

Accepted version

Sehl, A., Fletcher, R., & Picard, R. G. (2020). Crowding out: Is there evidence that public service media harm markets? A cross-national comparative analysis of commercial television and online news providers. *European Journal of Communication* (OnlineFirst). <https://doi.org/10.1177/0267323120903688>

**Crowding out: Is there evidence that public service media harm markets?
A cross-national comparative analysis of commercial television and online news
providers**

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Funding: The author(s) received financial support for the research, authorship and/or publication of this article: Google UK as part of the Google News Initiative.

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Abstract

The impact of public service media (PSM) on media competition has become a topic of debate in many European countries. Some argue that PSM could starve commercial media, or discourage them from entering markets in the first place because they shrink commercial audiences, lowering both advertising income for free commercial television and willingness to pay for commercial products. Despite its prevalence as a policy argument, there has been limited research about the crowding out concept – and almost no research that is independent, comparative, and considers broadcasting as well as online markets. This article addresses these shortcomings by examining whether there is any evidence to support the crowding out argument by analysing national broadcast and online markets in all 28 EU countries. More specifically, we focus on data on market resources, audience performance, and payment for digital news. The analysis reveals little to no support for the crowding out argument for broadcasting and related online markets.

Keywords: crowding out, PSM, commercial media, public value test, economics, policy

Introduction

The idea that strong public service media (PSM) have a negative effect on commercial media is often treated as an article of faith among politicians and those working in the private sector. In spring 2018, Swiss voters rejected a proposal to abolish the licencing fee for the national PSM organisation. The ‘No Billag’ initiative—a reference to the Billag firm that collects the licensing fee—aimed to ‘portray the SSR as an unfairly dominant and outdated relic’ (Agence France Press, 2018), and initiated a controversial discussion about the future of PSM that ultimately led to a referendum on the topic. The suggestion that PSM represent unfair competition to commercial media is now a common refrain in many European countries. It featured heavily in the discussions over the most recent renewal of the BBC’s Royal Charter in the UK in 2016 (KPMG, 2015; Oliver & Ohlbaum and Oxera Consulting, 2016), a court case started by several German publishers against ARD and their news app from 2011 to 2017 (Hölig and Hasebrink, 2018: 80), and the request by Finnmedia—the Federation of Finnish Media Industry—to the EU Commission to investigate if Yle’s text-based content counts as forbidden ‘state aid’ (Reunanen, 2018: 76).

The so-called ‘crowding out’ argument is based on the view that the size and strength of publicly supported broadcasters and their digital media operations will starve commercial media, or discourage them from entering markets in the first place. It is argued that PSM generates negative market effects by creating smaller audiences for free commercial television, thus reducing their advertising income and overall sustainability. In cable/satellite television provision, the argument asserts that PSM produce not only smaller audiences but also reduces their willingness to pay for other services. Similarly, it has been argued that PSM operating online and through mobile services reduces the size of online audiences, and their willingness to pay for digital commercial media (Mazzucato, 2013).

This argument is not new and elements of it were initially raised by economist Ronald Coase seven decades ago, when public service television began to thrive (Coase, 1947). Concerns arose again at the turn of the millennium that publicly-funded enterprises could crowd privately funded enterprises out of the market, reducing investment, economic growth, and innovation in pay television services, digital television, and online content provision. In the UK, for example, the national regulator, Ofcom, echoed concern that the BBC had the potential to affect competition, investment and innovation in new broadcasting and digital markets resulting in fewer competitors, channels, and digital services (Ofcom, 2004). Similar concerns led to the establishment of public value tests in many other EU countries (Moe, 2010).

The concepts of competition and crowding out are related, but not all competition necessarily produces crowding out and crowding out can be caused by either dominant commercial or public service providers. Competition produces benefits of increased consumer choice, lower prices, increased quality, and better service. Some allegations of crowding out are made by commercial enterprises who would prefer less competition, so they can earn excess profit by garnering larger market audiences and revenue whilst not having to engage in quality and price competition.

The issue of crowding out is not merely of economic interest. It also raises profoundly important questions for society. Many people rely on PSM for news, but commercial media also has an important role to play in informing the public about current affairs. Several studies have found that PSM across different countries broadcast more news and current affairs programmes at peak viewing times than their commercial counterparts (Aalberg et al., 2010; Aalberg and Curran, 2012; Esser et al., 2012) and also proportionally more hard news (de Vreese and Boomgaarden, 2006; Curran et al., 2009; Iyengar et al., 2010; Aalberg et al., 2013). But, there is evidence that media systems with strong commercial media and well-

funded, politically independent PSM offer citizens the best conditions to be politically well informed (Albæk et al., 2013; for a comprehensive review of the political impact of PSM see also Nielsen et al., 2016: 21-43). This is also true for online markets, where Esser and Humprecht (2018) found that countries with strong PSM have more diverse political news.

Nevertheless, it is important to note that here we provide a general analysis of broadcasting markets—which also provide content like film, entertainment, and sports, as well as news and journalism. News is often a loss-leading product for commercial media, so the broader issue of the overall financial sustainability of commercial media is relevant for journalism and communication scholars. For the online markets, however, we focus solely on news due to data availability.

There has been limited research into crowding out. As a recent review noted, ‘there is surprisingly little published, evidence-based research on the market impact of public service media’ (Nielsen et al., 2016: 56). In particular, there is almost no independent, comparative research that acknowledges that online markets might work differently to TV. This is a relevant gap as online markets become increasingly important. To address these shortcomings, this study is designed to seek evidence whether the crowding out argument is empirically evident by examining national broadcast and online markets based on market resources, audience performance, and payment for digital news in the 28 EU countries.

The analysis, based on data from the European Audiovisual Observatory and the Reuters Institute Digital News Report, reveals almost no support for the crowding out argument. Across countries we find no significant negative correlation between PSM revenues and commercial broadcaster revenues or pay TV revenues. In fact, we find the opposite. EU countries with large per-capita PSM revenues also have large commercial broadcaster revenues and large pay TV revenues even while controlling for differences in per capita GDP. The analysis presented here is cross-sectional, so although PSM and commercial

revenues may be positively associated across countries, within countries it is still possible that an increase in PSM revenues is associated with a decrease in commercial revenues over time. Nonetheless, the findings cast doubts on the strongest version of the crowding out argument, because the fact that relatively high public and commercial revenues coexist suggests that any negative crowding out effects have been relatively weak.

