

RETHINKING PUBLIC SERVICE BROADCASTING FOR THE DIGITAL AGE

Helen Weeds

3 December 2020

Rethinking Public Service Broadcasting for the Digital Age

Dr Helen Weeds*

3 December 2020

Contents

1. Introduction.....	1
2. The rationale for public service broadcasting in the digital age.....	2
2.1 Externalities in broadcasting.....	3
2.2 PSB and analogue broadcasting.....	3
2.3 Technological changes in the digital age.....	4
3. Consumer market failures in television.....	5
3.1 Analogue free-to-air television.....	5
3.2 Impact of digital technologies and globalisation.....	7
3.3 Empirical evidence on consumer market effects.....	8
3.4 Implications for public service broadcasting.....	10
4. Wider impacts of television viewing.....	12
4.1 Educational, social and behavioural impacts of television.....	13
4.2 Role of the media in the political process.....	15
4.3 Implications for public service broadcasting.....	18
5. The effectiveness challenge.....	19
6. Conclusion.....	21
References.....	23

Disclaimer:

The views expressed in this paper are the author's and do not necessarily represent those of Ofcom.

* Honorary Senior Research Fellow, Imperial College Business School, London.

1. Introduction

This report has been commissioned by Ofcom in the context of its ‘Small Screen: Big Debate’ programme of activities accompanying its quinquennial review of the public service broadcasting (PSB) system. Ofcom has asked me to provide a report discussing the economic rationale for PSB in a changing environment, with increased content production, growing online consumption and a variety of business models, and summarising relevant evidence. Ofcom requested a paper that could sit alongside several others on its website and asked that I give my views in order to stimulate debate. The approach and views expressed in this report are my own and do not necessarily represent those of Ofcom.

The report sets out in economic terms the traditional rationales for public service broadcasting and considers their continued relevance for the digital age. It makes extensive use of academic economics literature to shed light on this question, drawing on both theoretical models and empirical evidence. While television broadcasting (or audiovisual output more generally) is the focus of the report, it also refers to evidence from other media types where this is informative. There has been a burgeoning of academic papers in media economics and political economy in recent years, many of which are cited in this report. However, further research is called for in some areas, especially regarding the impact of PSB.

The report focuses on the viewer (or ‘consumer’) side of television. It aims to address the following two questions. First, can market provision meet consumers’ own demands for television, supplying the variety of genres and quality of content needed to satisfy their desires? Secondly, does consumption of (certain types of) television content generate benefits to others, beyond the viewer themselves—what economists term ‘positive externalities’—and, if so, what does this imply for the provision of such programming? The first topic might be labelled the ‘consumer’ aspect of PSB, while the second includes a number of ‘citizen’ concerns. The main sections of the report are based around these two topics.

Other topics, while potentially relevant to PSB, are beyond the scope of this report. In particular, it does not provide an analysis of the ‘producer’ side of television. Some elements of PSB can be viewed as forms of industrial policy promoting the production of television content in the UK and/or its constituent nations and regions. Other parts of PSB affect the industry’s structure, for example the promotion of independent production through external commissioning quotas imposed on public service broadcasters (PSBs). These aspects are not discussed here. Furthermore, the report does not provide a detailed consideration of PSB funding mechanisms, e.g. the TV licence fee, spectrum licences and other concessions granted to PSBs and the level of advertising on PSB channels.¹

The report intends to inform and stimulate debate rather than to present definitive conclusions regarding the appropriate form and scale of PSB for the digital age. The final section draws together the evidence presented in the report, making some suggestions for policy and highlighting topics for further research. Note that for ease of reference the report refers to ‘television’ and ‘programming’, but these terms should be interpreted broadly to include internet-delivered and non-linear video services and content.

The report is structured as follows.

¹ For discussions of PSB funding see Armstrong and Weeds (2007) and Weeds (2016). For an analysis of advertising on PSB channels see Crawford, Deer, Smith and Sturgeon (2017).

