

Governance of Public Broadcasters and Television Consumption

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Abstract: Recent literature emphasizes the importance of independent media for beneficial political, economic and social outcomes. I investigate how media consumers react to state ownership of TV stations and the regulation and financing of these public broadcasters. The empirical results show that a higher share of state-owned TV stations is associated with lower TV consumption, both in total and with regard to news and information only. The negative effects of state ownership are larger when the public stations are regulated by a Ministry as opposed to a more independent regulatory body. When public broadcasters are subject to self-regulation only, there is even a positive association between the share of state ownership and TV consumption. The negative effects of state ownership and total TV consumption – but not news and information consumption – are also smaller when the share of commercial income of public broadcasters is higher. The results are consistent with the view that political influence leads mainly to less attractive news information broadcasting whereas public funding leads to a less attractive entertainment spectrum but not to less attractive news.

JEL classification: L82, H41, L51, D83

Keywords: Media consumption, television, public service broadcasters, regulation, state ownership

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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. Besley and Prat (2006) show in a theoretical model that independent media ownership reduces media capture by government. 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 are lower where media freedom is restricted. Djankov et al. (2003) provide further empirical evidence on the consequences of independent media ownership and show in a cross-section of 97 countries that state ownership of the press is negatively associated with various beneficial social and economic outcomes.

Interestingly, both the latter studies present strong results for newspapers and (and in the case of Leeson (2008) for radio as well) but much weaker or not statistically significant results for 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. The latter might especially 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 and take many different forms. 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. But also in countries where government intervention in TV in markets is supposedly benevolent, (some) consumers' welfare might be negatively affected. Tightly regulated public service broadcasters whose finances depend on license fees or other forms of public funding might be prone to political

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.

influence, or such TV stations might not cater for the public's tastes, because they are not (or to a lesser extent) subject to competition. Furthermore, regulation might benefit some consumers while penalizing others. In some countries, public broadcasters are, for example, focused on promoting local news and other local content or content with special appeal to minority groups. Ultimately, whether public broadcasting is beneficial for consumers is an empirical question.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. Whereby, 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 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 television consumption – both in total and with regard to news and information only – is lower, when state ownership 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. However, when public broadcasters are subject to self-regulation television consumption increases with a higher share of state ownership. A high share of commercial income of public broadcasters (as compared to government funding) reduces the negative effect on the time spent on entertainment but not on political content on TV. Hence, the results suggest that tight political control affects the quality of all content whereas insulation from competition through public funding only affects the quality of entertainment on TV. The relationship between state involvement and news consumption is stronger for people who exhibit high levels of political interest than for those with low political interest. The results, thus, do not support a theory where public broadcasters offer high quality news at the cost of programs appealing to mass audiences.

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, such as market concentration, on quality and diversity 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.

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 the causes and consequences of 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 hypotheses and empirical strategy. Section 3 presents the data and empirical results and section 4 the conclusions.

2. Hypotheses and Empirical Strategy

State ownership and regulation of television stations can affect TV quality in several ways. First, political influence might lead to biased news content that is less critical about the government (e.g., Besley and Prat 2006). Second, a steady stream of government funding can insulate such TV stations from market pressures and alleviate the need to respond to consumer preferences in order to achieve high ratings and attract advertisers' money. The basic hypothesis, thus, states that the larger the extent of state ownership (i.e., the market share of public stations), the lower television consumption, especially news consumption, will be.

Conversely, public broadcasting could also lead to better quality and preference fulfillment (at least for some groups of people). For instance, government financed TV stations might have a political mandate and more funding to produce high quality news or content appealing to minorities or other special audiences. Because of preference externalities in media markets (see, e.g., George and Waldfogel 2003; Waldfogel 2003; 2004), 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, i.e., young or affluent consumers and women (as the main purchasers in a household) (see, e.g., Hamilton 2004). Public broadcasters, on the other hand, might serve a broader audience. The alternative hypothesis thus states that, because of higher quality and diversity, TV consumption, especially news consumption, increases with more government involvement in the TV market.