However, the results for the online news market are less clear, and the analysis suggests that other factors are likely to be shaping commercial performance. Here, it should be kept in mind that limitations associated with data availability at the national level mean that statistically significant associations are difficult to establish, and small sample sizes can mask small but nonetheless real relationships.

Crowding out theory

The crowding out concept is rooted in macroeconomic theories on the effects of public activities on the economy and markets. It asserts that some types of public spending and fiscal policies can reduce or halt private spending and investment. Crowding out effects are seen in several scenarios: (1) if the costs of capital for private firms increases because of government borrowing making private investments less viable, (2) if taxation significantly reduces financial resources that could be used for other purposes in the private sector, (3) if subsidies to some private firms make operations of other firms less competitive, and (4) if public services reduce demand for similar services provided by the private sector (Yazici and Kaestern, 1998; Conan and Straub, 2005; Blanchard, 2008). It is this fourth scenario that is the focus of most complaints about PSM and related activities.

In discussing the theory, there is an important caveat that needs to be underscored. Crowding out theory assumes a constant money supply (Carlson and Spencer, 1975). Applying the theory to media is fundamentally problematic because the supply of media and

media content is not constant. Nevertheless, the argument is used by private firms and other stakeholders to seek protection from the competition of public media firms.

Raising crowding out issues in broadcasting is not unreasonable, however, because policymakers in most nations are relying on mixed systems involving both public and private broadcasters to meet information and entertainment needs of the public. These mixed systems involve both free and paid television services, and PSM funded through mandated license fees or tax revenues (Barwise and Picard, 2012, 2015). The mixed system shall provide social benefit through increased content offerings, more choice, and some price discipline in the market for paid services. Where they have chosen a mixed system approach, policymakers seek to enable private broadcasters to operate in a manner that provides reasonable returns on investment, while concurrently providing PSM the scope required to fulfil out their mandates.

Literature review

As noted earlier, despite the relevance of the question and the ongoing public debates in many European countries, there is little evidence-based research on the market impact of PSM, and even fewer academic publications. Most research on the crowding out argument has been initiated by governments, PSM organisations, or private sector media. A recent literature review prepared by the Reuters Institute for Study of Journalism (Nielsen et al., 2016) found two academic and seven stakeholder studies published between 2005 and 2016. A review by KPMG (2015) covering roughly the last 20 years found 19 studies in total.

Specifically, previous studies have analysed the impact of PSM on private sector media revenues and the overall investments in content. These studies mostly relied on theoretical modelling, counter-factual analysis, correlations or econometric analysis to assess the likely market impact of PSM. The Reuters Institute review sums up the state of the art as following: ‘On the whole, existing studies provide little evidence for a negative market impact of PSM upon domestic private sector media. But the limited number of studies and

the dearth of independent research means there is no clear evidence-based consensus’ (Nielsen et al., 2016: 16-17). We will review the most recent and important studies to provide greater context for our study.

A study undertaken by Jonathan Simon of the consulting company Inflection Point and commissioned by the BBC (2013) used a cross-sectional analysis of television markets in 14 countries to examine the association between commercial market outcomes and PSM strength. Using different data sets, the study explored how commercial market outcomes were related to PSM strength (a composite of per capita revenues, public funding per capita, investment per capita in original programmes, and schedule diversity). The study found a statistically significant positive correlation between commercial market outcomes and PSM strength in most areas and most countries. The authors interpreted these findings as a ‘race to the top’, meaning that the relationship between PSM and commercial media is not one characterised by crowding out, but on the contrary, by mutual commercial and public benefit. The explanation offered for this association is that public and private sector media compete for audience attention in a way that motivates them to uphold higher quality standards.

While the strength of the study undoubtedly lies in the comparative design, a central limitation is that it presents analysis of relationships at a particular point in time. It is not possible, therefore, to know whether within-country decreases or increases in PSM funding are associated with changes in private sector revenues (for this criticism see also Nielsen et al., 2016: 58).

An independent study undertaken by Barwise and Picard (2014) addressed the impact of the public broadcaster on the television market overall. The study started with the UK television market in 2012 and then presented a counterfactual scenario of the impact on the UK media market if there were no BBC or licence fee. More specifically, the authors produced ‘optimistic’ and ‘pessimistic’ scenarios based on assumptions about commercial

operators' subscription income, advertising income and investment. The findings suggested that the extent of crowding out, insofar as it exists at all, is limited. In addition, the study found that without the presence of BBC industry revenues, content investment could fall by 5 to 25%, depending on the scenario, and that first-run content investment might decline by 25 to 50%.

PricewaterhouseCoopers (PwC) (2015) published a similar study with counterfactual modelling based on a computable general equilibrium model of the UK economy to assess impact across not only the media sector, but also the UK economy more broadly. The study, also commissioned by the BBC, was based on two scenarios: In Scenario 1, PwC estimated that a nominal increase (15%) in licence fee revenue over a five-year period would lead to a net increase in the level of GDP, overall net growth in the TV sector and a positive net effect on the total UK economy. In Scenario 2, PwC estimated that a nominal decrease (25%) in licence fee revenue over a five-year period would lead to a net decrease in level of GDP, an overall net negative effect in the TV sector and a negative effect on the total UK economy. Though as PwC discussed themselves, this analysis (and any other like it) is highly dependent on the initial assumptions.

A further study from the UK, itself a response by the BBC Trust to the British Government in the context of the BBC Royal Charter renewal (KPMG, 2015), used historical and econometric analysis to assesses possible crowding out effects of commercial operators by the BBC. It focused specifically on the following three markets between 2002 and 2014: entertainment television broadcasting, news television broadcasting, and local print newspapers. The study found no clear evidence that any increase or decrease in the level of BBC activity has resulted in a decline/increase in commercial broadcasters' viewer hours or their revenues, or newspapers' readership or revenues. However, while these findings are

more robust than the counterfactual analyses, they are valid only for the investigated years and not for future scenarios.

Another study in the context of the renewal process of the Royal Charter in the UK was conducted by two consultancies, Oliver & Ohlbaum and Oxera Consulting (2016) and commissioned by the Department for Culture, Media and Sport. The study reviewed existing market impact research in the UK and presents a double-counter-factual analysis of what the possible market impact of a different and more distinct BBC might be. The review found that while the BBC does take audience share from private sector media, the impact on commercial rivals is limited. The double-counter-factual analysis argued that a more distinct BBC with the same resource base might lead to higher revenues for private sector television (between 0.9% and 1.1%), radio (4.5% to 8%), and online news providers (0.8% and 2.1%). Although the study covered online news, the authors noted that the BBC might also have an impact on services like pay television which were not included in the study. The use of analysis across sectors is the study's key strength. But it ultimately relies on counterfactual analysis to understand what might happen in the future, and therefore arguably less robust than studies based on historical data (e.g. KPMG, 2015).