Section 2 describes the purposes of PSB and provides an economic interpretation of these aspects, explaining how they relate to market failures arising in analogue terrestrial broadcasting. The section then describes changes in technologies and consumer behaviour, referred to collectively as 'digitisation'.

Section 3 explains the consumer market failures that arise in analogue broadcasting, then considers the impact of digitisation and globalisation on these outcomes. Empirical evidence is surveyed before drawing implications for PSB.

Section 4 discusses impacts of television viewing beyond the individual consumer, setting out evidence on educational, social and behavioural effects. The role of the media in the political process is also discussed, along with evidence in this area. Implications of both strands of analysis for PSB are then drawn out.

Section 5 discusses the 'effectiveness challenge' facing public service content conferring social benefits given the vast array of content and many media outlets competing for viewers' attention. It recommends a close examination of the costs and benefits of intervention to inform proposals on the future scale and functioning of PSB.

Finally, Section 6 concludes.

2. The rationale for public service broadcasting in the digital age

The rationale for public service broadcasting is succinctly expressed in the BBC's public service mission to 'inform, educate and entertain,' first set out in the 1920s by its founding Director General, John Reith. In an expanded form, these elements are apparent in the UK's Communications Act 2003, the current legislation underpinning the country's PSB system. Paraphrasing, Section 264 of the Act describes the purposes of PSB as follows:

- The provision of programmes dealing with a wide range of subject matters, meeting the needs and interests of many different audiences;
- Maintaining high standards in programme content and production quality;
- Giving comprehensive and authoritative coverage of news and current affairs; and
- The provision of educational programming.

In economic terms, the purposes of PSB can be seen as satisfying two broad concerns:

1. *Consumer demands*: the provision of television services that people themselves want to watch, in particular containing the variety and quality of programming needed to satisfy diverse consumer tastes.
2. *Wider benefits from TV viewing*: the provision of programming that confers educational, social or democratic benefits beyond the individual consumer and which we would like other people, not just ourselves, to watch (sometimes referred to as the 'citizen' aspect of PSB).

While these purposes are clearly highly desirable, the deeper question is whether their achievement requires public intervention. To put it another way, will market provision, left to itself, fail to meet

these aims? Gavyn Davies, who served as chairman of the BBC from 2001 to 2004, expressed this question as follows²:

‘some form of market failure must lie at the heart of any concept of public service broadcasting. Beyond simply using the catch-phrase that public service broadcasting must “inform, educate and entertain”, we must add “inform, educate and entertain in a way which the private sector, left unregulated, would not do”. Otherwise, why not leave matters entirely to the private sector?’

2.1 Externalities in broadcasting

Market failures in broadcasting can be viewed in terms of externalities, a well-recognised source of market failure. An ‘externality’ arises when a production or consumption decision also has an effect on one or more third parties (other than those directly involved in that decision). The external effect may be either a benefit or harm—respectively, a ‘positive’ or ‘negative’ externality. Since externalities are typically ignored by those making production and consumption decisions, in such circumstances unregulated market provision will usually fail to achieve outcomes that are optimal overall, for all members of society.

The ability of the market to meet consumers’ own demands (concern 1 above) may be affected by ‘preference externalities’. Under conditions explained in more detail in Section 3 below, each consumer’s preference over items in a diverse product class may affect the likelihood that other consumers are served with their most-preferred product. When preference externalities are significant, the mix of products provided by the market may fail to meet the demands of consumers as a whole, or of particular consumer groups. The ‘consumer’ aspect of PSB aims to improve upon market provision by increasing the supply of programming types that, while socially desirable, might otherwise be underprovided.

Educational, social and democratic benefits that go beyond the individual viewer (concern 2 above) are positive externalities from the consumption of certain programming. Evidence in this area is presented in Section 4 below. Since providers and consumers typically ignore external effects which do not benefit them, such programming will tend to be underprovided by the market and under-consumed by viewers. The citizen aspect of PSB consists of interventions to increase the production and distribution of such programmes, supplementing market provision, and to promote their viewing.