In order to differentiate between the two main ways how government involvement can affect television's quality – political influence and insulation from competition – I propose two additional hypotheses. The independence of public TV stations may depend on the way they are regulated. While in some countries the regulatory authority lies directly within a Ministry, in other countries a separate regulatory authority exists or public broadcasters are subject to self-regulation. The latter forms of regulation will make political influence harder. Related to the argument is a study by Connolly and Hargreaves Heap (2007) who show that trust in television is higher in countries where public broadcasters enjoy higher independence from parliament and government. It is therefore hypothesized that the relationship between the existence of public TV and television consumption is weaker when the regulatory bond between public broadcasters and government is looser. Furthermore, most public broadcasters do not exclusively depend on public funding but are also allowed to generate income through advertising and sponsoring. An increased share of commercial income of a public TV station results in greater exposure to competition from private television. Hence, the relationship between the existence of public TV and television consumption (be it positive or negative) is expected to be weaker when the share of commercial income is higher.

The above hypotheses are tested based on 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 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 the 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 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.³ 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.⁴ 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.⁵

Despite an extensive set of control variables, an omitted variable bias might occur, or reverse causation might be possible. First, the level of media consumption might differ between countries due to various reasons. For example, people inform themselves more when they have a larger say in politics (Benz and Stutzer 2004). Second, the extent of state ownership of television or of public service broadcasting 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. It must be noted, however, that I control for variables which might drive such a relationship. In smaller countries, for example, availability of private (national) news of good quality might

³ The data are from World Development Indicators (World Bank several years) and Penn World tables 6.2 (Heston et al. 2006).

⁴ The index is constructed by the Economic Freedom Network (Gwartney et al. 2007).

⁵ Data on TV channels are from IP Network (several years), on radio stations from Eurostat (2003), and on newspapers from UNESCO (2008).

be too costly, thus leading to increased political demand for public service broadcasting. Population size is however included in all specifications. Nevertheless, the simple cross-sectional framework does not allow for a definitive assessment of a causal relationship. In order to mitigate the problem of factors not explicitly controlled for that possibly explain cross-country differences in the level of media consumption, I analyze whether state ownership of TV is associated with different media consumption patterns. Hence, I analyze television, radio and newspaper consumption separately while controlling for the other two media consumption activities, respectively. According to the hypotheses, state ownership, control and funding of TV stations should negatively affect TV consumption but not necessarily newspaper and radio⁶ consumption. There might even be a positive relationship with the consumption of the two other types of media, because people might substitute to newspapers or radio if they are not happy with television offerings.⁷ On the other hand, if the regulation of TV stations correlates with media consumption because of other reasons, it would probably affect all media consumption activities alike. The analysis of total television, newspaper and radio consumption, as compared to the analysis of consumption of news and political affairs only, and the analysis of news consumption of individuals with different preferences (i.e., different levels of political interest) provide further, more detailed insights.

3. Empirical Analysis

3.1 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 the country level data on TV market regulation results in availability of data for more than 40,000 respondents in 21 countries.⁸

In the ESS, respondents are asked how much time they spend watching television, listening to the radio, and reading the newspapers on an average weekday, in total, as well as solely on

⁶ However, the regulation of TV stations might be correlated with the regulation of radio stations.

⁷ 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 used.

⁸ 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, 239 did not answer one of the questions on total media consumption and 522 one of the questions on the consumption of news and political content.

news or programs about politics and current affairs. 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. The choice of value hardly affects results. In a sensitivity analysis, I also present ordered probit regressions that make use of the original categorical information.

[Figure 1 about here]

Figure 1 shows the average minutes a day respondents spend on the media for informational purpose in the years 2002/2003 for each of the 21 countries. The countries are ordered according to the amount of total news media consumption (i.e. TV, radio and newspaper consumption added together). In Greece, Slovenia and Italy, total news consumption is the lowest. In Greece, respondents spend on average only a bit more than an hour on news media consumption, whereby three quarters of the time is spent on television (47 minutes). On the other hand, average news consumption is highest in Ireland (2.25 hours) and Norway (2 hours). Other Northern European countries, like Denmark (1.9 hours) and Finland (1.6 hours), also exhibit a high level of media consumption. In most countries, TV is the most important source of information – evaluated on the basis of time spent on it – followed by radio and newspapers. However, the figure also reveals very different patterns of media use in the different countries. There are countries where one of the media types is more dominant than in other countries. In Greece and Italy, for example, newspapers are as important as radio, and in Ireland and Hungary radio is almost as important as TV.

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.