Though not based on economic analysis, a recent study relying on survey data from the 2015 Reuters Institute Digital News Report (Newman et al., 2015) found no evidence of a negative association between people's use of PSM for online news and paying for/willingness to pay for online news content from commercial providers (Fletcher and Nielsen, 2017). The study examined the relationship in six different countries (UK, USA, Germany, France, Spain, and Japan), and despite significant national variation in terms of PSM funding structures and media markets, found that online PSM news users were no less likely to be currently paying for online news from another provider than non-users, and no less willing to pay for it in the future.

Although there is little evidence-based research on the market impact of PSM, concerns that it could crowd out commercial activities prompted many European countries to introduce so-called public value tests in recent years. The first country to do so was the UK in 2007, in which the impact of proposed BBC services is assessed before they are introduced. At the same time, the tests ensured that British PSM was in line with EU norms and regulations that require state aid to have a clear public purpose.

Public value tests have since been conducted in a range of other European countries (see e.g. Humphreys, 2010; Moe, 2010). In September 2015, the Swedish Myndigheten för Radio och TV (2015) found that 14 out of 30 European countries have some sort of public value test to assess planned public media services. Across all 14 countries, only 7% of the 70 public value tests conducted up to September 2015 resulted in a rejection of a planned service (Myndigheten för Radio och TV, 2015). However, there is no uniform approach to public value tests across Europe, and no unified methodology within countries. Most tests are greatly context-dependent, and though they may fulfil their purpose, they do not permit generalised conclusions.

In sum, a small number of academic and stakeholder studies have found little evidence that PSM have a negative market impact. However, this evidence base is limited, often focusses on broadcast, and neglects the growing use of online media (see also Nielsen et al., 2016: 56-77). Furthermore, many of the studies are limited to the UK and do not analyse the situation in other countries. This study aims to address most of these shortcomings by (1) being an independent academic study, (2) being comparative in the study design by including all 28 EU countries and (3) including online as well as broadcasting markets.

Hypotheses

The argument for crowding out in media is based on assumptions that state intervention in broadcast markets through PSM harms markets by discouraging commercial competitors from entering, or making successful operation difficult if they enter, and that crowding out extends to related activities such as pay television, digital terrestrial television, and online/mobile digital news and entertainment provision. To establish whether crowding out is evident, this paper explores the associations between PSM and commercial media based on financial and audience data.

In short, if crowding out is one of the most important factors determining the fate of commercial media, countries with well-funded PSM should have developed relatively weak commercial media. Building on the theory and the literature review, a series of hypotheses involving different indicators of crowding out will be tested. The first hypothesis thereby is the central one for the crowding out argument in the context of legacy media (TV), while Hypotheses 3 and 4 are of increasing importance regarding online media:

H1a: Per capita revenues of PSM are negatively associated with per capita commercial broadcaster revenues.

This hypothesis is based on the crowding out argument that PSM stifle market resources and keep the market from generating resources needed for commercial operators. Consequently, larger PSM revenues should be negatively associated with the size of the commercial broadcaster market.

H1b: PSM TV audience shares are negatively associated with per capita commercial broadcaster revenues.

This hypothesis addresses whether PSM that have gained larger audience share have stifled advertising investment, and made it difficult for commercial broadcasters to acquire resources.

H2a: Per capita revenues of PSM are negatively associated with pay TV revenues.

H2b: PSM TV audience shares are negatively associated with pay TV revenues.

As with free-to-air commercial TV, these hypotheses are based on the idea PSM has made it difficult for competitors that offer pay TV services to operate. If this is true, higher total PSM revenues, or higher PSM audience share, should be associated with lower revenues for pay TV because they have reduced public demand for these services.

H3: PSM online news reach is negatively associated with online commercial broadcaster news reach.

H4: PSM online news reach is negatively associated with the proportion of people paying for commercial news online.

These hypotheses explore the crowding out argument relative to online news activities. We narrow the focus to news activities based on data availability. However, because of its well-established democratic function, news is arguably the most important output of both public and commercial media. Furthermore, online PSM news is interesting because it also arguably competes with online news from newspaper and digital-born news publishers. The hypotheses are based on the crowding out argument that if PSM are highly active online, they will have affected demand by reducing the use of other news providers and people's willingness to pay for news.

Method

Data for this study were obtained from official and authoritative sources, specifically the European Audiovisual Observatory (EAO) and the Reuters Institute Digital News Report (DNR). Table 1 gives an overview of the variables, the sources of the data, descriptive statistics, and if applicable, how the variables were computed.

[Table 1 about here]

As the DNR data comes from an online survey, the data is representative of the online population within each country. Therefore, DNR data was adjusted to make it more representative of the national population simply by multiplying them by the proportion that has access to the internet (itself obtained from the Eurostat online database for 2015). Similarly, per capita revenue figures are used to account for the fact that countries of different sizes will have media markets of different sizes. Population data was also obtained from the Eurostat online database for 2015.

[Table 2 about here]

This study is based on data from all EU28 countries. Table 2 gives an overview of the countries and PSM organisations included in each case. In line with the focus of the study and the methodology of the EAO, we have included all PSM that are publicly owned or (partly) publicly funded, but not included purely commercial media with a public service remit. The countries included cover the three different media system types identified by Hallin and Mancini (2004), as well countries from Central and Eastern Europe that were not included in the original model, but in follow-up models designed to look beyond Western Europe (Peruško et al., 2013; Dobek-Ostrowska, 2015; Herrero et al., 2017). Dobek-Ostrowska (2015) argues that the Central and Eastern European countries themselves are diverse and cannot be placed in a single model in terms of media and politics, but should be grouped into four categories: Hybrid Liberal, Politicised Media, Media in Transition, and Authoritarian. Similarly, Herrero et al. (2017) cluster Central and Eastern European countries into three different groups: Central, Eastern and Northern.

