# Governance of Public Broadcasters and Television Consumption

Christine Benesch[a]
*University of St. Gallen and CREMA*

This version: February 24, 2012

**Abstract:** Recent literature emphasizes the importance of independent media for beneficial political, economic and social outcomes. Although the media are generally considered free, there exists a long-standing tradition of public service broadcasting in many European countries. This paper investigates how media consumers react to this kind state ownership of TV stations and to the different regulatory regimes public broadcasters are subject to. The empirical results show that a higher share of public TV stations is associated with lower TV news consumption on average. The negative effects of state ownership are larger when the public stations are regulated directly by a Ministry as opposed to a more independent regulatory body. When public broadcasters are subject to a self-regulatory regime, there is even a positive association between the share of public stations and TV consumption. The results are consistent with the view that political influence leads to lower news quality in general, but some countries manage to provide a regulatory environment that keeps public TV stations independent. (164 Words)

*JEL classification:* L82, H41, L51, K23

*Keywords:* Media consumption, public television, regulation, state ownership, media capture

[a] Corresponding address: Christine Benesch, University of St. Gallen, Institute for International Economics and Applied Economic Research (SIAW), Bodanstrasse 8, 9000 St. Gallen, Switzerland.
Email: christine.benesch@unisg.ch.

I would like to thank Bruno S. Frey, Simon Luechinger, and participants of the Workshop "Beyond Basic Questions" in Zurich for helpful comments on earlier versions of this paper. I am grateful for financial support from the Research Fund of the University of Zurich and the Swiss National Science Foundation.

## 1. Introduction

Mass media play a unique role in transmitting information to voters and in shaping their political attitudes. The diffusion of free, non-partisan media during the last centuries is regarded as crucial for the development of functioning democracies.[1] Hence, an extended debate exists on how media markets should be organized in order for the media to optimally fulfill their public service mission. Recent work on the political economy of media markets emphasizes the importance of the media's independence from government (for a survey, see Prat and Stromberg 2011). Besley and Prat (2006), for instance, show in an influential theoretical model that independent media ownership reduces media capture by government. Djankov et al. (2003) provide empirical evidence on the consequences of independent media ownership and show in a cross-section of 97 countries that state ownership of the media is negatively associated with various beneficial social and economic outcomes. In addition, Leeson (2008) finds that media consumers react to news quality affected by political capture. In a cross section of 13 countries, newspaper and radio news consumption, as well as political knowledge, are lower where media freedom is restricted.

Interestingly, both latter studies present strong results for the case of newspapers (as does Leeson (2008) for radio) but much weaker or not statistically significant results for the case of television. Thus, the question arises whether TV markets and TV consumption merely follow different principles than other media types do, or if general measures of media freedom and state ownership do not consistently capture the relevant aspects governing television markets and, therefore, the aspects affecting television consumption choice. In particular, the latter might be the case when comparing Western democracies to other countries. In Western Europe, media are generally considered free (Freedom House various years). Yet, regulation of television markets and state ownership of TV stations in the form of public service broadcasters are rather the rule than the exception (for a similar argument, see Connolly and Hargreaves Heap 2007). These interventions in television markets are usually justified by market failures and public good or merit good aspects of information (see, e.g., Sunstein 2000; Kiefer 2003; Hargreaves Heap 2005) and should therefore be beneficial for consumers. However, in countries where government intervention in TV markets is supposedly benevolent, tightly regulated public service broadcasters - whose finances depend on license fees or other forms of public funding - might be

[1] See, e.g., Gentzkow et al. (2006) who relate "the Rise of the Forth Estate" in the US, i.e. the development of the non-partisan press in the 19th century, to the sharp decline of corruption in that era.

prone to political influence as well. Ultimately, the question of whether and under what circumstances public broadcasting is beneficial for consumers is an empirical one.[2]

This paper provides an empirical investigation into the effects of state ownership of TV stations and the regulation and financing of these public broadcasters on media consumers. Thereby, the amount of media consumption, i.e. the amount of time spent on the different types of media, serves as an indicator for how consumers assess the quality of media content. The empirical analysis is restricted to European countries with a similar degree of general media freedom, but differences in the regulation of television markets. The empirical results reveal that, on average, television news consumption is lower when the share of state-owned TV stations is higher. This negative effect of state ownership is larger when regulatory supervision of public broadcasters lies within a Ministry as opposed to a more independent regulatory body. When public broadcasters are subject to a regime of self-regulation, television consumption increases with a higher share of state ownership. The share of commercial income of public broadcasters (as compared to government funding) has no effect on the relationship between the share of state ownership and TV consumption. The results are, on one hand, consistent with the theory of media capture (Besley and Prat 2006) where low transaction costs between government and the media increase the likelihood of political capture. On the other hand, the empirical results do not support the theoretical predictions that a larger extent of commercial orientation decreases the likelihood of media capture. Hence, in the setting of public broadcasting in Europe, formal regulatory provisions seem to be more relevant than the source of funding for factual independence. Regulatory approaches that keep public TV stations formally independent (i.e., self-regulation) seem to be successful at maintaining an arm's-length relationship between government and public TV stations. In addition, they are also successful in combining the positive aspects of public television, i.e. its public service mission, with media independence.

In a robustness analysis I address two possible alternative explanations for the observed relationship between TV consumption and the prevalence and regulation of public television. First, it could be the case that public TV stations produce high quality news because they have a political mandate to do so, but they don't generate a large audience because people are rather more interested in soft news or entertainment. In such a setting, at least those whose levels of

[2] Consumer sovereignty might not be the only criteria when judging a country's media institutions. Nevertheless, the knowledge of how consumers react to different regulatory schemes and to state involvement in media markets in general is relevant for the debate on media market regulation.

interest in news are greater and whose preferences would not be reflected to the same extent in a free market setting without public TV should benefit from it. The analysis, however, shows that the negative relationship between state involvement and news consumption is stronger for people who exhibit high levels of political interest than for those who show little political interest. The empirical results do not therefore support a theory in which public broadcasters offer high quality news at the cost of programs appealing to mass audiences. On the contrary, the results provide further support for the idea that state involvement leads to lower news quality.

Second, it could be argued that public TV offers unbiased news and is more efficient in the sense that consumers are not required to spend so long engaging in it order to garner a certain amount of useful information, i.e. the productivity of TV news consumption is higher. In this scenario, the negative correlation between TV consumption and state involvement would indicate high news quality of public TV stations rather than low quality. We would then expect a larger share of people to watch the news on TV (because of the high quality) when state involvement in TV markets is high, however those who do watch them tend to spend less time doing so (because of the high productivity of time use). The empirical results, however, do not support this alternative scenario. A larger share of (tightly regulated) public TV stations has a negative effect on TV consumption at the intensive as well as at the extensive margin. The empirical results are also robust to various changes in specification and, overall, consistent with the theory of media capture.

This study has links with three strands of economic literature. First, it complements recent studies on the consequences of media freedom and state involvement in media markets (see, e.g., Brunetti and Weder 2003; Djankov et al. 2003; Besley and Prat 2006; Gentzkow et al. 2006; Leeson 2008). Second, it adds to the research on the effects of media market institutions and characteristics, on quality and diversity of media content and consumer satisfaction (see, e.g, Berry and Waldfogel 2001; Hosp and Eichenberger 2006; George 2007). Third, it links with the literature on public broadcasters and their regulation (see, e.g., Noam 1987; Berry and Waldfogel 1999; Sunstein 2000; Hargreaves Heap 2005; Prat and Strömberg 2005; Connolly and Hargreaves Heap 2007).

The remainder of the paper proceeds as follows: Section 2 discusses the theoretical background and literature; section 3 explains the empirical strategy; section 4 presents the data and empirical results and section 5 the conclusions.

## 2. Theoretical Background and Literature

Public TV stations, or public service broadcasters as they are often called, were set up in many European countries in the early days of television broadcasting. They usually have a clear mission dedicated to public service: to produce high quality news programming, promote local content, and serve a broad spectrum of preferences. Public television should correct market failures, as well as promote 'citizenship' or the consumption of 'merit goods' (for general discussions of the role of public TV see, e.g., Noam 1987; Armstrong 2005; Hargreaves Heap 2005; Armstrong and Weeds 2007). Hence, according to this view, public television produces content of high quality and information value, supposedly of better quality than private TV stations, which must cater to groups valuable to advertisers and produce programs appealing to mass taste.

