2.05***	-2.90***	-2.93***
	(0.85)	(0.85)	(1.01)	(0.76)	(0.68)	(0.83)	(0.88)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	2920	2920	2920	2920	2920	2920	2920
R-squared	0.87	0.88	0.88	0.89	0.94	0.88	0.88
Mean turnout	66.19	66.19	66.19	66.19	66.19	66.19	66.19

Note: All specifications include year and municipality fixed effects. Commercial coverage in the municipality is the sum of observed cable coverage and simulated satellite coverage. Standard errors are based on a bootstrap with 200 replications clustered on municipality. Each observation is one municipal election. Socioeconomic and demographic controls include income per capita log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Weighted by population. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Cable television and turnout in local elections, excluding 2003 election

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-2.45***	-3.05***	-2.20**	-2.64***	-2.03**	-3.05***	-3.03***
	(0.87)	(1.03)	(0.92)	(0.84)	(0.79)	(1.00)	(0.94)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	2,530	2,530	2,530	2,530	2,530	2,530	2,530
R-squared	0.88	0.88	0.88	0.89	0.93	0.88	0.88
Mean	67.35	67.35	67.35	67.35	67.35	67.35	67.35

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Cable television and turnout in local elections, excluding low population density municipalities

Turnout municipal	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-1.85	-2.69***	-2.45**	-2.99***	-2.01***	-2.73***	-2.78***
	(1.14)	(0.99)	(0.97)	(0.88)	(0.70)	(0.98)	(0.97)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	2,071	2,071	2,071	2,071	2,071	2,071	2,071
R-squared	0.87	0.88	0.88	0.89	0.93	0.88	0.88
Mean	66.27	66.27	66.27	66.27	66.27	66.27	66.27

Note: Municipalities in the first quartile of the population density distribution in 1980 excluded. All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

A.5 Section 5 - Additional results

Table A12: Cable television and turnout in national elections

Turnout national	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cable coverage	-1.04*	-1.26**	-0.67	-1.53***	-0.33	-1.16**	-1.38***
	(0.58)	(0.48)	(0.50)	(0.51)	(0.41)	(0.48)	(0.52)
Socioec.+demographic controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality trend	No	No	No	No	Yes	No	No
Time trend × Density 1980	No	No	Yes	No	No	No	No
Time trend × Education low 1980	No	No	No	No	No	Yes	No
Time trend × Education high 1980	No	No	No	No	No	No	Yes
Polynomial of controls	No	No	No	Yes	No	No	No
Observations	3,279	3,279	3,279	3,279	3,279	3,279	3,279
R-squared	0.89	0.89	0.89	0.90	0.95	0.89	0.89
Mean	79.86	79.86	79.86	79.86	79.86	79.86	79.86

Note: All specifications include year and municipality fixed effects. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, share of population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio. Each observation is one national election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A13: Cable television and vote shares

	(1)	(2)	(3)
Vote shares	Left	Right	Other
Cable coverage	-1.87	1.43	0.44
	(2.35)	(1.74)	(1.77)
Observations	2,916	2,916	2,916
R-squared	0.88	0.82	0.54
Mean	41.13	54.04	4.82

Note: All specification include year fixed effect, municipality fixed effects, socioeconomic and demographic controls, and a time trend interacted with population density in 1980. Socioeconomic and demographic controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio. Each observation is one municipal election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A14: Dynamics and political participation - local elections

	(1) Turnout	(2) Left	(3) Right
Years of cable	-0.27**	-0.17	0.08
	(0.10)	(0.14)	(0.14)
Observations	2,920	2,916	2,916
R-squared	0.88	0.88	0.82
Mean	66.19	41.13	54.04