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.⁹ TV stations 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.¹⁰ Ownership data are for the year 1999. Figure 2 presents the indicators for the share of state owned TV stations for the 21 countries included in the analysis.

[Figure 2 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 un-weighted 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 some 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 the 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.¹¹ 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 in different countries. Data gathered by Svendsen (2002) account for such differences in regulation. Svendsen

⁹ 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%.

¹⁰ For further details on the methodology see Djankov et al. (2003).

¹¹ It can of course be argued that this measure – state ownership by market share – is to some extent endogenous and already in equilibrium, i.e. the result of the interaction between (public and private) supply and demand (suspect to quality expectations of the public).

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 Ministry, 8 are regulated by a separate regulatory authority and 5 countries are subject to self-regulation.¹² 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 3 presents advertising and share of commercial income of the public service broadcasters¹³ in the different countries. It ranges from 0 to 0.6. The mean is 0.28 and the median 0.32.

[Figure 3 about here]

3.1 Results

Table 1 presents the results of state ownership of TV stations by market share on total media 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 than in countries with lower state ownership ($p < 0.01$). The size of the coefficient is considerable (-55). State ownership of TV is not associated with radio and newspaper consumption in a statistically significant manner (column 2 and 3). Coefficients are however positive, i.e. point in the direction of the hypothesized substitution effect. The different media consumption activities are positively related to each other at individual level.

¹² 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).

¹³ 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.

All coefficients are statistically significant ($p < 0.01$), however small in size. TV consumption is higher in countries with a higher GNI per capita, a larger population and a higher level of state owned enterprises and government investment. Radio consumption is negatively associated with GNI per capita.

[Table 2 about here]

Turning to the analysis of consumption of news and political content in the different types of media in table 2, the same overall picture emerges. State ownership of TV is negatively related to TV consumption and coefficients are statistically significant ($p < 0.05$). Coefficients in the news radio and newspaper regressions are positive but not statistically significant. The size of the coefficient in the TV news regression, which is again substantial with -19, shows that news TV consumption is proportionally reduced to the same extent as total TV consumption when state ownership is higher. 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 28 minutes less total TV watching per day (compared to a mean of almost 2 hours) and about 10 minutes less TV news watching (compared to a mean of about 45 minutes).

Regulation of Public Service Broadcasters

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

[Table 3 about here]

The results in the first column in table 3 reveal that state ownership of TV stations is only negatively associated with total television consumption if public service broadcasters are regulated by a separate authority or by a ministry. If public service broadcasters are subject to self-regulation, a higher share of state owned TV stations is even positively related to TV consumption. A 50 percentage point increase in the share of state owned TV stations is related to a 23 minute increase in TV viewing per day when public TV channels are subject to

self-regulation and to a 31 or 37 minute decrease in TV viewing per day when these channels are regulated by a separate authority or a Ministry.¹⁴

Focusing on TV news consumption, the results are similar. They are shown in the second column of table 3. A 50 percentage point increase of state ownership is associated with an 18 minute increase in TV news consumption if public service broadcasters are self-regulated and a 26 minute decrease if a Ministry regulates these TV channels. If a separate regulatory authority regulates the public TV channels, there is no statistically significant relationship between the share of state ownership and TV news consumption. Thus, self-regulated public broadcasters seem to offer especially attractive news whereas regulation by a ministry leads to both less attractive entertainment and news at high levels of state ownership.¹⁵

Financing of Public Service Broadcasters

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. Table 4 shows the results of the regressions, including the share of commercial income of public service broadcasters and its interaction with the share of state owned TV stations.

[Table 4 about here]

When public TV stations receive all their income from public sources (e.g. through license fees or government grants), state ownership is negatively associated with total TV consumption. A 50 percentage point increase in the share of state owned TV stations is then related to 48 minutes less TV watching per day. The effect is statistically significant ($p < 0.01$). As the share of commercial income increases, this relationship becomes smaller. At 30 percent of commercial income, an increase in the share of state owned TV stations by 50 percentage points is linked to a decrease in TV consumption of only 20 minutes. At 60

¹⁴ The marginal effects of state ownership in the case of regulation by a separate authority or a ministry have to be calculated from the coefficients of the dummy variables and the interaction effects. The respective t-values are -6.95 and -6.93. Both marginal effects are therefore highly statistically significant ($p < 0.01$).