However, public broadcasters (even if they were set up for benevolent reasons) might be prone to political capture and produce biased news content that is less critical about the government and, hence, less informative. In the theory of media capture in democracies by Besley and Prat (2006), media producers have two main motives: commercial income and income from government transfers (or through other preferential treatment by government). Consumers react to the quality of information and TV stations lose audiences if their news programming is biased and, therefore, uninformative. Based on these assumptions, the model produces three main results regarding the likelihood of political capture (see also Prat and Stromberg 2011, p. 9). First, capture is more likely when transaction costs between government and the media are low, second, when the commercial motive of media producers is small and, third, when there is less media pluralism.

Regarding the first point, transaction costs between government and the media, arguably, are very low when the media are state-owned and hence political capture is likely. However, certain regulatory provisions may keep the relationship between public broadcasters and the government at arm's-length. In Europe, three basic regulatory regimes can be distinguished. Public broadcasters are either regulated directly by a Ministry, by a separate regulatory authority, or they are subject to some sort of self-regulation (see Svendsen 2002). The latter forms of regulation will increase transaction cost between the government and TV stations and may make capture less likely. In other words, the potential for pressuring public TV stations is much larger when government can directly appoint managers, influence funding or sanction public TV stations in

other ways, as compared to when a separate regulatory commission makes these decisions (or has to approve them) or when public broadcasters are even more independent in that respect.[3]

Second, the commercial motive of public broadcaster is usually much lower than that of private TV stations. There are however differences between countries. The share of public funding varies to a large extent, because countries impose different advertising and sponsoring restrictions on public stations and because public funding can be more or less generous. If a large share of a public broadcaster's budget comes from public sources like taxes or compulsory license fees, the need to maximize the audience in order to attract commercial income through advertising and sponsoring is reduced. Hence, the loss of audience because of political capture is less costly for TV stations with large shares of public funding and bribing public TV stations is, in such cases, cheaper for government.

With regard to the third aspect, the theoretical predictions are less clear. The existence of a strong public broadcaster and additional regulations for private TV stations (that go often hand in hand) can constitute entry barriers for private TV stations and reduce media plurality. On the other hand, plurality could be higher if public broadcasters coexist with private stations compared to a situation where one or a few private media conglomerates dominate the market.

In summary, although public television can be more susceptible to political influence than privately owned commercial TV stations, certain regulatory provisions and financing schemes may lessen the potential for capture. If public TV stations (that have political mandate and more funding to produce high quality news) would manage to remain independent they may even provide better news quality than commercial stations or serve a broader spectrum of preferences. Because of preference externalities in media markets (see, e.g., George and Waldfogel 2003; Waldfogel 2003; 2004; Oberholzer-Gee and Waldfogel 2005), preferences only shared by small groups might receive little attention in a free market setting. Furthermore, TV stations mainly financed by advertising, as compared to license fees or other forms of public funding preferences, might cater mainly to groups with high value for advertisers (see, e.g., Hamilton 2004).

While there is ample empirical evidence that political capture of media exists and has negative impacts (for a review, see Prat and Stromberg 2011), there is much less empirical literature on

[3] It could, of course, be argued, that formal independence does not necessarily lead to factual independence (see, e.g., Leeson and Coyne 2005 on how government can manipulate the media). It is, hence, an empirical question whether certain regulatory provisions indeed lead to more independent media coverage and better news quality.

how public broadcasting and its regulation relates to media capture. Djankov et al. (2003) construct a cross-country dataset on the prevalence of state-ownership of the media in 97 countries. They show that state ownership is associated with lower levels of media freedom and worse political, economic and social outcomes. The results, however, are much weaker (and often not statistically significant) for television than for newspapers. A study by Leeson (2008) on the effects of media freedom on news consumption and political knowledge shows an analogous difference between the press and TV. Low levels of media freedom are associated with lower levels of newspaper consumption but not TV news consumption. One interpretation of these differences would be that print has an "intrinsic advantage" as a news medium (Prat and Stromberg 2011, p. 13).[4] Another interpretation would be that state ownership of TV stations has, at least in some countries, a different background (i.e., the public service broadcasting tradition) and that some countries manage to provide regulations that keep their public TV stations independent. Connolly and Hargreaves Heap (2007) present empirical evidence in support of this argument and show that trust in television is higher in European countries where public broadcasters enjoy higher levels of independence from parliament and government. This paper takes a similar approach, but analyzes the reaction of consumers to television ownership and regulation, i.e., it uses the time spent on media consumption as an indicator of how consumers assess media content. The next section describes the empirical strategy in more detail.

## 3. Empirical Strategy

It is difficult to directly measure whether and to what extent media outlets are captured by government.[5] Hence, most studies directly analyze the impact of media freedom, media diffusion, or other media market institutions on some measures of political, economic or social outcome (e.g., Besley and Burgess 2002; Brunetti and Weder 2003; Djankov et al. 2003; Enikolopov et al. 2011). This paper takes a different approach and analyzes the reaction of media consumers to government involvement in television markets. The amount of time people spend on news consumption serves as an indicator of how they assess the quality of media content.

[4] Another study by Prat and Strömberg (2005), however, points towards the relevance of TV news in the political context. The authors show that the introduction of private TV in Sweden lead to higher levels of political knowledge among voters who were previously less informed.

[5] Exceptions are, for example, McMillan and Zoido (2004) who document the kickbacks Montesinos, the secret-police chief of President Fujimori, paid to media executives (and other people), or Durante and Knight (2011) who show that the direction and extent of the political bias in news content on Italian TV changed when government changed.

If TV stations are politically captured they will be less critical about government, e.g. by suppressing negative news about the government or not providing the opposition with the same access. Consumers are expected to react to the lower information value of news content resulting from such practice. They will reduce their TV news consumption and switch, if possible, to other news sources that are more informative, like newspapers, radio or the internet[6], i.e. time spent on news of a certain type of media reflects the (relative) quality expectations of consumers.[7] Some papers provide empirical evidence that media consumers indeed react to media capture. Leeson (2008) shows in a cross-sectional study that media consumption is lower in countries where media freedom is restricted. Durante and Knight (2011) provide more detailed evidence for the case of Italy and show that TV consumers switched channels when the direction and extent of political bias on different private and public TV channels shifted after a change of government. Hence, these results support the idea that time spent on news consumption can be used as an indicator for political capture. Hosp and Eichenberger (2006) use the same empirical strategy to assess a different media market characteristic and investigate the effect of concentration in newspaper markets on quality. They find that newspaper reading time is lower in Swiss counties with a higher concentration in the newspaper market.

In a cross-country setting, however, there are some caveats. First, the level of media consumption might differ between countries due to various reasons. For example, people inform themselves to a greater extent when they have a larger say in politics (Benz and Stutzer 2004). Second, the extent of state involvement in TV markets is not completely exogenous and might even depend on media consumption. In countries where no attractive private TV supply exists and TV consumption is low, political pressure for public service broadcasting might be higher.[8] In order to mitigate these problems I analyze whether state involvement is associated with different

[6] This is one of the main assumption in Besley's and Prat's model of media capture, i.e., they assume that viewers prefer informative news (Besley and Prat 2006, p. 723)

[7] Public Broadcasting could also lead to lower news quality through a slightly different mechanism than traditionally understood media capture by government. In a democracy, pressure from all political parties could lead to news programs not only being less critical about government but about all political actors or about politics in general. News will then just be uninformative and boring. In such a setting, political pressure from all sides could also lead to the news being rather close to the median voters preferences, i.e. news would be rather unbiased. If consumers prefer news biased towards their own ideology (see, e.g., Mullainathan and Shleifer 2005; Gentzkow and Shapiro 2006; Gentzkow and Shapiro 2010), as a result, news consumption would be rather low.

[8] It should be noted, that it is possible to control for at least some of the variables that could drive such a relationship. In smaller countries, for example, availability of private (national) news of good quality might be too costly, thus leading to increased political demand for public service broadcasting. Population size can be included in the empirical specifications.

relative media consumption patterns. Hence, I analyze television, radio and newspaper consumption separately while controlling for the other two media consumption activities, respectively. In addition, lower independence of TV stations is expected to negatively affect TV consumption but not newspaper and radio[9] consumption. There might even be a positive relationship with the consumption of the two other types of media, because people can switch to newspapers or radio if they are not happy with television offerings.[10]

In a robustness analysis I also address two other possible explanations for a correlation between media market institutions and media consumption. First, it is possible that in certain countries public broadcasters produce news of higher quality than commercial TV stations would (because the former have the political mandate to do so) but only generate a small audience, because most people prefer entertainment or soft news on TV. Second, it could be the case that, when the quality of the news programming is high, people would not need to spend as much time viewing in order to obtain a certain amount of useful information. Low TV consumption time would then be an indicator of high news quality rather than the opposite. In the first case, government involvement should at least benefit those media consumers with a high preference for news, whose interests would not be reflected to the same extent in a commercial market.[11] Hence, it is possible to analyze the media consumption time of people with high and low interest in politics in order to test this scenario. In the second setting, one would expect a large share of people to watch TV news when news quality is high, but those who do would spend much less time doing so. When low average TV consumption time really indicates low news quality, both the share of people who watch news and the time these people spend on news consumption would be rather low. Hence, the analysis of the effects at the extensive margin can shed light on whether the second scenario is plausible or not.