Note: All models include municipality fixed effects, year fixed effects, time trend times population density in 1980, and socioeconomic and demographic controls (income per capita log of population, education, unemployment, share of urban population, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio). Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A15: Dynamics and policy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Policy	Total	Tax	Education	Elderlycare	Childcare	Healthsoc.	Culture	Transport	Adm.	Other
Years of cable	-0.01**	0.01	0.30***	0.01	0.009	-0.08	-0.03	-0.14*	0.17**	-0.23
	(0.006)	(0.03)	(0.10)	(0.10)	(0.04)	(0.23)	(0.05)	(0.08)	(0.07)	(0.22)
Observations	11,936	5,715	11,936	11,936	11,936	11,936	11,936	11,936	11,936	11,936
R-squared	0.88	0.91	0.79	0.87	0.89	0.75	0.50	0.63	0.54	0.84
Mean	3.65	0.88	23.45	16.90	4.76	13.95	5.64	3.81	6.21	25.29

Note: All models include municipality fixed effects, year fixed effects, time trend times population density in 1980, and socioeconomic and demographic controls (income per capita log of population, education, unemployment, share of urban population, population share of children (pre-school age), young people (school age), elderly (age 66+) and the gender ratio). Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A16: Spending preferences and years of schooling

Education spending	(1)	(2)	(3)	(4)
Years of schooling	0.013***	0.010***	0.013***	0.010**
	(0.003)	(0.003)	(0.003)	(0.005)
Individual controls	No	Yes	Yes	Yes
Municipality controls	No	No	Yes	Yes
Municipality dummies	No	No	No	Yes
Observations	480	480	480	480
R-squared	0.05	0.08	0.13	0.62
Mean	0.11	0.11	0.11	0.11

Note: Individual level controls include age, gender and income. Municipality controls include population, age structure, income, education, share of urban population and unemployment. Dependent variable is the response to the question "Imagine if how the municipal government 1000 kr (around 120 dollars) of your tax bill was decided by you, how much of it would you spend on education?" measured as the share of the total. The sample contains only valid responses, respondents for whom replies sum up to 1000. Source: Local Election Survey 2007. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A17: Cable television and vote shares for party blocks in national elections

	(1)	(2)	(3)
Vote shares	Right	Left	Other
Cable coverage	0.001	0.001	0.003
	(0.011)	(0.011)	(0.006)
Socioec.+demographic controls	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Time trend × Density 1980	Yes	Yes	Yes
Observations	3,279	2,920	2,920
R-squared	0.928	0.934	0.521
Mean	0.54	0.43	0.02

Note: Socioeconomic and demographic controls include income per capita, log population, unemployment, share of urban, share of population pre-school age, school age, elderly and share of women. Each observation is one national election. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A18: Cable television and vote shares for individual parties in municipal elections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vote share municipal	Rv	Sv	Dna	V	Sp	Krf	H	Frp
Cable coverage	-0.0001	-0.006	-0.023	0.01	0.003	-0.002	-0.010	0.01
	(0.004)	(0.007)	(0.019)	(0.008)	(0.007)	(0.004)	(0.015)	(0.01)
Socioec.+demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend × Density 1980	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917
R-squared	0.75	0.76	0.88	0.64	0.88	0.90	0.89	0.84
Mean	0.01	0.06	0.34	0.05	0.10	0.09	0.22	0.07

Note: Socioeconomic and demographic controls include income per capita, log population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

Table A19: Cable television and vote shares for individual parties in national elections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vote share national	Rv	Sv	Dna	V	Sp	Krf	H	Frp
Cable coverage	-0.003	0.0008	-0.001	0.009	-0.003	0.007	0.003	-0.015
	(0.004)	(0.006)	(0.008)	(0.005)	(0.008)	(0.005)	(0.010)	(0.012)
Socioec.+demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time trend × Density 1980	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,920	3,279	3,279	3,279	3,279	3,279	3,279	3,279
R-squared	0.73	0.85	0.93	0.65	0.923	0.944	0.958	0.926
Mean	0.01	0.08	0.34	0.04	0.09	0.10	0.21	0.10

Note: Socioeconomic and demographic controls include income per capita, log population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. Weighted by population. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.

A.6 Section 6 - Additional results

In this section we further explore the mechanisms presented in Section 6. First, we explore the variables separately for variables pertaining to the summary measure *Participation* in Table 6 and conduct several robustness checks. Second, we use an alternative summary measure, *Participation*^{a}. Finally, we explore self-assessed reasons for not voting.