2.2 PSB and analogue broadcasting

The UK’s system of PSB developed at a time when analogue terrestrial broadcasting was the only means of providing television services in this country and can be seen as a response to the market failures that arise in that context (discussed in detail in Section 3 below).³ This technology suffered from two severe limitations.

First, scarcity of spectrum permitted only a handful of TV channels to be broadcast. Prior to digital switchover the UK’s analogue terrestrial system carried just five channels, one of which had substantially lower coverage than the other four at around 70% of households. The limited number of channels severely restricted the choice of programming available to consumers at each point in time.

² Davies (1999), page 10.

³ On the historical development of UK PSB see Scannell (1990) and Armstrong and Weeds (2007).

Secondly, the absence of a conditional access (CA) system prevented viewers from being charged directly for their consumption.⁴ As a result, commercial television relied entirely on the sale of advertising airtime for its funding, weakening its incentives to serve the preferences of consumers.

2.3 Technological changes in the digital age

Using the term loosely, 'digitisation' refers to a number of technological developments affecting the provision of television content and services. In television distribution, the transition to digital terrestrial television (DTT) and subsequent improvements in compression technology have alleviated the capacity constraint of analogue broadcasting: over one hundred channels can now be broadcast on DTT. Satellite (DTH) and cable transmission systems, introduced in the late 1980s and 1990s, have also been digitised, allowing these to carry even larger numbers of channels. Satellite and cable were launched as pay-TV platforms, with services funded through subscription fees charged to viewers (though some channels also carry advertising).

Meanwhile, the internet has opened up an additional technology for the distribution of video content, with global reach. This has facilitated the entry of subscription-funded over-the-top (OTT) providers, such as Netflix and Amazon, and free-to-view, advertising-funded services such as YouTube. Many traditional channels and distributors are also utilising the internet to provide content directly to consumers without the need for expensive distribution infrastructure. The internet has stimulated the development of new search tools and other online mechanisms (such as user recommendations) to bring content to the attention of users.

The production of television programming has also experienced important changes due to digitisation. Costs of recording, editing and storage of video—important elements of the fixed cost (i.e. independent of the number of viewers) of programme production—have fallen significantly, allowing many more products to be supported by a market of a given size. In addition, as part of the changes in distribution noted above, the cost of making content available to consumers—even globally—is now much lower.

Consumers have responded to changing technologies by increasingly diverting their viewing from broadcast TV channels to other forms of video, including subscription video on demand (SVoD) services and YouTube. BARB (2020) reports that in the final quarter of 2019, for the first time, a majority (50.5%) of UK homes held a subscription to at least one of Netflix, Amazon Prime Video or Now TV. The proportion of UK households with SVoD has increased further in 2020 with the impact of the Covid-19 lockdown and the launch of Disney+.⁵ Although the time spent watching broadcast TV remains large overall, viewing patterns differ significantly between age groups: in April 2020 broadcast content (live, recorded or on-demand on any device) accounted for 59% of total video minutes viewed by all individuals but only 31% of viewing by those aged 16-34.⁶ Changing consumer behaviour, as well as changing technologies, create challenges for PSB, discussed at length below.

⁴ Conditional access is a technology used to restrict access to television services to authorised users (e.g. paying subscribers). Programming is transmitted in an encrypted form and a security module (often incorporated in a set-top box) is needed to authorise its decryption. In some countries a CA system was added after the introduction of analogue terrestrial broadcasting: e.g. in France, Canal Plus launched a terrestrial subscription channel in 1984.

⁵ Oliver & Ohlbaum (2020) estimate that 4.6 million new SVoD subscriptions have been taken out in the UK since the start of the lockdown. Disney+ launched in the UK on 24 March 2020.