[9] However, the regulation of TV stations might be correlated with the regulation of radio stations.

[10] Of course, the same argument would also apply to other media consumption activities, such as the consumption of news on the internet. However, data on internet news consumption is not available in the data set used.

[11] On preference externalities in TV markets see, e.g., Waldfogel (2004).

## 4. Empirical Analysis

### 4.1 Data

*Data on media consumption*

The empirical analysis is based on data from the first wave of the European Social Survey (ESS) conducted in 2002/03. The combination of this individual level data with country level data on TV market regulation results in availability of data for about 40,000 respondents in 21 countries.[12]

In the ESS, respondents are asked how much time they spend, on an average weekday, watching news or programs about politics and current affairs on television, listening to such programs on the radio, and reading on such topics in newspapers. They may indicate their answer in eight categories ranging from "no time at all" to "more than 3 hours". To facilitate the analysis, I use the minute values of the category means. For the top category "more than 3 hours", I assume 3.5 hours. In a sensitivity analysis, I also present ordered probit regressions that make use of the original categorical information. Respondents spend on average 47 minutes a day on TV news consumption (sd=40), 18 minutes on newspaper news consumption (sd=25) and 31 minutes on radio news consumption (sd=44).

The survey also includes a large number of socio-demographic characteristics such as income, age, gender, employment status, working hours, education, marital status, whether born in the country of residence or not, type of community respondents live in as well as political interest. They enter the media consumption equation as control variables. Table A1 in the Appendix shows summary statistics for all these individual characteristics.

*Data on state ownership of television*

I use data compiled by Djankov et al. (2003) on state and private ownership of a country's five most important TV stations with local news content. TV stations are selected on the basis of market share of the audience and classified as either state or private owned.[13] TV stations

[12] Luxembourg is the only country in the first wave of the ESS for which no TV market data is available. Of the 40,807 original respondents in the 21 countries included in the analysis, 522 did not answer one of the questions on the consumption of news and political media content.

[13] There is also a third category „other", which includes, for example, media outlets owned by political opposition parties. This category is however irrelevant for the sample of European countries. Only Slovenia has a TV station in this category with a market share of 1%.

financed by government license fees and accountable to the government or a government appointed body, like the British BBC (i.e. public service broadcasters), are classified as state owned. In our sample of mostly Western European countries, this is the dominant form of state ownership.[14] Ownership data are for the year 1999. Figure 1 presents the indicators for the share of state owned TV stations for the 21 countries included in the analysis.

[Figure 1 about here]

The light gray columns in front represent the share of the five top TV stations that are state owned, whereby the TV stations are weighted by their market share. The darker columns in the back show, for comparison, the unweighted share of state owned TV stations. State ownership is highest in Switzerland. Government controls three of the five most important TV stations and weighted by market share, state ownership amounts to 89%. On the other side of the graph is Greece, where the government controls only one of the top five TV stations with a market share of just 8%. The fraction of state ownership by market share averages 0.51 with a standard deviation of 0.19. State ownership by share and state ownership by count differ to some extent in certain countries. In Austria and Belgium, for example, the government controls the more popular TV stations and state ownership by market share is higher than by simple count. In other countries, like Ukraine, Hungary or Cyprus the opposite seems to be the case. In the following empirical analysis, I concentrate on state ownership by market share as it is the more precise measure.[15] However, in a sensitivity analysis, results are checked using the data on state ownership by count.

*Data on regulation and financing of public broadcasters*

Public service broadcasters are financed and regulated differently from country to country. Data gathered by Svendsen (2002) account for such differences in regulation. Svendsen differentiates between subordination of public service broadcasters to a Ministry, to a separate regulatory authority or to self-regulation. In our sample of 21 countries, 8 countries are regulated by a

[14] For further details on the methodology see Djankov et al. (2003).

[15] State ownership by market share is, however, to some extent endogenous to media consumption, i.e. the result of the interaction between (public and private) supply and demand (suspect to quality expectations of the public).

Ministry, 8 are regulated by a separate regulatory authority and 5 countries are subject to self-regulation.[16] For one country, Slovenia, there is no data available.

With regard to the source of revenue of public broadcasters, I differentiate between public and commercial revenue, i.e. revenue from government grants or license fees and revenue from advertising and sponsoring. The data are calculated from information provided by Betzel (2003) and relate to the year 2002. There is no data available for Germany. Figure 2 presents advertising and share of commercial income of the public service broadcasters[17] in the different countries. It ranges from 0 to 0.6. The mean is 0.28 and the median 0.32.

[Figure 2 about here]

4.2. Empirical Specification

The empirical strategy is implemented in a cross-section framework. I specify a micro-econometric media consumption function, in which the time spent on media consumption $MC_{ij}$ of individual $i$ in country $j$ depends on the extent of state ownership of television stations $StateTV_j$ as well as on individual characteristics $X_i$ and country-specific variables $Y_j$.

$$MC_{ij} = \beta_0 + \beta_1 StateTV_j + \gamma_1 X_i + \gamma_2 Y_j + \varepsilon_i \quad (1)$$

A second specification contains the more detailed regulation data. Here, the effect of state ownership of TV stations on media consumption additionally depends on which type of regulation public service broadcasters are subject to. Three regulatory regimes can be distinguished: self-regulation forms the reference group, while dummy variables for regulation by a separate regulatory authority $RegAuth_j$ and regulation by a ministry $RegMin_j$ in country j and

[16] Belgium is divided into a French and a Dutch speaking part, as both language groups have their own public service broadcasters that are regulated differently. For the UK, I use the regulation of the BBC for the whole country (ITV is regulated differently) and for Spain the regulation of national public service broadcasters (Catalan public service broadcasters are regulated differently).

[17] For some countries, the data are not provided separately for public TV and public radio companies. In these cases, the data presented here relate to both public TV and public radio. For some countries, it was not evident in the data source if the data relates to public TV only or to both public TV and public radio.

their interaction with the share of state owned TV ($StateTV_j$*$RegAuth_j$, $StateTV_j$*$RegMin_j$) are added to the regression.

$$MC_{ij} = \beta_0 + \beta_1 StateTV_j + \beta_2 RegAuth_j + \beta_3 RegMin_j + \beta_4 StateTV_j*RegAuth_j + \beta_5 StateTV_j*RegMin_j + \gamma_1 X_i + \gamma_2 Y_j + \varepsilon_i \quad (2)$$

A third specification adds the share of commercial income of public service broadcasters $ComInc_j$ as well as its interaction with the share of state owned TV $StateTV_j*ComInc_j$.

$$MC_{ij} = \beta_0 + \beta_1 StateTV_j + \beta_2 ComInc_j + \beta_3 StateTV_j*ComInc_j + \gamma_1 X_i + \gamma_2 Y_j + \varepsilon_i \quad (3)$$

As data on state ownership, regulation and funding of TV stations is available at the country level, no country-fixed effects can be included within the regressions. To nevertheless control for general differences between countries and their economic situations, GNI per capita adjusted for purchasing power, the unemployment rate and the size of the population are added to the regressions.[18] State ownership of TV stations in a country might also reflect a more general attitude or a propensity towards state involvement in the economy, which might correlate with political involvement and, thus, news consumption. I therefore control for this propensity by including an index for state owned enterprises and government investments.[19] Furthermore, in the robustness checks, I include other media market characteristics, such as the number of TV channels, newspapers and radio stations in a country.[20]

[18] The data are from World Development Indicators (World Bank several years) and Penn World tables 6.2 (Heston et al. 2006).

[19] The index is constructed by the Economic Freedom Network (Gwartney et al. 2007).

[20] Data on TV channels are from IP Network (several years), on radio stations from Eurostat (2003), and on newspapers from UNESCO (2008).