First, we further explore the effects in Column (9) and (10) of Table 6. In Table A20 we estimate the impact of cable television on the measures used to construct the summary measure *Participation* analyzed in Table 6. We adjust for multiple hypothesis testing in these regressions. Table A20 shows little evidence of effects on these outcomes. Out of 18 estimates of potential interest we find two statistically significant estimates. Overall magnitudes are fairly small and the signs of the coefficients vary greatly for the various outcomes. While there is a negative effect of cable television on the variable contact in Column (1), Column (2) shows that the effect is stronger for individuals with higher education. The impact on the propensity to contact a local politician or administration is somewhat smaller for more educated individuals. This is the effect that drives the negative interaction in Column (10) of Table 6. We think the estimate should be interpreted with caution. This could be driven by large level-differences in values depending on education for this particular variable. For example, no individuals with the lowest registered level of education answer yes to having contacted either a local politician or administration. This may lead to a floor effect, whereby there is less scope for reducing this variable further for less educated individuals.

Consistent with this explanation, we find that the estimates of effects on *Participation* in Table 6 are sensitive to restricting the sample by dropping respondents with very low levels of education. Dropping individuals in the lowest tenth percentile of years of schooling (with elementary school education or less) the estimated direct effect in Column (10) of Table 6 is one tenth the size, becomes negative and remains insignificant. The interaction effect is one third the size and no longer statistically significant. The estimated effect in Column (9) changes sign and remains insignificant. We find a similar lack of robustness for *Contact*. On the other hand, the estimated effects on the exposure to political information through television are very robust to this exercise.

Second, we construct an alternative summary measure. The summary measure *Participation* ignores the fact that response rates and years particular questions were asked vary greatly in the surveys. Six questions have been asked throughout this period, with the exception of 1999. In order to ensure that the variables are weighted equally in the summary measure, we use these variables as the basis of the summary measure. These variables can be seen in Table A21. This procedure ensures that the new measure summarizes the variation in all the variables more completely than previously. An additional advantage of this approach is that it facilitates comparisons, since the questions which are the outcomes of Columns (3) - (8) of Table 6 also were asked in only these three surveys. We proceed by repeating the main analysis of Section 6 using this more carefully constructed summary measure. As can be seen in Table A21, we also find very low estimates with this alternative summary measure. Table A21 also reports the estimated effects on the variables pertaining to *Participation*.^{a}

Finally, we look more closely at self-reported reasons for not voting. There are four alternative reasons for not voting recorded in the election surveys. The dependent variable is the reply to the questions whether or not the following statements were relevant for the decision of not voting; "I did not vote because I did not know the difference between candidates", "I did not vote because the candidates are too similar", "I did not vote because I do not care" or "I did not vote because I did not have time". We regressed these responses on the baseline specification used throughout the paper. Consistent with lower exposure to relevant political information, we found that in municipalities with higher cable television coverage, there is a significant and sizable increase in the probability that respondents justified not voting with parties being too similar. This effect is stronger for less educated individuals, although the interaction is not statistically significant. We do not find a statistically significant or as sizable point estimates for the other variables. These results should be interpreted with caution due to the low sample size. However, together with the results in Table 6 they point towards commercial television coverage being associated with less exposure to relevant political information.

Table A20: Constituent measures of *Participation*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Contact		Demo		Discuss		Interest		Petition		Member	
Cable coverage	-0.016	0.875**	0.021	0.135	0.130	0.092	-0.006	-0.269	-0.210	-0.003	0.043	0.682
	(0.169)	(0.307)	(0.294)	(0.324)	(0.377)	(0.796)	(0.285)	(0.395)	(0.226)	(0.309)	(0.273)	(0.366)
Cable coverage ×		-0.064***		-0.008		0.002		0.019		-0.014		-0.046
years of schooling		(0.017)		(0.015)		(0.044)		(0.019)		(0.015)		(0.021)
Observations	7,797	7,797	7,792	7,792	4,500	4,500	4,924	4,924	7,772	7,772	5,003	5,003
R-squared	0.136	0.138	0.078	0.078	0.115	0.115	0.146	0.147	0.104	0.104	0.127	0.128
Mean	-0.09	-0.09	0.03	0.03	0.01	0.01	-0.04	-0.04	0.02	0.02	-0.07	-0.07