⁶ Ofcom (2020a), Figure 1.2 and Figure 1.4. In 2018 the corresponding figures were 69% for all individuals and 42% for 16-34 year olds (Ofcom, 2019). Viewing patterns in April 2020 are likely to have been affected by

3. Consumer market failures in television

Milton Friedman praised the market for its ability to cater for individual tastes. Contrasting market provision with ‘the tyranny of the majority’ in political decision-making, Friedman wrote⁷:

‘[t]he characteristic feature of action through political channels is that it tends to require or enforce substantial conformity. The great advantage of the market, on the other hand, is that it permits wide diversity. It is, in political terms, a system of proportional representation. Each man can vote, as it were, for the color of tie he wants and get it; he does not have to see what color the majority wants and then, if he is in the minority, submit.’

Yet Friedman’s view that the products an individual can obtain from the market are independent of the preferences of others is not always correct, as pointed out by Waldfogel (2007). When the market can support just a limited number of product types, individuals with minority tastes are likely to find that they cannot obtain their desired ‘color of tie’. Waldfogel calls this phenomenon ‘the tyranny of the market’: for small groups with non-standard preferences, the market sometimes fails to deliver. This phenomenon arises from ‘preference externalities’: by adding to or taking away from the majority taste which drives market provision, each consumer’s preference affects the likelihood that other consumers are served with their most-preferred product.

Preference externalities do not affect all markets. Tyranny of the market arises when preferences vary widely between consumers and fixed costs of providing each product variant are substantial relative to the size of the market, making it infeasible to produce a continuum (or a very large number) of products meeting every conceivable taste. Media markets, including television, display these features: video production costs are almost entirely fixed and preferences differ substantially both between individuals and across groups of consumers.

However, technological change alters the extent of the problem. By reducing fixed production costs and expanding distribution capacity, digitisation has greatly increased the number and variety of products that can be produced and delivered to consumers. Meanwhile internet distribution and search tools make it easier for pockets of demand to be aggregated and served.

This section discusses the implications of economic models of broadcasting, first for analogue free-to-air television and then for the digital age.⁸ Empirical evidence is also discussed. Implications for PSB are drawn out at the end of the section.

3.1 Analogue free-to-air television

The impact of preference externalities in capacity-constrained, advertising-funded analogue television is illustrated in early literature on the economics of broadcasting.⁹ In a model of programme selection,

the Covid-19 lockdown, which saw a surge in viewing of audiovisual content, including broadcast TV, with particularly marked growth in SVoD services.

⁷ Friedman (1962), page 15.

⁸ For detailed discussions of literature on the economics of broadcasting see Armstrong and Weeds (2007) and Anderson and Waldfogel (2015).

⁹ In addition to the programme selection effects discussed here, pure advertising funding tends to result in excessive amounts of advertising from the perspective of viewers, for whom it is an annoyance (or of less value than the content that carries it). For this reason broadcasting regulations in many countries limit the amount of advertising that may be shown on free-to-air television. When broadcasters rely on advertising funding there is also a danger that programme content might be distorted towards the interests of major advertisers; Osborne (2015) raises a similar point in relation to a UK newspaper.

Steiner (1952) assumes that each viewer has a single preferred programme type and will switch off if this is not available.¹⁰ With a limited number of outlets—e.g. just two channels—competing broadcasters tend to duplicate the most popular genre, leaving minority tastes unserved. The result depends on the relative sizes of the preference groups, being accentuated when these are highly asymmetric. For example, if 78% of viewers will watch only a soap while 22% will watch only a game show and there are three competing channels, all three providers will choose to show a soap, splitting the majority audience between them (as one-third of 78% exceeds the 22% audience that would watch a game show). However, a fourth channel will provide a game show (as its 22% audience share exceeds one-quarter of 78%), although there remains duplication of the majority taste. As the number of channels expands (or, equivalently, as fixed costs fall relative to the size of the market) more and more niche tastes will be supplied, although there will continue to be duplication of popular genres.