4.3. Results

Table 1 presents the results of a regression of state ownership of TV stations by market share on news consumption. An OLS estimator is applied and standard errors are clustered at country level.

[Table 1 about here]

Column 1 shows that respondents in countries with a higher share of state ownership watch significantly less TV news than in countries with lower state ownership ($p<0.05$). The size of the coefficient is considerable (-19). For example, a 50 percentage point higher share of state ownership (i.e. the difference between Hungary and Ireland or between Portugal and Switzerland) is associated with about 10 minutes less TV news watching (compared to a mean of about 45 minutes). The results are consistent with the idea that public TV is more susceptible to political capture and less informative than privately owned TV stations. State ownership of TV is not associated with radio and newspaper consumption in a statistically significant manner (columns 2 and 3). Coefficients are however positive and point in the direction of a substitution effect, i.e., people tend to favor other news sources when state involvement in television markets is high. Hence, the difference in results for television consumption as compared to radio and newspaper consumption confirms the above interpretation that state ownership of TV stations leads to lower TV news quality.

Next, I examine whether the effect of state ownership of TV stations on TV consumption is related to the type of regulatory supervision to which these stations are subjected.

[Table 2 about here]

The results in Table 2 reveal that state ownership of TV stations is negatively associated with TV news consumption only if public service broadcasters are regulated by a separate regulatory authority or a Ministry. If public service broadcasters are subject to self-regulation, a higher share of state owned TV stations is, on the contrary, positively related to TV consumption. A 50

percentage point increase of state ownership is associated with an 8 minute increase in TV news consumption if public service broadcasters are self-regulated, a 5 minutes decrease if there is a separate regulatory authority and a 26 minute decrease if a Ministry regulates these TV channels.[21] The results are in line with the theoretical prediction by Besley and Prat (2006) that higher transaction costs between government and the media lead to lower levels of media capture and they highlight two additional arguments. First, more formal independence indeed seems to safeguard public broadcasters from political capture. Second, the combination of public television with a regulatory structure that ensures independence seems to lead to a more attractive news supply than offered in a market dominated by private TV stations.

In addition, the effect of state ownership of TV stations on TV consumption might depend not only on the type of regulation and control that public stations face, but also on the origin of their income. Column 2 in Table 2 shows the results of the regressions that include the share of commercial income of public service broadcasters and its interaction with the share of state owned TV stations. As before, state ownership is negatively related to TV news consumption. This relationship does not, however, depend on levels of commercial income. Both the coefficient for commercial income and the coefficient of the interaction effect are not statistically significant at conventional levels. These results do not support the theoretical predictions that a larger extent of commercial orientation decreases the likelihood of media capture and, therefore, increases news quality. Hence, in the setting of public broadcasting in Europe, formal regulatory provisions seem to be more relevant for factual independence and news quality than the source of funding.

### 4.4. Robustness Analysis

So far, the results are consistent with the hypothesis that state ownership in combination with tight regulatory control of TV stations leads to less attractive TV news offerings because such public broadcasters are more susceptible to political capture. The robustness analysis addresses two alternative explanations for a negative relationship between state involvement and time spent on TV consumption. First, public TV stations might be commissioned to produce high quality news that does not conform to mass taste. Second, better news quality could lead to some sort of

[21] The marginal effects of state ownership in the case of regulation by a separate authority or a ministry are calculated from the coefficients of the dummy variables and the interaction effects. The respective marginal effects are 10.84 (se=5.31, $p<0.05$) for separate regulatory authority and 52.89 (se=7.07, $p<0.01$) for regulation by a Ministry.

higher productivity of news consumption. In both cases, a negative relationship between state involvement and TV consumption could be consistent with public broadcasters producing news of higher rather than lower quality. Moreover, I study the sensitivity of the results with regard to alternative empirical specifications.

*Political interest and news consumption*

The content people prefer to watch on TV does not necessarily correspond to what would be beneficial from a social point of view. Information consumption, especially information in the political context, or citizens' exposure to diverse points of view, can have positive external effects (see, e.g., Sunstein 2000; Sunstein 2007). Many public service broadcasters are therefore commissioned to provide high quality news reflecting a diverse set of opinions. If these kinds of "high quality" news programs do not reflect mass taste, the presence of public service broadcasters might well lead to lower aggregate news consumption. In this scenario, government involvement in TV markets should specifically benefit those consumers with a high interest in news and politics (whose preferences would not be properly reflected without government intervention) and they would exhibit high levels of news consumption.

Table 3 shows an extension of the basic analysis. In addition, the regressions include interaction terms between state involvement in TV markets and respondents' level of political interest. Political interest is measured on a four-point scale ranging from "not at all interested" to "very interested". The results do not provide any evidence for the above scenario. On the contrary, the interaction term between state ownership and political interest is negative and statistically significant and, hence, the negative effects of state ownership on TV news consumption are more pronounced for consumers with a high interest in politics than for those with a low interest. For respondents in the lowest category of political interest, the marginal effect of state ownership of TV stations on TV news consumption is small and not statistically significant (-7.54, se=5.93), whereas the marginal effect is larger and statistically significant at the 95% or 99% level for those with a higher interest in politics (-33.25, se=11.62 in the highest category). The interaction effects between state ownership of TV stations and type of regulation are also stronger for consumers with high preferences for political information than for those with low interest in politics (i.e. the triple interactions between state ownership, type of regulation and political interest are negative and statistically significant; see column 2 in Table 3). Furthermore, the triple interaction effect between state ownership, share of commercial income and political interest is

positive (see column 3 in Table 2), although not statistically significant at conventional levels (t=1.56). It therefore points into the direction of the theoretical prediction that more commercial orientation of public broadcasters leads to less political capture and thence to more attractive TV news for those consumers interested in politics.

[Table 3 about here]

In summary, the results in Table 3 are not consistent with the described alternative scenario, but lend further support to the hypothesis that tightly regulated public TV stations are more susceptible to political capture and do not appeal to consumers who are interested in politics, whereas self-regulated public stations remain independent and offer particularly high news quality.

*News quality and productivity of news consumption*

The basic empirical strategy is based on the argument that (potential) consumers spend less time on TV news consumption when TV news quality is lower. Low news quality means that the productivity of time spent on TV news is low and, hence, the relative price of TV consumption is high. If close substitutes to TV news exist, such as radio, newspapers or internet, households will tend to substitute away from TV to those other types of news media, and TV consumption can be expected to decrease (see, e.g., Hosp 2005, p. 82). However, if no such substitutes exist people might well spend more time on TV news to get a certain level of information when TV news quality is low, i.e., in this scenario, a relatively low average amount of time spent on news consumption would indicate high news quality rather than low quality. Hence, the results of the basic analysis could be interpreted in the sense that more state involvement in the TV market leads to higher TV news quality and not lower quality. Furthermore, in this case, we would expect a larger share of people to watch the news (because it is of high quality) when state involvement is high, but those who do watch the news to spend less time on it (because they only need to spend little time on it in order to be sufficiently well informed). The latter argument can be used to empirically test for the above scenario: if more state involvement in TV markets and tighter regulation of public TV stations indeed lead to higher news quality (but less time spent on TV consumption on average because the productivity of news consumption is higher) we would

expect positive effect at the extensive margin (and a negative effect at the intensive margin), whereas if state involvement leads to lower quality (and lower average TV news consumption because people, e.g., switch to other media outlets) we would expect a negative (or at least no positive) effect at the extensive margin (and a negative effect at the intensive margin). Table 4 shows the results of an analysis of the effects of state involvement in TV markets on the share of people who do not watch TV news at all. Specifications (1), (2) and (3) apply a linear probability model using OLS[22] and only discriminate between people who do not spend any time watching TV news and those who do spend some amount of time watching it, and specifications (4), (5) and (6) are ordered probit regressions that make use of the full categorical information on people's TV news consumption. The results reveal that state involvement is positively associated with the share of people who do not watch TV news at all (see specifications (1) and (4)), i.e., state involvement has a negative effect on TV news consumption not only at the intensive but also at the extensive margin. While the results are statistically significant ($p<0.05$) in the ordered probit specification, the statistical significance is below conventional levels in the linear probability model. The coefficients are nevertheless similar in size and reflect that a 50% increase in the share of state owned TV stations leads to a 2% to 4% higher probability of not watching any TV news at all. The results are also confirmed including interaction effects with the type of regulatory regime and the level of political interest. Because the interaction effects are not straightforward to interpret in a non-linear model, Table 5a shows the average marginal effects of the share of state owned TV station on the probability of not watching TV news for the different regulatory regimes and Table 5b for the different levels of political interest. The results confirm that the share of state-owned TV stations in country is positively and significantly associated with the probability of not watching TV news for respondents with high levels of political interest and when public broadcasters are regulated by a ministry. When public broadcasters are subject to self-regulation, the marginal effect is negative (at least in the ordered probit specification) and it is not statistically significant when there is a separate regulatory authority. The empirical results confirm those in the previous sections and do not support the above scenario in which tightly regulated public broadcasters provide higher news quality.