This matters because different media systems tend to have different approaches to PSM funding. Democratic Corporatist countries, as well as the European countries in the

Liberal model, have relatively well-funded PSM compared to those in the Polarized Pluralist model. Peruško et al. (2013) argue that in Central and Eastern Europe, the situation for PSM is generally closer to Southern Europe than to countries in Northern Europe. Apart from funding, the institutional and legal conditions under which PSM operate may either constrain or enable attempts by governments or other political elites to influence reporting (Hanretty, 2009; Psychigiopoulou et al., 2017). Most recently, the independence of the PSM in Poland and Hungary have been widely discussed (see e.g. Makarenko 2016; Newman 2016). While it is not the purpose of this paper to analyse differences in the freedom and independence of PSM in Europe, it is important to emphasise that while they are all PSM, they are not all the same. As described in Table 1, variables based on DNR data are only available for 20 of the 28 EU countries for 2018. The others, which are among the smallest EU nations in terms of population size (Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Malta, Slovakia and Slovenia), are treated missing cases in the analysis for Hypotheses 3 and 4.

The hypotheses are tested using correlation analysis and linear regression. We use the regression analysis to control for differences GDP per capita across countries. This variable was chosen because we wanted to control for the fact that richer countries are likely to have both stronger commercial and public service media. Due to the small number of cases, it was not possible to include more than one control variable in the models.

Findings

H1a: Per capita revenues of PSM are negatively associated with per capita commercial broadcaster revenues.

We based these hypotheses on the crowding out argument that PSM have stifled market resources and keep the market from generating resources needed for commercial operators. However, the results of the analysis do not support the hypothesis that higher total PSM revenues will be negatively associated with commercial broadcaster revenues. Instead, a

Spearman's correlation test of per capita revenues of PSM (public funding plus any commercial revenues) and the per capita commercial broadcaster revenues (TV advertising revenues, plus radio advertising revenues, plus pay TV revenues) in the 28 EU countries revealed a moderate (and significant) positive association ($r = .58$, $p = .002$). In other words, the higher a country's per capita PSM revenues, the higher the per capita commercial broadcaster revenues. Figure 1 shows the linear positive relationship between per capita PSM revenues plotted against per capita commercial broadcaster revenues. The Nordic countries, Belgium, Germany, Austria, Ireland and the UK are characterised by high PSM and commercial broadcaster revenues, whereas the Central and Eastern as well as Southern European countries typically have low PSM and commercial revenues. Portugal is an outlier with small total per capita PSM revenues, but the highest per capita commercial broadcaster revenues of all.

[Figure 1 about here]

We also performed a linear regression to measure the possible influence of per capita GDP (see table 3, model 1).¹ The analysis shows that the positive relationship between per capita PSM revenues and total per capita commercial TV revenues holds ($B = .64$, $p = .01$). H1a is therefore not supported, and we have even found evidence of the opposite, raising the possibility that PSM revenues have helped increase commercial broadcaster revenues. Per capita GDP was also a significant predictor ($B = .49$, $p = .03$), indicating that commercial TV revenues are higher in wealthier EU countries.

¹ Because richer countries are likely to have both higher PSM and commercial revenues, we also compared PSM revenues as a percentage of GDP with commercial broadcaster revenues as a percentage of GDP. However, a Spearman's correlation test found no significant association across countries ($r = .11$, $p > .05$). Indeed, substituting per capita measures with the relevant proportion of GDP measure did not result in a significant association for any of the hypotheses.

H1b: PSM TV audience shares are negatively associated with per capita commercial broadcaster revenues.

This hypothesis speaks to whether PSMs that have gained larger TV market audience shares stifled advertising investment, making it difficult for commercial broadcasters to acquire resources to sustain operations. The Spearman's correlation coefficient for the relationship between PSM TV market audience share and total per capita commercial broadcaster revenues (in the 26 of the 28 EU countries where data was available) is positive and significant ($r = .64, p < .001$). This shows that there is a strong bivariate relationship between higher TV market audience share of PSM and higher total per capita commercial revenues (see Figure 2). The placement of the countries is similar to Figure 1, with Denmark, Germany, Finland and the UK home to PSM with a large audience share and high commercial broadcaster revenues. The Central and Eastern as well as Southern European countries have low PSM audience shares and low commercial broadcaster revenues.

[Figure 2 about here]

Again, we control for per capita GDP in the linear regression analysis summarised in table 2, model 2. While the model explains just over one third of the variance (Pseudo $R^2 = .38$), we can see now that the relationship between the PSM TV audience share and per capita commercial revenues is no longer significant ($B = .91, p > .05$). Per capita GDP again emerges as a significant predictor ($B = .94, p = .03$). Nonetheless, we still did not find any evidence that higher PSM TV market audience shares have produced lower per capita commercial revenues. Hypothesis 2 is therefore not supported.

H2a: Per capita revenues of PSM are negatively associated with pay TV revenues.

H2b: PSM TV audience shares are negatively associated with pay TV revenues.

These hypotheses focus on pay TV in isolation. In line with the crowding out theory, they predict that stronger PSM will be associated with lower per capita revenues for pay TV because they have reduced demand for the services and payments from the public. However, Spearman correlation tests between total per capita PSM revenues and per capita pay TV revenues reveals another significant and positive association ($r = .68, p < .001$) (see Figure 3), as is also the case for PSM TV audience share and pay TV revenues ($r = .73, p < .001$) (Figure 4). In Figure 3, Luxembourg is positioned above the linear slope with high per capita pay TV revenues but low per capita PSM revenues. Denmark instead scores high on both measures in both figures. Countries below the linear slope on both occasions include Austria and Germany that have relatively strong PSM, but less developed markets for pay TV. Again, the Central and Eastern European countries are mainly placed below the slope.

[Figure 3 about here]

[Figure 4 about here]

When controlling for per capita GDP, the association between per capita PSM revenues and per capita pay TV revenues remains significant ($B = .65, p < .001$). As does the association between PSM TV audience share and pay TV ($B = 1.51, p < .001$) (see table 3, models 3 and 4). Hypothesis 2a and 2b are therefore not supported.

H3: PSM online news reach is negatively associated with online commercial broadcaster news reach.

H4: PSM online news reach is negatively associated with the proportion of people paying for commercial news online.

These hypotheses explore the crowding out argument specifically in relation to online news. The crowding out view is that if PSM are highly active online, they will have affected demand by reducing (a) the use of online commercial news providers, and (b) people's willingness to pay for commercial alternatives. It is important to keep in mind that the previous hypotheses focussed on finances and therefore relate directly to crowding out, due to the fact that separate financial information is not available for the news operation of public and commercial publishers, we focus on reach. Reach is not a perfect guide to financial performance, but the two are likely to be connected. For example, as we would expect, the correlation between per capita PSM revenues (from the EAO data) and online PSM news reach (from the DNR data) is strong and positive ($r = .73$, $p < .001$).