¹⁵ It should however be noted that – although the marginal effect of the extent of state ownership on TV consumption is negative for the case of regulation by a Ministry or (in the case of total TV consumption) a separate authority – the marginal effect of regulation by a Ministry or a separate authority on TV consumption is positive for low levels of state ownership and only becomes negative for high levels of state ownership.

percent of commercial income (which is the maximum in our sample), the relationship is even positive, though not statistically significant.

The scenario appears different for TV news consumption. As shown before, state ownership is negatively related to TV news consumption. This relationship does not depend on the level of commercial income. Both the coefficient for commercial income and the coefficient of the interaction effect are not statistically significant on conventional levels. In countries where public TV stations rely on a high share of commercial income, entertainment, but not information on TV seems to be more attractive than in countries with a share of public income. Yet, there also seems to be no trade-off between entertainment and information when public TV stations have a high share of commercial income. News and information on TV retain the same attractiveness.

Political interest and news consumption

So far, the results are consistent with the hypothesis that state ownership and control of TV stations leads to a less attractive TV offering – because public service broadcasters are less subject to competition and therefore must cater less to the public’s tastes; and because political influence leads to biased and less trustworthy news. However, the content people prefer to view 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” do not reflect mass taste, the presence of public service broadcasters might well lead to lower aggregate news consumption (and if finances are diverted from entertainment programming to news, also to lower entertainment consumption). In this scenario, government involvement in TV markets should 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 5 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 negative effects of state ownership on TV news consumption are even larger for

consumers with a high interest in politics than for consumers 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, $t=1.27$), whereas the marginal effect is larger and statistically significant at the 95% or 99% level for those with a higher interest in politics (-33.35, $t=2.86$ in the highest category). Consumers with high preferences for political information also seem utilize other media to a larger extent when state ownership of TV stations is high. The marginal effect of state ownership of TV stations on newspaper consumption is positive and statistically significant for respondents in the highest category of interest in politics (8.44, $t=1.72$).

[Table 5 about here]

Robustness

The results presented thus far are robust to various changes in specification. Table A1 in the appendix shows the result of these specifications for total TV and news TV consumption.

The results are confirmed using ordered probit regressions and the original categorical information on television, radio and newspaper consumption.

Using the share of state-owned TV stations by count, i.e. the un-weighted 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 well. 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 18 minutes less total TV consumption and about 7 minutes less TV news consumption. This is similar to the reduction of 28 and 10 minutes when analyzing the effect of state ownership by market share.

State ownership of TV stations might be correlated with other TV and media supply characteristics in a country which systematically influences media consumption. I control for such issues by adding the number of TV channels received by 70 percent of the population. Again, the results are robust to the added control variable. In column (D), I additionally

include the number of radio channels available and the number of daily newspaper titles in a country¹⁶. Again, the results remain very similar although the sample is smaller because the additional control variables are only available for 16 of the 21 countries.

Furthermore, I review whether the results are not driven by one specific country. I therefore repeat the regressions, always omitting the observations of one country (results not shown in table A1). Generally, the results remain similar and statistically significant on conventional levels. However, omitting the observations from Switzerland (the country with the highest share of state ownership and the lowest average TV consumption) reduces the size of the coefficients, especially for news TV consumption. The coefficient drops from -19 in the baseline regression to -8, but remains statistically significant ($p < 0.05$). In summary, the empirical results are robust to the various changes in empirical specifications.

4. Conclusion

Media consumption, and especially television consumption, varies to a large extent between countries. Different media institutions in different countries can partially explain this variation. The empirical analysis in this paper shows that a larger share of state ownership of television stations is associated with lower TV consumption, both in total and with regard to information and news only. Tighter regulation of the public service broadcasters amplifies these negative relationships. On the other hand, a larger share of self-regulated public broadcasters is even associated with higher TV consumption. The results are consistent with the view that political influence and control leads to lower quality of TV content whereas independent public broadcasters offer more attractive programming. Also, a larger share of commercial income of public broadcasters attenuates the negative relationship between the extent of state ownership and TV entertainment consumption but not news consumption. Hence, insulation from competition through a steady stream of public funding leads to less attractive entertainment programming (but not necessarily to less attractive news). The results do not support an alternative scenario, 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 (but higher newspaper consumption) when state ownership is high, than people with little interest in politics. While the cross-sectional framework in this empirical study cannot completely rule out the possibility of

¹⁶ 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).

reverse causality or an omitted variable bias, the analysis provides an interesting and differentiated insight into the relationship between state involvement in television markets and media consumption.