[22] The linear probability model is preferred over a logit or probit specification because of the easier interpretation of interaction effects.

*Alternative specifications*

The results presented thus far are robust to various changes in specification. As already shown above in Table 4, the results are confirmed using ordered probit regressions and the original categorical information on television, radio and newspaper consumption.

Tables 6 and 7 show the results of a set of additional alternative specifications. Using the share of state-owned TV stations by count, i.e. the unweighted share of state-owned TV stations among the five top TV stations in a country, instead of the share of state-owned TV stations weighted by market share, leads to very similar results as in the baseline regression in Table 1 (see column (A) in Table 6). Coefficients are generally bigger, which is not surprising as the variation of state ownership by count is smaller than the variation of state ownership by share. An increase in state ownership by count of 20 percentage points, which again reflects the difference between Hungary and Ireland or between Portugal and Switzerland, is associated with about 7 minutes less TV news consumption. This is quantitatively similar to the reduction of 10 minutes when analyzing the effect of state ownership by market share. The results are also quantitatively similar to those in the baseline regressions when including the interaction effects with type of regulation and political interest. Statistical significance is, however, reduced to some extent, i.e. the statistical significance of the interaction term between state ownership of TV stations and regulation by a separate authority and between state ownership of TV stations and political interest drops just below conventional levels (t=1.46 and t=1.62) (see columns (B) and (C) in Table 6).

[Table 6 about here]

State ownership of TV stations might be correlated with other media market characteristics which systematically influence TV consumption. I control for one such issue by adding the number of TV channels received by 70 percent of the population. The results are robust to the added control variable (see columns (A) to (C) in Table 7). In addition, in columns (D) to (F) I include the number of radio channels and the number of daily newspaper titles in a country.[23] Again, the result without interaction effects remains quantitatively and qualitatively very similar (see

[23] The data on the number of TV channels are from IP Network (several years), the data on radio stations from Eurostat (2003), and the data on newspapers from UNESCO (2008).

column (D) in Table 7) although the sample is smaller because the additional control variables are only available for 16 of the 21 countries. Only in the specifications including interaction effects with the type of regulation and political interest are the results a little weaker. As a result, the marginal effect of state ownership on TV news consumption is negative if public broadcasters are self-regulated (as compared to positive in the baseline regressions) and not statistically significant if they are subject to a separate regulatory authority. In the case of regulation by a Ministry, the marginal effect is quantitatively and qualitatively very similar to the baseline results. The interaction effect between the share of state-owned TV stations and political interest is not statistically significant including the additional media market controls, but it is positive (as in the baseline specifications) and the marginal effects of state ownership on TV consumption are negative and statistically significant for all levels of political interest. The changes in statistical significance as compared to the baseline regressions can mainly be explained by the reduction in observations. I.e., regressions with the standard set of controls but the reduced number of observations lead to almost the same results as the regressions with the additional control variables (results not shown). Hence, because of the rather limited number of countries, the results are to some extent susceptible to changes in sample selection. In summary, while the cross-sectional framework in this empirical study cannot completely rule out the possibility of reverse causation or an omitted variable bias, the empirical results are surprisingly robust to the various changes in empirical specifications.

[Table 7 about here]

## 4. Conclusion

Recent literature on the political economy of the media shows that independent media play an important role for political accountability and contribute to better political, economic and social outcomes (for a survey, see Prat and Stromberg 2011). Public service broadcasters that are prevalent in many Western European democracies are somewhat at odds with the recommendations in this literature. Public and scholarly opinion is very much divided on how to assess this type of government involvement in media markets (see, e.g., Sunstein 2000). The empirical analysis in this paper investigates how media consumers react to public broadcasting

and shows that a larger share of state-owned TV stations in Europe is associated with lower TV news consumption. Tighter regulation of the public service broadcasters amplifies these negative relationships, whereas a larger share of self-regulated public broadcasters is associated with higher TV news consumption. The results are consistent with the theory of media capture where low transaction costs between government and the media facilitate media capture. In addition, the results show that certain regulatory provisions (i.e., a regime of self-regulation) are successful at keeping public TV stations independent and even seem to lead to better news quality (as reflected by the amount of TV news consumption) than a setting without any public broadcasting.

The commercial orientation of state-owned TV stations, i.e., their share of funding through advertising and sponsoring as compared to license fees and other public sources, though, is not related to news consumption in a statistically relevant manner. Hence, in the setting investigated, more financial independence from government seems to be less relevant for news quality than more formal regulatory independence. In the framework of this quantitative empirical study it is not possible to investigate why commercial orientation seems not to matter. Maybe the rather crude differentiation between the different sources of funding is not able to capture the relevant aspects that really drive financial and hence political independence. It could be the case, for instance, that financing through license fees can be less influenced in the daily political process as compared to when public broadcasters are financed through normal taxes and are part of the regular public budget.

Although the empirical analysis is based on cross-sectional data only, the results do not support alternative scenarios, where tightly regulated public broadcasters offer high quality news at the cost of content appealing to mass audiences. Individuals with a high interest in politics exhibit lower TV news consumption when state ownership is high than people with little interest in politics. The negative effects of state ownership and tight regulation on TV consumption are observed, both at the extensive and intensive margin, and cannot therefore be explained by some sort of higher productivity of watching the news on public TV.

In summary, the analysis offers interesting and differentiated insights into the relationship between state involvement in television markets and media consumption. While the present study only highlights two specific aspects of the regulation of public broadcasters, the insights can nevertheless be relevant for the ongoing discussions on the reform of the public broadcasting system occurring in several countries (see, e.g., Svendsen 2002). Further research will hopefully

address other media market institutions relevant for the independence of public broadcasters in Europe, and for television in general.

**References**


Armstrong, Mark (2005). Public Service Broadcasting. *Fiscal Studies* 26(3): 281-299.

Armstrong, Mark and Helen Weeds (2007). Public Service Broadcasting in the Digital World. In: Paul Seabright and Jürgen Von Hagen (eds.). *The Economic Regulation of Broadcasting Markets: Evolving Technology and Challenges for Policy*. Cambridge, UK: Cambridge University Press: 81-149.

Benz, Matthias and Alois Stutzer (2004). Are Voters Better Informed When They Have a Larger Say in Politics? Evidence for the European Union and Switzerland. *Public Choice* 119(1-2): 31-59.

Berry, Steven T. and Joel Waldfogel (1999). Public Radio in the United States: Does It Correct Market Failure or Cannibalize Commercial Stations? *Journal of Public Economics* 71(2): 189-211.

Berry, Steven T. and Joel Waldfogel (2001). Do Mergers Increase Product Variety? Evidence from Radio Broadcasting. *Quarterly Journal of Economics* 116(3): 1009-1025.

Besley, Timothy and Robin Burgess (2002). The Political Economy of Government Responsiveness: Theory and Evidence from India. *Quarterly Journal of Economics* 117(4): 1415-1451.

Besley, Timothy and Andrea Prat (2006). Handcuffs for the Grabbing Hand? Media Capture and Government Accountability. *American Economic Review* 96(3): 720-736.

Betzel, Marcel (2003). Programme Performance of Public Service Broadcasting and Its Mission in the Digital Age. Paper prepared for the 17th EPRA meeting in Naples, Italy, 8-9 May 2003.

Brunetti, Aymo and Beatrice Weder (2003). A Free Press Is Bad News for Corruption. *Journal of Public Economics* 87(7-8): 1801-1824.

Connolly, Sara and Shaun P. Hargreaves Heap (2007). Cross Country Differences in Trust in Television and the Governance of Public Broadcasters. *Kyklos* 60(1): 3-14.

Djankov, Simeon, Caralee McLiesh, Tatiana Nenova and Andrei Shleifer (2003). Who Owns the Media? *Journal of Law and Economics* 46(2): 341-381.

Durante, Ruben and Brian Knight (2011). Partisan Control, Media Bias, and Viewer Responses: Evidence from Berlusconi's Italy. *Journal of the European Economic Association*, forthcoming.