There was no significant (Spearman's) correlation between online PSM news reach and the combined online news reach of commercial broadcasters ($r = -.37$, $p > .05$), though we do note that the association is negative. Figure 5 plots the relationship between these two variables, and shows that no clear pattern is discernible. One reason for this is that, some countries—in particular the UK and Austria—have popular online PSM news, and low online commercial news reach. But in Ireland and Denmark, where the online PSM news reach is roughly the same, the combined online commercial news reach is also very high. In other words, the relationship is inconsistent, and there are likely factors other than PSM news use that explain online commercial news reach. As the bivariate associations were not significant, we will not proceed with regression analysis for this hypothesis.

[Figure 5 about here]

We do, however, find a significant (Spearman's) correlation between online PSM news reach and paying for online news from commercial outlets ($r = .49$, $p = .03$). Figure 6 shows that the reason for this is that in some of the countries with the largest PSM online reach—particularly Finland and Denmark—there are relatively large numbers of people paying for online news.

[Figure 6 about here]

However, this association is not significant when we control for per capita GDP in Table 3, model 5 ($B = .06$, $p = .67$).

The findings for H3 and 4, then, are somewhat mixed. This is partly because we only have data for 20 countries, and such a small sample will always make it difficult to identify significant associations. But aside from this, another reason is that there is little consistency among the countries which have popular online PSM news. In these countries, some commercial news media are thriving, but in others, they appear to be struggling. This suggests that factors outside of the influence of PSM are affecting the fortunes of commercial news media, casting doubt on the generalisability of the crowding out argument in regards to online news.

[Table 3 about here]

Conclusion

This paper has explored the crowding out argument, often brought forward in policy discussions, in relation to PSM operations in the 28 European Union countries. As such, it has gone beyond most existing studies by being comparative in design and inclusive of both broadcasting and online markets. Several different hypotheses based on the crowding out argument were tested using a variety of market data to examine the relationships between PSM resources and market performance of commercial operators.

Overall, the data analysis reveals little support for the crowding out argument – which is in line with the lack of evidence found in previous research. We found no significant negative correlation between PSM revenues and commercial market revenues or pay TV revenues across countries. In fact, we found evidence for the opposite. The findings chime with in-depth, single-country studies that show commercial players may in some sense have benefitted from inhabiting a market with well-funded PSM, or, that the fate of commercial and public media may be deeply intertwined, meaning that they can grow (or founder) together (e.g. PwC, 2015; KPMG, 2015). This could be explained through the idea of a ‘race to the top’ (BBC, 2013), with commercial media possibly benefitting from building on the legacy of strong public funding in infrastructure, services and content and the audiences it has developed.

This study departed from research that has focussed on developments over time within a single market in that it aimed to describe the situation across all 28 EU countries. In doing so, we observed quite striking differences between countries, and therefore media systems. In very general terms, and with some clear exceptions, we find stronger PSM and stronger commercial markets in democratic corporatist and liberal countries, but weaker markets in polarised pluralist and Central and Eastern European countries. Interestingly, we also saw that in the United Kingdom, broadcasting revenues for PSM and commercial players

are above the linear slope, but for the online markets, PSM is capturing much of the news audience while commercial players have a comparatively low reach. Also, in Germany and Austria, countries with strong PSM, we saw that the pay TV market is smaller than we might expect.

The data also revealed no significant negative correlation between online PSM news reach and commercial news reach or paying for online news. News reach is only a small – though democratically important – part of the broader crowding out question. Nevertheless, the crowding out argument is of increasing importance here because news consumption is increasingly moving online. In one sense the mixed findings presented here are in line with what others have already observed. In particular, that some countries with strong PSM, like those in the Nordic region, also have high rates of paying for online news, but in others, like Germany and the UK, paying for news is relatively uncommon (Fletcher and Nielsen, 2017). More research will be needed to uncover the factors associated with the performance of online commercial news media.

It is important to reiterate that the data we use here is cross-sectional, meaning that we are not able to examine change over time. This is important because although PSM and commercial revenues may be positively associated across countries, within countries it is still possible that an increase in PSM revenues is associated with a decrease in commercial revenues over time. This would constitute crowding out in one sense, and future studies could use techniques like fixed effects regression modelling to explore this possibility. However, at present we are not aware of any sufficiently comparable longitudinal data for the 28 EU countries examined here.

Furthermore, from the point of view of media and communication researchers, the issue of whether already-profitable commercial media would be slightly more profitable if PSM funding was lowered is arguably a secondary issue in the crowding out debate. Rather,

the core issue is whether commercial media can generate a reasonable return on investment in markets where PSM funding is high, given that previous studies have shown the societal benefits of media systems that have both strong public and commercial media (e.g. Albæk et al., 2013). The analysis here is therefore relevant, because regardless of whether or not high PSM revenues actually cause higher commercial revenues, it shows that it is demonstrably untrue that the two cannot coexist. These findings, then, cast doubts on the strongest version of the crowding out argument, because they either suggest that commercial media have benefitted from strong PSM, or that any negative effects have been relatively weak.

The results of this study, and those that have preceded it, highlight that policymakers should carefully consider the precise nature of the crowding out arguments being made. Arguments about whether PSM represent good value for money, whether PSM prevents commercial media from generating even more revenue, and whether PSM prohibit the financial viability of commercial media are all related, but they also likely represent different strategic goals, and imply very different visions of what media systems should be like in the future.

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Tables

Table 1. Variables and their data sources

Variable	Data source	Computation	Mean (SD)
Per capita revenues of PSM (Euro)	EAO (2016) with data from 2015	(Public funding of PSM + PSM commercial revenues) / Population	49.94 (40.68)
Per capita commercial revenues (Euro)	EAO (2016)	(TV advertising revenues + Radio advertising revenues + Pay TV revenues) – (PSM commercial revenues)) / Population	114.84 (58.52)
Pay TV revenues (Euro)	EAO (2016)	---	63.31 (40.60)
PSM TV audience share (%)	EAO (2015) with data from 2014	---	27.03 (14.67)
Weekly online reach of PSM for news (%)	DNR (2018)	Weekly news reach of PSM * Internet penetration	21.60 (10.19)

Average weekly online reach of commercial media for news (%)	DNR (2018)	Weekly news reach of commercial broadcasters * Internet penetration	33.75 (9.24)
Paid for online news in the last year (%)	DNR (2018)	Paid for online news in the last year * Internet penetration	9.65 (4.83)
GDP per capita (Euro)	Eurostat (2015)	---	99.57 (44.15)