Of course, consumer sovereignty might not be the only appropriate criteria when judging a country's media institutions. Because of external effects of information consumption, especially of information in the political context, other features, such as citizens' exposure to diverse points of view, are important as well (see, e.g., Sunstein 2000; Sunstein 2007). Accordingly, in many countries, it is not the (only) goal of public service broadcasters to attract high audiences, but they are commissioned for many different tasks, e.g. to support national productions or to provide minorities with a media platform. Nevertheless, in order to evaluate different regulation schemes it is relevant to know how consumers assess and react to them.

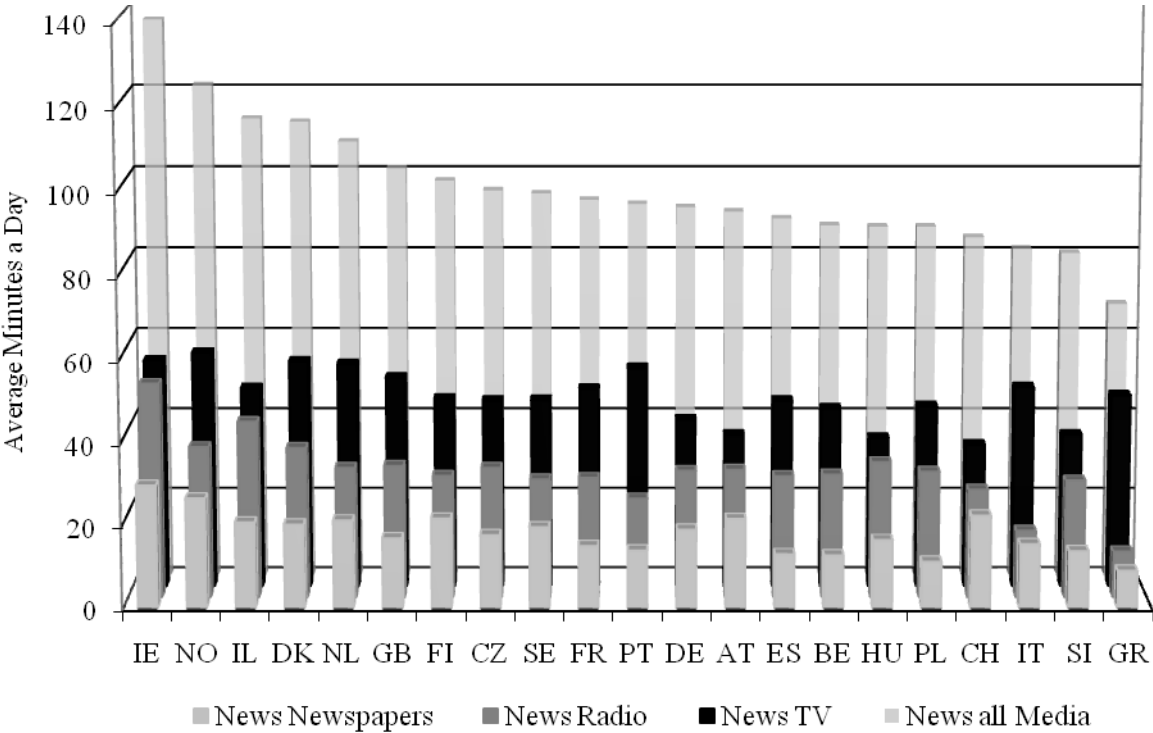
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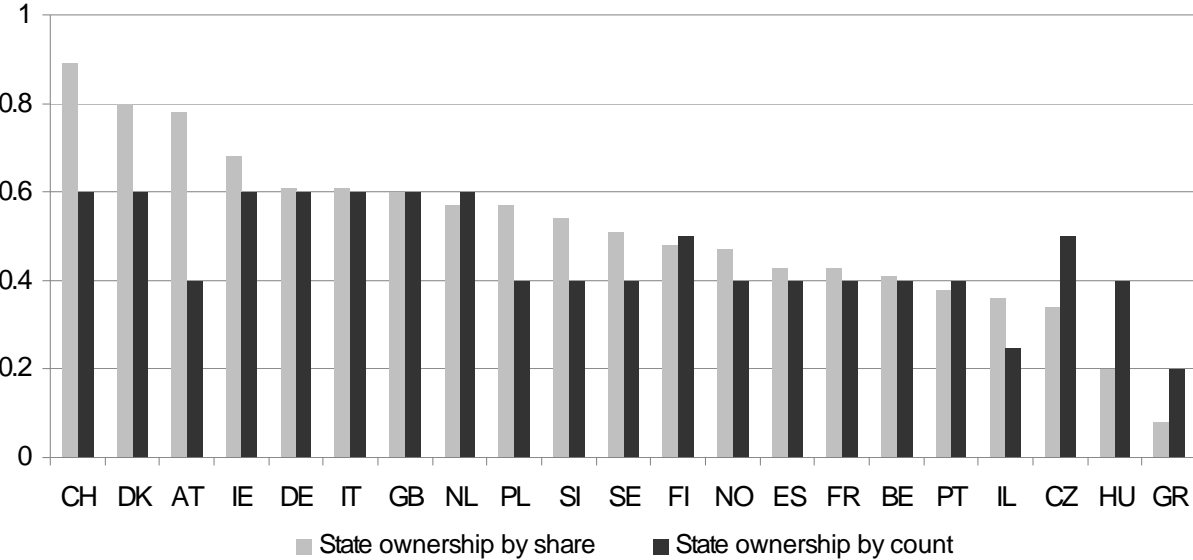
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Figure 1: Importance of Different News Media in 21 European Countries, 2002/2003