Enikolopov, Ruben, Maria Petrova and Ekaterina Zhuravskaya (2011). Media and Political Persuasion: Evidence from Russia. *The American Economic Review* 101(7): 3253-3285.

Eurostat (2003). Cinema, TV and Radio in the EU. Statistics on Audiovisual Services. Data 1980–2002. Luxembourg: Office for Official Publications of the European Communities.

Freedom House (various years). *Freedom in the World. The Annual Survey of Political Rights and Civil Liberties.* New York: Freedom House.

Gentzkow, Matthew, Edward L. Glaeser and Claudia Goldin (2006). The Rise of the Fourth Estate: How Newspapers Became Informative and Why It Mattered. In: Edward L. Glaeser and Claudia Goldin (eds.). *Corruption and Reform: Lessons from America's Economic History*. Chicago, IL: University of Chicago Press.

Gentzkow, Matthew and Jesse M. Shapiro (2006). Media Bias and Reputation. *Journal of Political Economy* 114(2): 280-316.

Gentzkow, Matthew and Jesse M. Shapiro (2010). What Drives Media Slant? Evidence from U.S. Daily Newspapers. *Econometrica* 78(1): 35-71.

George, Lisa M. (2007). What's Fit to Print: The Effect of Ownership Concentration on Product Variety in Daily Newspaper Markets. *Information Economics and Policy* 19(3-4): 285-303.

George, Lisa M. and Joel Waldfogel (2003). Who Affects Whom in Daily Newspaper Markets? *Journal of Political Economy* 111(4): 765-784.

Gwartney, James D., Robert A. Lawson, Russell S. Sobel and Peter T. Leeson (2007). *Economic Freedom of the World: 2007 Annual Report*. Vancouver, BC: The Fraser Institute. Data retrieved from www.freetheworld.com (accessed on May 15, 2008).

Hamilton, James T. (2004). *All the News That's Fit to Sell. How the Market Transforms Information into News*. Princeton, NJ: Princeton University Press.

Hargreaves Heap, Shaun P. (2005). Television in a Digital Age: What Role for Public Service Broadcasting? *Economic Policy* 41: 111-147.

Heston, Alan, Robert Summers and Bettina Aten (2006). Penn Word Table Version 6.2. Mimeo, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

Hosp, Gerald (2005). *Medienökonomik: Medienkonzentration, Zensur und soziale Kosten des Journalismus*. Konstanz: UVK Verlagsgesellschaft.

Hosp, Gerald and Reiner Eichenberger (2006). Pressekonzentration senkt Leserzufriedenheit: Empirische Evidenz für die Schweiz. Working Paper, Universität Fribourg.

Jowell, Roger and the Central Co-ordinating Team (2003). European Social Survey 2002/2003: Technical Report. Centre for Comparative Social Surveys, City University, London.

Kiefer, Marie Luise (2003). Medienfunktionen als meritorische Güter. *Medien Journal. Zeitschrift für Kommunikationskultur* 27(3): 31-46.

Leeson, Peter T. (2008). Media Freedom, Political Knowledge, and Participation. *Journal of Economic Perspectives* 22(2): 155-169.

Leeson, Peter T. and Christopher J. Coyne (2005). Manipulating the Media. *Institutions and Economic Development* 1(2): 67-92.

McMillan, John and Pablo Zoido (2004). How to Subvert Democracy: Montesinos in Peru. *Journal of Economic Perspectives* 18(4): 69-92.

Mullainathan, Sendhil and Andrei Shleifer (2005). The Market for News. *American Economic Review* 95(4): 1031-1053.

Noam, Eli M. (1987). A Public and Private-Choice Model of Broadcasting. *Public Choice* 55(1): 163-187.

Oberholzer-Gee, Felix and Joel Waldfogel (2005). Strength in Numbers: Group Size and Political Mobilization. *Journal of Law and Economics* 48(1): 73-91.

Prat, Andrea and David Stromberg (2011). The Political Economy of Mass Media. CEPR Discussion Paper No. DP8246, London: Centre for Economic Policy Research.

Prat, Andrea and David Strömberg (2005). Commercial Television and Voter Information. CEPR Discussion Paper No. 4989, London: Centre for Economic Policy Research.

Sunstein, Cass R. (2000). Television and the Public Interest. *California Law Review* 88(2): 499-564.

Sunstein, Cass R. (2007). *Republic.com 2.0*. Princeton, NJ: Princeton University Press.

Svendsen, Erik Nordahl (2002). The Regulation of Public Service Broadcasting, an EPRA Inquiry. Paper prepared for the 16th EPRA meeting in Ljubljana, 24-25 October 2002.

UNESCO Institute for Statistics (2008). Newspapers. Available online at http://stats.uis.unesco.org/ (accessed on May 13, 2008).

Waldfogel, Joel (2003). Preference Externalities: An Empirical Study of Who Benefits Whom in Differentiated-Product Markets. *RAND Journal of Economics* 34(3): 557-568.

Waldfogel, Joel (2004). Who Benefits Whom in Local Television Markets? *Brookings-Wharton Papers on Urban Affairs* 2004: 257-305.

World Bank (several years). *World Development Indicators*. Washington, DC: The World Bank.

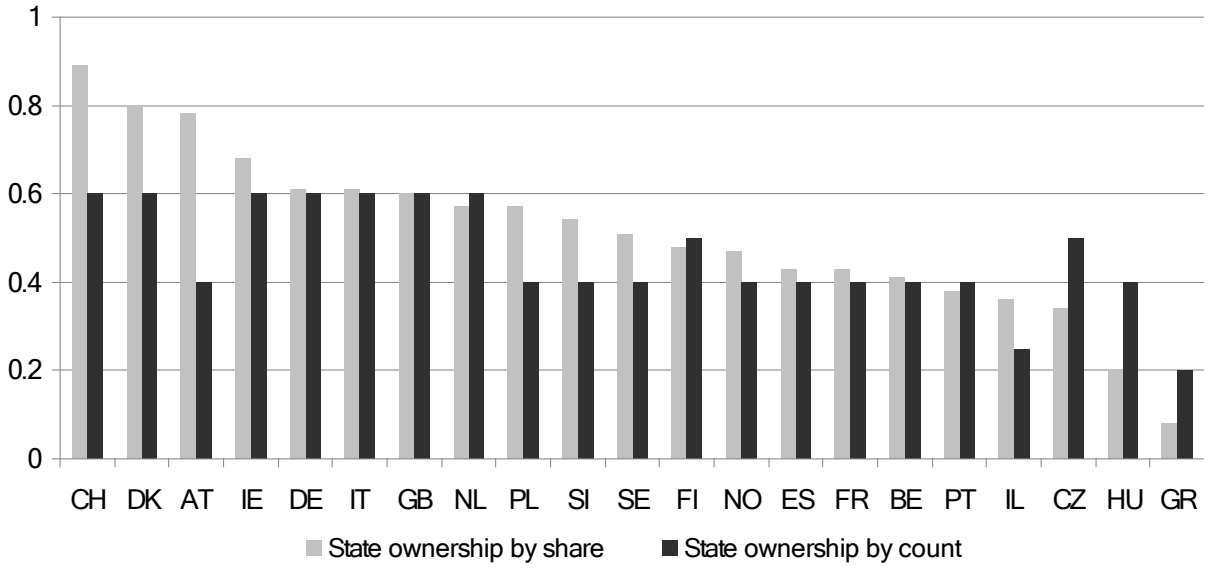
## Appendix

**Table A1: Summary statistics of individual variables**

| | Mean | Sd |
|---|---|---|
| TV news consumption | 46.60 | 39.54 |
| Newspaper news consumption | 18.34 | 24.61 |
| Radio news consumption | 30.86 | 44.06 |
| Political interest [0-3] | 1.43 | 0.90 |
| Household income (int. $) | 2468.26 | 2065.11 |
| In top income category | 0.01 | 0.12 |
| Working hours | 40.94 | 15.01 |
| Household size | 1.64 | 0.44 |
| Female | 0.53 | 0.50 |
| Citizen of country | 0.97 | 0.17 |
| Living with partner | 0.62 | 0.48 |
| Living with children | 0.40 | 0.49 |
| Education | | |
| Not completed primary educ. | 0.04 | 0.21 |
| Primary educ. | 0.14 | 0.35 |
| Lower secondary educ. | 0.23 | 0.42 |
| Upper secondary. | 0.33 | 0.47 |
| Post-secondary, non-tertiary educ. | 0.06 | 0.24 |
| First stage of tertiary educ. | 0.15 | 0.35 |
| Second stage of tertiary educ. | 0.05 | 0.21 |
| Employment status | | |
| Paid work | 0.50 | 0.50 |
| Unemployed | 0.05 | 0.21 |
| In education | 0.09 | 0.28 |
| Sick, disabled | 0.02 | 0.15 |
| Retired | 0.21 | 0.41 |
| Military/community service | 0.00 | 0.06 |
| Housework | 0.12 | 0.32 |
| Other employment status | 0.01 | 0.12 |
| Place of living | | |
| Big city | 0.19 | 0.39 |
| Suburbs | 0.15 | 0.35 |
| Small town | 0.30 | 0.46 |
| Village | 0.30 | 0.46 |
| Rural area, farm | 0.07 | 0.25 |