Table 2. Overview of countries and PSM included in the analysis

Country	PSM
Austria ¹	ORF (R + TV)
Belgium ²	RTBF (R + TV)
	VRT (R + TV)
Bulgaria	BNT (TV)
	BNR (R)
Croatia	HRT (R + TV)
Cyprus	CyBC (R + TV)*
Czech Republic ¹	CT (TV)
	CR (R)
Denmark ¹	DR (R + TV)
	TV2/Danmark A/S (TV)
Estonia	ERR (R + TV)*
Finland	YLE (R + TV)
France ³	France Télévisions (TV)
	Arte France (est) (TV)*
	France Médias Monde (R + TV)*
	Chaîne parlementaire (LCP AN+PS - est.) (TV)*
	Radio France (R)
	TV5 Monde (est.) (TV)*
Germany ^{1,6}	ARD (R + TV)
	ZDF (TV)
	Deutsche Welle (R + TV)*
	Deutschlandradio (R)
Great Britain ⁴	BBC (R + TV)
	Channel 4 Television (TV)
	S4C (TV)*
Greece	NERIT/Elliniki Radiophonia-Tileorassi SA (R + TV)
Hungary	MTVA (R + TV)
Ireland	RTE (R + TV)
	TG4 (TV)
Italy ⁵	RAI (R + TV)

Latvia	LTV (TV)* LR (R)*
Lithuania	LRT (R + TV)*
Luxembourg	Établissement de Radiodiffusion Socioculturelle du Grand-Duché de Luxembourg (R)*
Malta	PBS (R + TV)*
Netherlands ⁶	NPO (R + TV)
Poland ¹	TVP (TV) PR (R)
Portugal	RTP (R + TV)
Romania	TVR (TV) SRR (R)
Slovakia	RTS (R + TV)*
Slovenia ⁶	RTVSLO (R + TV)*
Spain ^{1,6}	RTVE (R + TV) Radio Y Television De Andalucia (R + TV) Corporació Catalana de Mitjans Audiovisuals (R + TV) Radio Televisión Madrid (R + TV) Corporación Radio e Televisión De Galicia, S.A.U (R + TV)
Sweden ²	SVT (TV) SR (R) UR (R + TV)*

For TV market share (only TV organisations without Malta and Luxembourg):

Market shares of foreign public channels are not included.

(1) Include complementary thematic public channels (TV2 channels counted as public in Denmark).

(2) TV5 Europe not included.

(3) Complementary thematic public channels not included.

(4) Include the BBC's various thematic channels, UK TV channels, Channel 4 and its various thematic channels.

(5) Include RAI and RAISat thematic channels since 2008.

(6) Include regional public channels.

* Data only available from EAO and not DNR

Table 3. OLS regression models

	Model 1	Model 2	Model 3	Model 4	Model 5
	DV: Per capita commercial revenue	DV: Per capita commercial revenue	DV: Per capita pay TV revenue	DV: Per capita pay TV revenue	DV: Paid for online news
Per capita PSM revenue	.64 ** (.23)		.65 *** (.12)		
PSM audience share		.91 (.84)		1.51 *** (.42)	
PSM online news reach					.06 (.14)
Per capita GDP	.49 * (.21)	.94 * (.40)	.33 *** (.11)	.55 ** (.20)	.06 (.04)
N	28	26	28	26	20
Pseudo R ²	.40	.38	.68	.69	.14

Note. Columns showing unstandardized beta coefficients followed by standard error in parentheses. $p < .05$ *, $p < .01$ **, $p < .001$ ***

Figures

Figure 1. Per capita PSM revenues plotted against per capita commercial broadcaster revenues (2015)

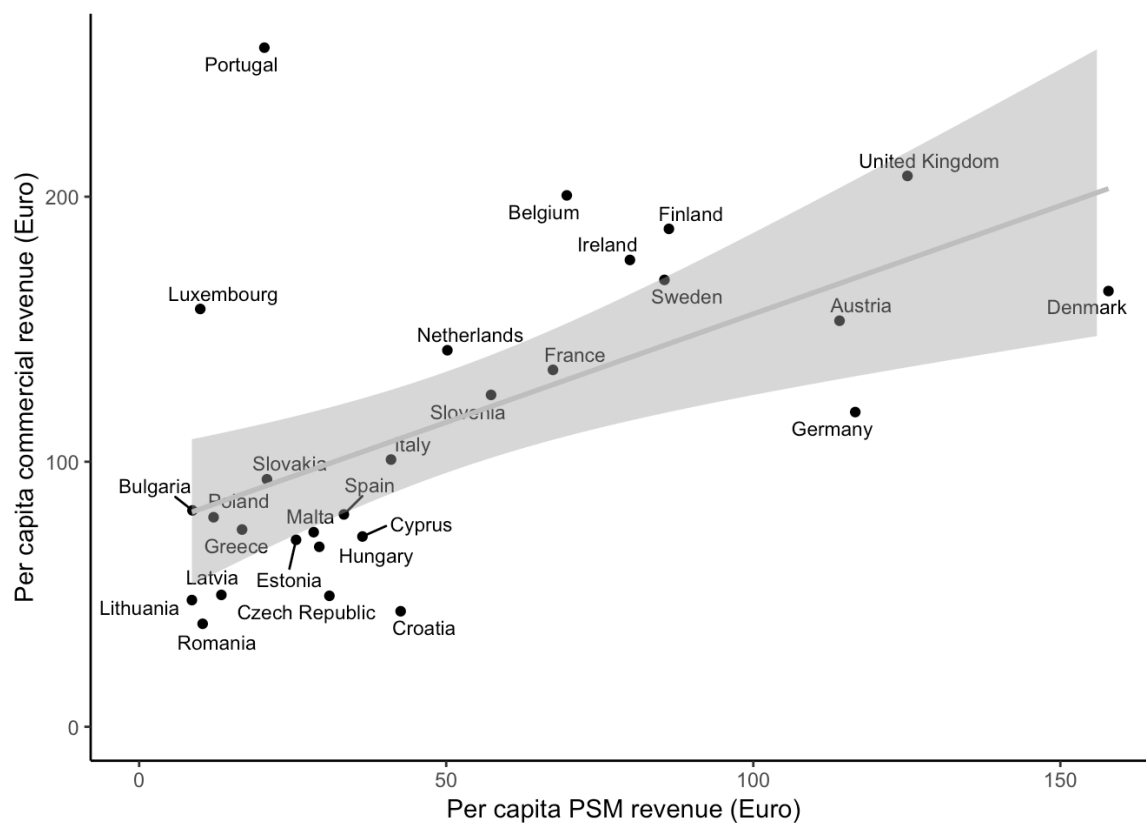


Figure 2. PSM TV audience share (2014) plotted against per capita commercial broadcaster revenues (2015)