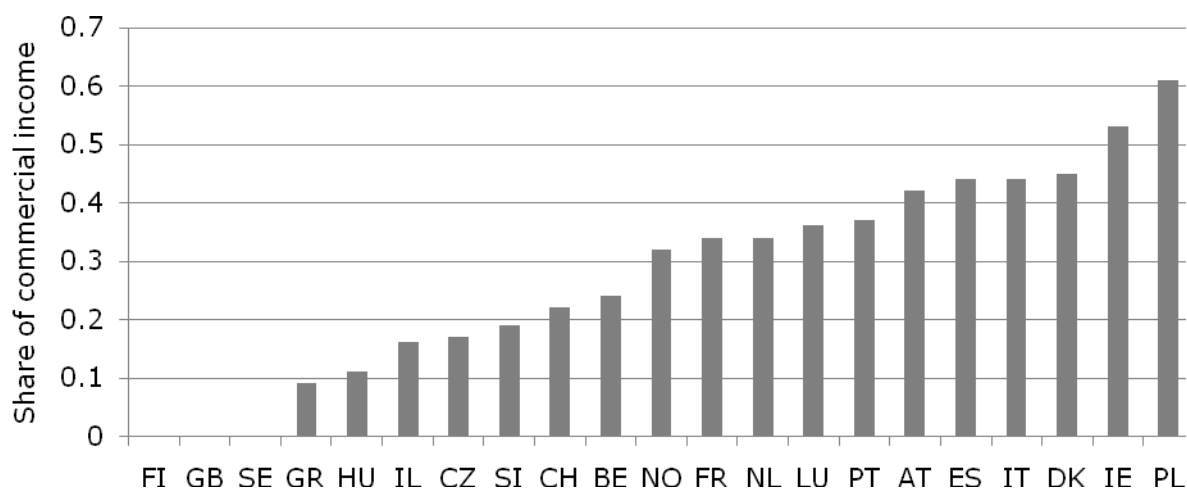
Data Source: European Social Survey Wave 1 (Jowell and the Central Co-ordinating Team 2003).
Note: Average minutes a day are calculated from category means. For the top category (more than 3 hours) 3.5 hours are assumed.

Figure 2: State Ownership of Television in 21 European Countries, 1999



Data Source: Djankov et al. (2003).

Figure 3: Share of Commercial Income of Public Service Broadcasters in 20 European Countries



Data Source: Betzel (2003).