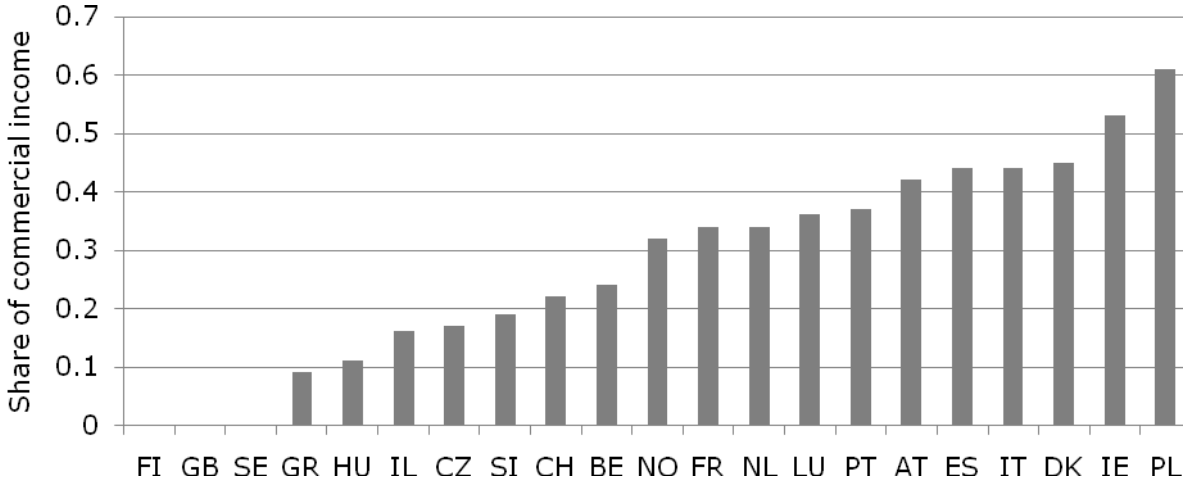
*Data Source*: European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003).

**Figure 1: State Ownership of Television in 21 European Countries, 1999**




*Data Source:* Djankov et al. (2003).

**Figure 2: Share of Commercial Income of Public Service Broadcasters in 20 European Countries**




*Data Source:* Betzel (2003).

**Table 1: State Ownership of TV and News Consumption**

| Dependent variable: media use (minutes) | TV News | Radio News | Newspaper News |
|---|---|---|---|
| | Coefficient (Standard error) | Coefficient (Standard error) | Coefficient (Standard error) |
| State ownership of TV | -19.26** (8.28) | 4.52 (4.02) | 16.64 (13.07) |
| TV news consumption | | 0.10*** (0.02) | 0.17*** (0.03) |
| Newspaper news consumption | 0.25*** (0.03) | | 0.26*** (0.04) |
| Radio news consumption | 0.12*** (0.02) | 0.07*** (0.02) | |
| State owned enterprise index | 0.81** (0.32) | 0.09 (0.33) | -0.80 (0.91) |
| Population (1 Mio.) | -0.07 (0.07) | -0.05** (0.02) | -0.05 (0.05) |
| GNI per capita (1000 int. $) | 0.68** (0.28) | 0.13 (0.14) | -0.25 (0.23) |
| Unemployment rate | 84.57* (44.28) | -16.30 (18.91) | 4.83 (36.18) |
| Individual controls | Yes | Yes | Yes |
| Constant | 1.96 (12.66) | -15.16** (5.81) | -2.09 (12.04) |
| No. of observations | 40285 | 40285 | 40285 |
| R-squared | 0.19 | 0.20 | 0.10 |

*Notes*: OLS regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for political interest, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well.

*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007).

**Table 2: State Ownership of TV, Regulatory Authority, Commercial Income and TV Consumption**

| Dependent variable: TV news use (minutes) | Coefficient (Standard error) | Coefficient (Standard error) |
|---|---|---|
| State ownership of TV | 17.69*** (4.87) | -24.40* (12.33) |
| Self-regulation | | |
| Separate regulatory authority | 17.47*** (4.62) | |
| Regulation by a Ministry | 44.11*** (5.36) | |
| State ownership * reg. authority | -28.53*** (6.82) | |
| State ownership * reg. by Ministry | -70.58*** (7.35) | |
| Share of commercial income | | 23.99 (28.76) |
| State ownership * commercial inc. | | -10.50 (51.41) |
| Individual controls | Yes | Yes |
| Country level controls | Yes | Yes |
| Constant | -19.60 (13.37) | 5.61 (14.02) |
| No. of observations | 38778 | 37374 |
| R-squared | 0.19 | 0.19 |

*Notes*: OLS regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for newspaper and radio consumption, political interest, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well. Country level controls include GNI per capita (PPP), unemployment rate, size of population and a state owned enterprise index.

*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007), Betzel (2003), Svendsen (2002).

**Table 3: Political Interest, State Involvement and News Consumption**

| Dependent variable: TV news use (minutes) | Coefficient (Standard error) | | Coefficient (Standard error) | | Coefficient (Standard error) | |
|---|---|---|---|---|---|---|
| State ownership of TV | -7.54 | (5.93) | 3.50 | (5.86) | -5.16 | (10.78) |
| Political interest | 12.24*** | (1.59) | 2.97 | (2.68) | 15.63*** | (2.48) |
| State ownership * political interest | -8.57*** | (2.78) | 9.01** | (3.96) | -15.46** | (5.41) |
| Self-regulation | | | Reference group | | | |
| Separate regulatory authority | | | 5.82 | (3.98) | | |
| Regulation by a Ministry | | | 33.02*** | (6.19) | | |
| State ownership * reg. authority | | | -14.93** | (7.09) | | |
| State ownership * reg. by Ministry | | | -43.69*** | (9.41) | | |
| Reg. authority * pol. int. | | | 8.65*** | (2.71) | | |
| Reg. by ministry * pol. int. | | | 6.07* | (3.10) | | |
| State ownership * reg. authority * pol. int. | | | -10.91** | (4.78) | | |
| State ownership * reg. by Ministry * pol. int. | | | -15.71*** | (4.53) | | |
| Share of commercial income | | | | | 44.37 | (34.67) |
| State ownership * commercial income | | | | | -50.98 | (58.87) |
| Commercial income * pol. int. | | | | | -18.92 | (12.65) |
| State ownership * com. inc. * pol. int. | | | | | 35.73 | (22.96) |
| Individual controls | Yes | | Yes | | Yes | |
| Country level controls | Yes | | Yes | | Yes | |
| Constant | -4.52 | (12.62) | -13.25 | (12.16) | -4.52 | (12.84) |
| No. of observations | 40172 | | 38666 | | 37263 | |
| R-squared | 0.19 | | 0.20 | | 0.19 | |

*Notes*: OLS regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for newspaper and radio consumption, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well. Country level controls include GNI per capita (PPP), unemployment rate, size of population and a state owned enterprise index.

*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01..

*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007), Betzel (2003), Svendsen (2002).