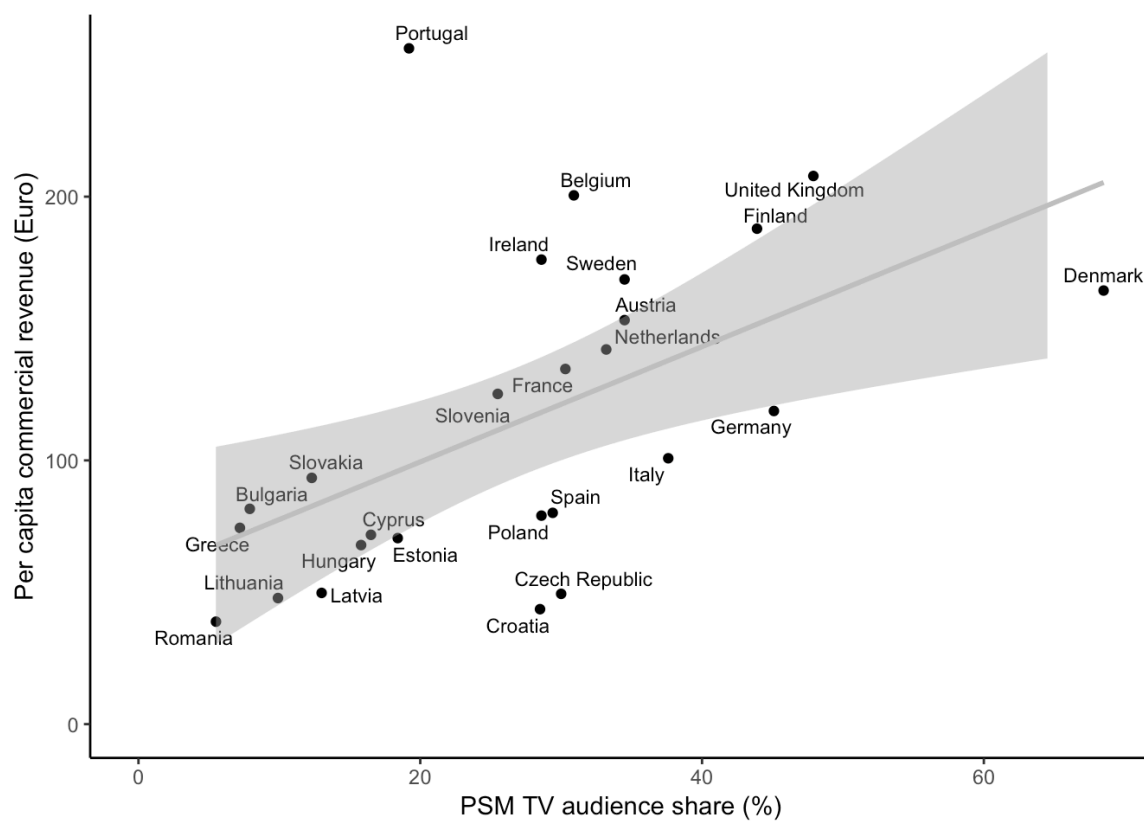


Figure 3. Per capita PSM revenues plotted against per capita commercial pay TV revenues (2015)

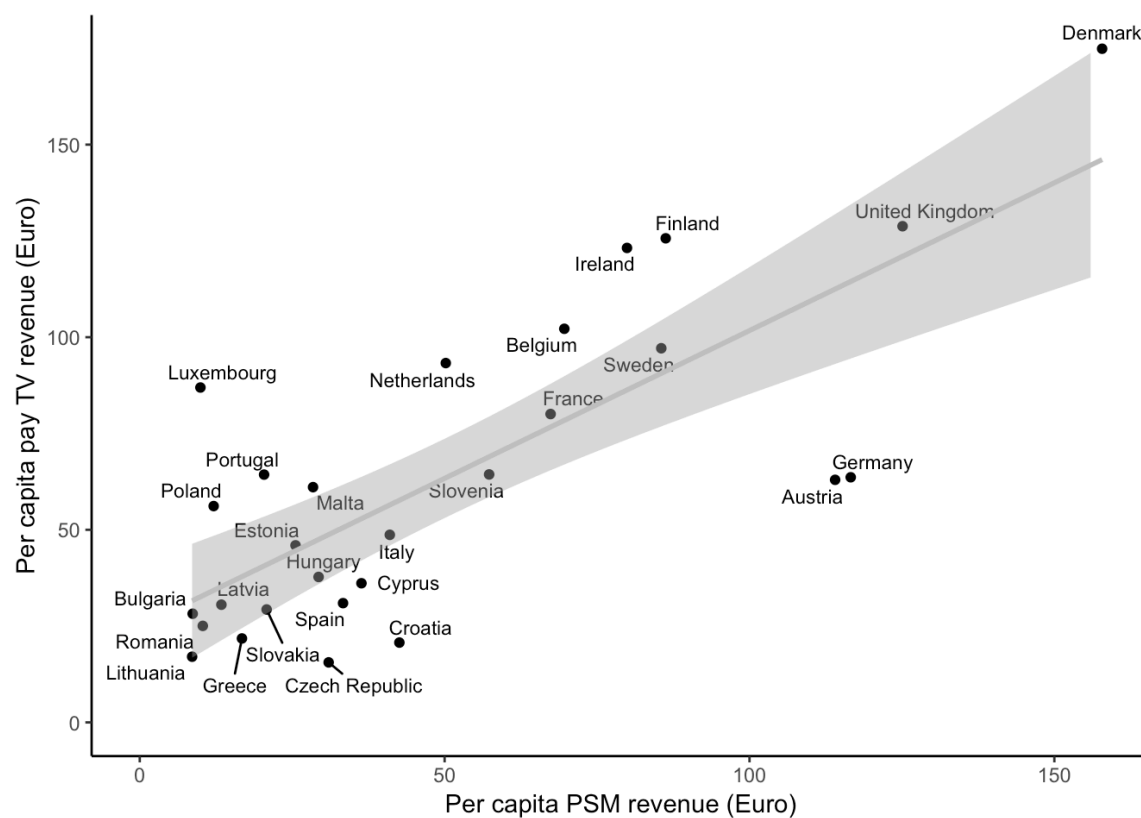


Figure 4. PSM TV audience share (2014) plotted against per capita commercial pay TV revenues (2015)