Note: All specifications include year fixed effects, municipality fixed effects, individual- and municipality-level socioeconomic and demographic controls. Individual controls include age, age^2 education, income and gender. Municipality controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, share of population pre-school age, school age, elderly and share of women. The dependent variables measure if the respondent: (1) has contacted a local or county level politician or administration to influence policy, (2) whether they participated in a protest, (3) discusses local politics with friends and family on some occasions,(4) if the respondent is interested in politics in general, (5) has signed a petition, (6) and is a member of a political party. Source: Local Election Survey 1995-2007. There are 390 municipalities in the sample. Observations are weighted by sampling probability. Standard errors are clustered at the municipal level and adjusted for multiple hypothesis testing using the Bonferroni-method. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A21: Alternative summary measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
	Participation^a		Contact		Demo		Discuss		Interest		Petition	
Cable coverage	0.053	0.170	0.012	0.578	0.079	0.202	0.130	0.092	-0.006	-0.269	0.141	0.166
	(0.289)	(0.347)	(0.313)	(0.446)	(0.504)	(0.589)	(0.377)	(0.796)	(0.285)	(0.395)	(0.432)	(0.507)
Cable coverage ×		-0.008		-0.042		-0.009		0.002		0.019		-0.001
years of schooling		(0.012)		(0.019)		(0.017)		(0.044)		(0.019)		(0.017)
Observations	5,218	5,218	5,218	5,218	5,214	5,214	4,500	4,500	4,924	4,924	5,202	5,202
R-squared	0.112	0.112	0.153	0.154	0.094	0.094	0.115	0.115	0.146	0.147	0.129	0.129
Mean	-0.02	-0.02	-0.09	-0.09	0.02	0.02	0.01	0.01	-0.04	-0.04	0.01	0.01

Note: All specifications include year fixed effects, municipality fixed effects, individual- and municipality-level socioeconomic and demographic controls. Individual controls include age, age^2 education, income and gender. Municipality controls include income per capita, education, log of population, unemployment, share of population living in densely populated areas, share of population pre-school age, school age, elderly and share of women. The six variables measure if the respondent: (1) has contacted a local or county level politician or administration to influence policy, (2) whether they participated in a protest, (3) discusses politics with friends and family on some occasions, (4) if the respondent is interested in politics, (5) has signed a petition. For each variable we use the same observations as the ones used to construct *Participation*^{a}. Source: Local Election Survey 1995, 2003, and 2007. There are 390 municipalities in the sample. Observations are weighted by sampling probability. Standard errors are clustered at the municipal level. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table A22: Why not vote?

Did not vote because:	(1) Knowledge	(2) Same	(3) Care	(4) Time
Cable access	0.511	2.179*	-0.792	1.360
	(1.795)	(1.118)	(2.638)	(2.302)
Observations	1,283	1,276	668	668
R-squared	0.32	0.27	0.37	0.32
Mean	2.48	2.22	2.22	2.36

Note: All specifications include year fixed effects, municipality fixed effects, individual and municipality level socioeconomic and demographic controls. Individual controls include age, age^2 education, income and gender. Municipality controls include income per capita, education, log of population, unemployment, share of urban population, share of population pre-school age, school age, elderly and share of women. The dependent variable is a reply to the question to what extent the following statements were relevant for the decision of not voting. Knowledge denotes: ”I did not vote because I did not know the difference between candidates”. Same denotes: ”I did not vote because the candidates are too similar”. Care denotes: ”I did not vote because the issues were not important to me”. Time denotes: ”I did not vote because I did not have time”. Source: Local Election Survey 1995-2007. There are 390 municipalities in the sample. Observations are weighted by sampling probability. Standard errors are clustered at the municipal level. *** p<0.01, ** p<0.05, * p<0.1.