**Table 4: State Ownership and TV News Consumption: Extensive Margin**

| | (1) Lin. prob. | (2) Lin. prob. | (3) Lin. prob. | (4) Ordered probit | | | (5) Ordered probit | (6) Ordered probit |
|---|---|---|---|---|---|---|---|---|
| Dependent variable: TV news use (min.) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Marg. Eff. [no TV] (SE) | Marg. Eff. [>3 hrs TV] (SE) | Coefficient (SE) | Coefficient (SE) |
| State ownership of TV | 0.048 | 0.045 | -0.065 | -0.536* | 0.076* | -0.018* | 0.430* | -0.112 |
| | (0.063) | (0.105) | (0.076) | (0.318) | (0.046) | (0.010) | (0.231) | (0.256) |
| Self-regulation | | | | | | | | |
| Separate regulatory authority | | 0.047 | | | | | 0.368** | |
| | | (0.065) | | | | | (0.160) | |
| Regulation by a Ministry | | -0.129* | | | | | 1.373*** | |
| | | (0.070) | | | | | (0.199) | |
| State ownership * reg. authority | | -0.096 | | | | | -0.528** | |
| | | (0.108) | | | | | (0.255) | |
| State ownership * reg. by Ministry | | 0.201* | | | | | -2.192*** | |
| | | (0.112) | | | | | (0.320) | |
| Political interest | -0.042*** | -0.043*** | -0.084*** | 0.272*** | | | 0.285*** | 0.427*** |
| | (0.006) | (0.007) | (0.016) | (0.023) | | | (0.022) | (0.048) |
| State ownership * political interest | | | 0.082*** | | | | | -0.306*** |
| | | | (0.027) | | | | | (0.086) |
| Individual controls | Yes | Yes | Yes | Yes | | | Yes | Yes |
| Country level controls | Yes | Yes | Yes | Yes | | | Yes | Yes |
| No. of observations | 40285 | 38778 | 40172 | 40285 | | | 38778 | 40172 |
| (Pseudo) r-squared | 0.08 | 0.09 | 0.08 | 0.07 | | | 0.07 | 0.07 |

*Notes*: Regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for newspaper and radio consumption, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well. Country level controls include GNI per capita (PPP), unemployment rate, size of population and a state owned enterprise index.

*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007), Svendsen (2002).

**Table 5a: Marginal Effect of State Ownership on TV News Consumption by Regulation**

| | (2) Lin. prob. | (5) Ordered probit | |
|---|---|---|---|
| | Marg. effect [No TV] (Standard error) | Marg. effect [No TV] (Standard error) | Marg. effect [>3 hours TV] (Standard error) |
| State ownership of TV if | | | |
| Self-regulation | 0.045 (0.105) | -0.068* (0.039) | 0.013** (0.006) |
| Separate regulatory authority | -0.051 (0.044) | 0.014 (0.018) | -0.003 (0.004) |
| Regulation by a Ministry | 0.247*** (0.056) | 0.206*** (0.036) | -0.082*** (0.017) |

*Notes*: Marginal effects from regressions in Table 4. See Table 4 for specifications and data sources.
*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

**Table 5b: Marginal Effect of State Ownership on TV News Consumption by Political Interest**

| | (3) Lin. prob. | (6) Ordered probit | |
|---|---|---|---|
| | Marg. effect [No TV] (Standard error) | Marg. effect [No TV] (Standard error) | Marg. effect [>3 hours TV] (Standard error) |
| State ownership of TV if | | | |
| Political interest 0 | -0.065 (0.076) | 0.024 (0.054) | -0.001 (0.003) |
| Political interest 1 | 0.017 (0.061) | 0.065 (0.045) | -0.009 (0.006) |
| Political interest 2 | 0.099* (0.056) | 0.079** (0.040) | -0.028** (0.013) |
| Political interest 3 | 0.182*** (0.064) | 0.074** (0.035) | -0.067*** (0.025) |

*Notes*: Marginal effects from regressions in Table 4. See Table 4 for specifications and data sources.
*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

**Table 6: Share of State-Owned TV stations by count and TV Consumption**

| Dependent variable:<br>TV news use (minutes) | (A)<br>Coefficient<br>(SE) | (B)<br>Coefficient<br>(SE) | (C)<br>Coefficient<br>(SE) |
|---|---|---|---|
| State ownership of TV by count | -34.54**<br>(12.88) | 13.69<br>(28.99) | -22.88<br>(13.47) |
| Self-regulation | | Ref. group | |
| Separate regulatory authority | | 20.06<br>(13.78) | |
| Regulation by a Ministry | | 51.73**<br>(22.96) | |
| State ownership by count * reg. authority | | -38.42<br>(26.28) | |
| State ownership by count* reg. by Ministry | | -97.27*<br>(51.16) | |
| Political interest | 7.76***<br>(0.86) | 8.12***<br>(0.85) | 11.87***<br>(2.66) |
| State ownership by count * political interest | | | -9.11<br>(5.62) |
| Individual controls | Yes | Yes | Yes |
| Country level controls | Yes | Yes | Yes |
| Constant | 12.08<br>(12.23) | -13.25<br>(17.09) | 6.05<br>(12.45) |
| No. of observations | 40285 | 38778 | 40172 |
| R-squared | 0.18 | 0.19 | 0.19 |

*Notes*: OLS regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for newspaper and radio consumption, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well. Country level controls include GNI per capita (PPP), unemployment rate, size of population and a state owned enterprise index.

*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.

*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007), Svendsen (2002).

**Table 7: State Ownership of TV, Regulatory Authority, Commercial Income and TV Consumption: Robustness**

| Dependent variable: TV news use (min.) | (A) | (B) | (C) | (D) | (E) | (F) |
|---|---|---|---|---|---|---|
| | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) | Coefficient (SE) |
| State ownership of TV | -17.26*** | 8.79 | -9.06** | -22.59** | -12.33** | -18.08* |
| | (4.17) | (7.53) | (3.70) | (7.88) | (5.67) | (9.49) |
| Self-regulation | | Ref. | | | Ref. | |
| Separate regulatory authority | | 18.58*** | | | -10.76 | |
| | | (4.68) | | | (6.21) | |
| Regulation by a Ministry | | 40.23*** | | | 18.13*** | |
| | | (5.07) | | | (3.71) | |
| State ownership * reg. authority | | -26.50*** | | | 16.88 | |
| | | (8.13) | | | (9.73) | |
| State ownership * reg. by Ministry | | -56.23*** | | | -33.44*** | |
| | | (8.83) | | | (4.74) | |
| Political interest | 7.78*** | 8.13*** | 10.90*** | 7.20*** | 7.27*** | 8.82*** |
| | (0.76) | (0.76) | (1.57) | (0.71) | (0.74) | (2.27) |
| State ownership * political interest | | | -6.02** | | | -2.86 |
| | | | (2.65) | | | (3.86) |
| State owned enterprise index | 1.53*** | 2.98*** | 1.54*** | 1.43*** | 1.21** | 1.42*** |
| | (0.43) | (0.45) | (0.42) | (0.46) | (0.42) | (0.45) |
| Population (1 Mio.) | -0.04 | -0.03 | -0.04 | -0.01 | -0.06 | -0.01 |
| | (0.04) | (0.03) | (0.04) | (0.05) | (0.04) | (0.05) |
| GNI per capita (1000 int. $) | 0.82*** | 0.82*** | 0.83*** | 0.74*** | 0.44*** | 0.74*** |
| | (0.25) | (0.15) | (0.25) | (0.25) | (0.14) | (0.24) |
| Unemployment rate | 75.89* | 102.89*** | 76.89* | -22.73 | -60.98* | -21.92 |
| | (40.58) | (16.85) | (40.39) | (58.20) | (34.55) | (57.67) |
| No. of TV channels | -0.34*** | -0.28*** | -0.33*** | -0.27*** | -0.14*** | -0.27*** |
| | (0.08) | (0.05) | (0.08) | (0.06) | (0.04) | (0.06) |
| No. of radio stations | | | | 0.01*** | 0.01*** | 0.01*** |
| | | | | (0.00) | (0.00) | (0.00) |
| No. of daily newspaper titles | | | | -0.02 | -0.01 | -0.02 |
| | | | | (0.02) | (0.01) | (0.02) |
| Individual controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | -1.19 | -30.61*** | -5.61 | 8.82 | 16.94 | 6.42 |
| | (11.70) | (10.59) | (12.03) | (12.78) | (12.17) | (13.94) |
| No. of observations | 37836 | 36329 | 37730 | 31927 | 30420 | 31849 |
| R-squared | 0.19 | 0.20 | 0.19 | 0.20 | 0.20 | 0.20 |

*Notes*: OLS regressions with robust standard errors clustered at country level. Standard errors in parenthesis. Individual controls include variables for newspaper and radio consumption, household income (log), size of household (square root), gender, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations are included as well. Country level controls include GNI per capita (PPP), unemployment rate, size of population and a state owned enterprise index.
*Significance levels:* * p<0.10, ** p<0.05, *** p<0.01.
*Data Sources:* European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003), Djankov et al. (2003), World Development Indicators (World Bank several years), Economic Freedom Network (Gwartney et al. 2007), Svendsen (2002).