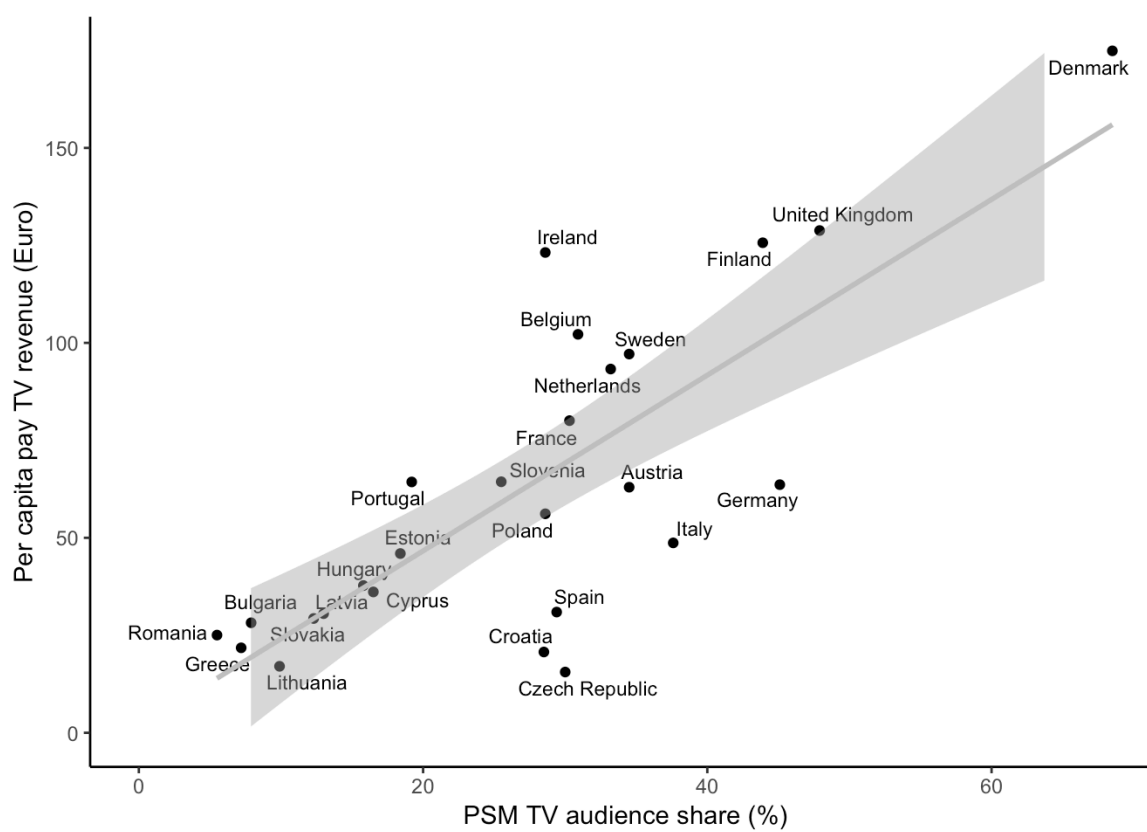


Figure 5. PSM online news reach (2018) plotted against commercial broadcaster online news reach (2018)

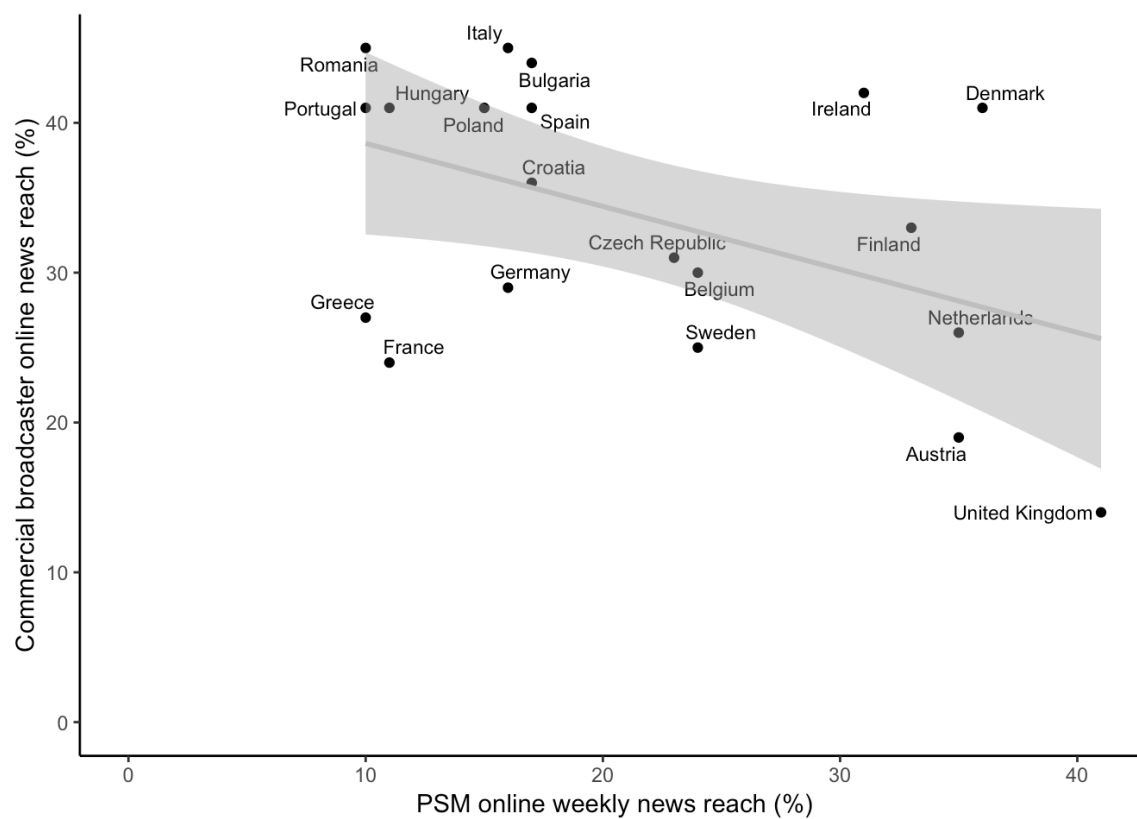


Figure 6. PSM online news reach (2018) plotted against proportion paying for online news (2018)