Table 1: State Ownership of TV and Media Consumption

Dependent variable: media use (minutes)	Total TV	Total radio	Total newspapers
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
State ownership of TV	-55.46** (-4.12)	26.70 (1.45)	11.27 (1.09)
Total TV consumption		0.05** (3.51)	0.04** (3.86)
Total radio consumption	0.03** (3.54)		0.03** (4.47)
Total newspaper consumption	0.12** (5.08)	0.19** (5.19)	
GNI per capita (1000 int. \$)	0.56* (2.62)	-1.17* (-2.28)	0.17 (0.54)
Unemployment rate	58.86 (1.19)	-60.66 (-0.85)	-41.09 (-1.07)
Population (1 Mio.)	0.18(*) (1.97)	-0.00 (-0.01)	-0.08 (1.69)
State owned enterprise index	3.75** (4.56)	0.95 (1.07)	-0.34 (-0.56)
Individual controls	Yes	Yes	Yes
Constant	131.165** (11.66)	68.60** (3.00)	-17.53 (1.44)
No. of observations	40,568	40,568	40,568
R-squared	0.14	0.04	0.14

Notes: OLS regressions with robust standard errors clustered at country level. t-values in brackets. Individual controls include variables for political interest, household income (log), size of household (square root), sex, 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: ** $p < 0.01$, * $0.01 < p < 0.05$, (*) $0.05 < p < 0.1$.

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 and News Consumption

Dependent variable: media use (minutes)	News TV	News radio	News newspapers
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
State ownership of TV	-19.26* (-2.32)	16.65 (1.27)	4.53 (1.13)
News TV consumption		0.17** (6.20)	0.10** (4.98)
News radio consumption	0.12** (7.41)		0.07** (4.78)
News newspaper consumption	0.25** (7.90)	0.26** (6.81)	
GNI per capita (1000 int. \$)	0.68* (2.46)	-0.25 (-1.08)	0.13 (0.89)
Unemployment rate	84.55(*) (1.91)	4.82 (0.13)	-16.31 (-0.86)
Population (1 Mio.)	-0.07 (-1.03)	-0.05 (-1.08)	-0.05* (-2.32)
State owned enterprise index	0.81* (2.55)	-0.80 (-0.88)	0.09 (0.26)
Individual controls	Yes	Yes	Yes
Constant	1.79 (0.14)	-4.15 (-0.37)	-17.00** (2.96)
No. of observations	40,285	40,285	40,285
R-squared	0.19	0.10	0.20

Notes: OLS regressions with robust standard errors clustered at country level. t-values in brackets. Individual controls include variables for political interest, household income (log), size of household (square root), sex, 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<0.01, * 0.01<p<0.05, (*) 0.05<p<0.1.

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 3: State Ownership of TV, Regulatory Authority and TV Consumption

Dependent variable: media use (minutes)	TV consumption	TV news consumption
	Coefficient (t-value)	Coefficient (t-value)
State ownership of TV	45.07** (3.50)	17.69** (3.63)
Self-regulation	Reference group	
Separate regulatory authority	59.43** (6.42)	17.47** (3.78)
Regulation by a Ministry	62.84** (5.67)	44.09** (8.21)
State ownership * reg. authority	-106.53** (-7.04)	-28.53** (-4.18)
State ownership * reg. by Ministry	-118.40** (-7.62)	-70.56** (-9.58)
Individual controls	Yes	Yes
Controls on country level	Yes	Yes
Constant	80.27** (4.85)	-20.64 (-1.63)
No. of observations	39,060	38,778
R-squared	0.15	0.19

Notes: OLS regressions with robust standard errors clustered at country level. t-values in brackets. Individual controls include variables for political interest, household income (log), size of household (square root), sex, 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. Controls on country level include GNI per capita, unemployment rate, size of population and a state owned enterprise index.

Significance levels: ** p<0.01, * 0.01<p<0.05, (*) 0.05<p<0.1.

Data Sources: European Social Survey Wave1 (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).

Table 4: State Ownership of TV, Financing of TV Stations and TV Consumption

Dependent variable: media use (minutes)	TV consumption	TV news consumption
	Coefficient (t-value)	Coefficient (t-value)
State ownership of TV	-96.00** (-5.53)	-24.41(*) (-1.98)
Share of commercial income	-86.55* (-2.57)	23.96 (0.83)
State ownership * commercial income	188.77** (2.93)	-10.45 (-0.20)
Individual controls	Yes	Yes
Controls on country level	Yes	Yes
Constant	159.06** (10.54)	5.48 (0.40)
No. of observations	37,652	37,374
R-squared	0.15	0.19

Notes: OLS regressions with robust standard errors clustered at country level. t-values in brackets. Individual controls include variables for political interest, household income (log), size of household (square root), sex, 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. Controls on country level include GNI per capita, unemployment rate, size of population and a state owned enterprise index.

Significance levels: ** $p < 0.01$, * $0.01 < p < 0.05$, (*) $0.05 < p < 0.1$.

Data Sources: European Social Survey Wave1 (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 5: Political Interest, State Involvement and News Consumption

Dependent variable: media use (minutes)	TV news consumption	Newspaper news consumption
	Coefficient (t-value)	Coefficient (t-value)
State ownership of TV	-7.54 (-1.27)	1.31 (0.33)
Political interest	12.23** (7.71)	4.01** (7.06)
State ownership * political interest	-8.57** (-3.08)	2.38* (2.39)
Individual controls	Yes	Yes
Controls on country level	Yes	Yes
Constant	-4.43 (-0.35)	15.28* (2.63)
No. of observations	40,172	40,172
R-squared	0.19	0.20

Notes: OLS regressions with robust standard errors clustered at country level. t-values in brackets. Individual controls include variables for household income (log), size of household (square root), sex, 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. Controls on country level include GNI per capita, unemployment rate, size of population and a state owned enterprise index.

Significance levels: ** $p < 0.01$, * $0.01 < p < 0.05$, (*) $0.05 < p < 0.1$.

Data Sources: European Social Survey Wave1 (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 A1: State Ownership of TV and TV Consumption: Robustness

Dependent variable: media use (minutes)	(A) Ordered probit		(B) OLS		(C) OLS		(D) OLS	
	Total TV	News TV	Total TV	News TV	Total TV	News TV	Total TV	News TV
	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)	Coefficient (t-Value)
State ownership of TV by share	-0.94** (-3.87)	-0.54(*) (-1.71)			-53.98** (-5.36)	-17.26** (-4.13)	-40.88** (-3.10)	-22.59* (-2.86)
State ownership of TV by count			-91.08** (-3.71)	-34.54* (-2.68)				
GNI per capita (1000 int. \$)	0.01** (2.70)	0.02* (2.09)	-0.01 (-0.04)	0.49* (2.05)	0.79** (3.21)	0.82** (3.31)	0.69* (2.64)	0.74** (2.98)
Unemployment rate	0.89 (1.13)	2.44(*) (1.76)	-59.19 (-0.87)	41.29 (1.19)	37.64 (0.88)	75.88(*) (1.87)	20.87 (0.17)	-22.69 (-0.39)
Population (1 Mio.)	0.003* (2.02)	-0.002 (-0.84)	0.32** (2.98)	-0.01 (-0.14)	0.24** (4.27)	-0.04 (-0.96)	0.36* (2.74)	-0.01 (-0.16)
State owned enterprise index	0.06** (4.80)	0.03* (2.40)	5.04** (5.49)	1.35** (2.94)	5.42** (9.46)	1.53** (3.59)	4.79** (6.47)	1.43** (3.13)
No. of TV channels					-0.45** (-2.85)	-0.34** (-4.09)	-0.38* (-2.31)	-0.27** (-4.71)
No. of radio stations							0.002 (0.40)	0.01** (3.38)
No. of daily newspaper titles							-0.05 (-1.22)	-0.02 (-0.93)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant			160.96** (9.75)	11.80* (0.96)	128.15** (12.39)	-0.92 (-0.08)	131.29** (9.42)	8.96 (0.71)
No. of observations	40,568	40,285	40,568	40,285	38,097	37,836	32,095	31,927
(Pseudo) R-squared	0.04	0.07	0.14	0.18	0.15	0.19	0.15	0.20

Notes: ordered probit / OLS regressions with robust standard errors clustered at country level. Individual controls include variables for political interest, radio and newspaper consumption, household income (log), size of household (square root), sex, age, age squared, education, working hours, employment status, marital status, children, area of living, and citizenship. Dummy variables indicating missing observations included as well.

Significance levels: ** p<0.01, * 0.01<p<0.05, (*) 0.05<p<0.1.

Data Sources: European Social Survey (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), IP Network (several years), Eurostat (2003), UNESCO (2008).