Allowing viewers to have a second-choice programme, Beebe (1977) finds that broadcasters may focus on a second choice that is widely shared—the so-called ‘lowest common denominator’ (LCD)—rather than meeting the first choice of any consumer group, again with duplication of this genre. Suppose that consumers’ first-choice preferences are split equally between news, period drama and nature programmes, but 90% of each group will watch a soap as their second choice. With two competing channels, both provide soaps (as one-half of 90% exceeds the third of all consumers available to each first-choice genre). However, with three competing channels the LCD is displaced by niche programming and all consumers are served with their first-choice genre. Thus, markets with very few channels receive LCD programming, while those with many channels (or where fixed costs are low relative to the market size) receive varied programming catering for more specialised tastes.

Advertising-funded broadcasters naturally seek to attract audiences that are of highest value to advertisers. As well as larger audiences, this implies a preference for individuals with a greater propensity to purchase advertised products.¹¹ Individuals on higher incomes and those in younger cohorts—whose lifetime choices may be influenced early on—therefore tend to be more valuable. In effect, viewer segments are weighted by their economic value to advertisers, giving a further bias to the selection of advertising-financed content.

Pure advertising funding also tends to undermine the provision of high-quality programming, as broadcasters cannot tap into consumers’ willingness to pay for higher quality.¹² Raising quality typically incurs higher costs; while such investment may increase the strength of consumer preferences for the programme, advertising revenues depend primarily on the number of viewers and do not rise directly with viewers’ valuations.¹³ Thus, two programmes that attract the same number of viewers will earn the same revenues, hence the one that is cheaper to produce will be shown even

¹⁰ In addition to genre, programme characteristics can be considered to include branding and positioning, to the extent that these create differentiation for viewers.

¹¹ Groups that are harder to reach by other means (e.g. because they consume little other advertisement-carrying media) also tend to be of higher value, as advertisers will pay more to access such individuals.

¹² In economic terms, product A is of higher quality than product B if all consumers choose A over B when these are offered at equal prices (or, put another way, all consumers have higher willingness to pay for A than for B). This can be distinguished from product diversity, where consumers choose different products at equal prices. It is generally assumed that higher quality products are more costly to produce; if a lower-quality product cannot be produced more cheaply then it is unlikely to be produced at all, given that a product that is preferred by all consumers can be produced for the same amount.

¹³ There might be some relationship between the advertising revenues and viewer valuations if higher quality programming is preferred by groups of viewers that are particularly valuable to advertisers, but even then the relationship would not be a direct one.

if consumers' combined willingness to pay for the latter is higher. Consequently, advertising-funded television tends to deliver lower quality content, all else equal.

The above findings can be expressed as follows in terms of positive preference externalities. An increase in the number of subscribers that share the same preference (for a particular genre, or for higher quality) raises the likelihood that such programming is provided. By removing demand from LCD programming, this also increases the likelihood that other consumers are supplied with their first-choice programme. Accordingly, there are positive preference externalities between consumers who share the same preference, and potentially weaker spillovers to other consumer types.

The 'consumer' aspect of PSB can be interpreted as a remedy for these market failures of analogue, advertising-funded broadcasting. Requirements to provide a wide and varied range of content that meets diverse consumer tastes, and to raise programme quality, help to counteract incentives to provide low-quality, repetitive, lowest common denominator programming.

3.2 Impact of digital technologies and globalisation

The inefficiencies in programme selection described above arise when the number of channels is tightly constrained (or, equivalently, fixed costs represent a high proportion of market size so that only a few programmes will be produced) and television is funded from advertising revenues alone. As distribution capacity expands (or, equivalently, fixed costs fall) these problems are alleviated: lowest common denominator is replaced by differentiated programming satisfying niche tastes, and successively smaller consumer groups are served with their most-preferred programming.¹⁴

The introduction of subscription television mitigates inefficiencies of advertising-funded television. With the ability to charge viewers directly, consumers' higher valuation of their most-preferred content over lowest common denominator programming can be extracted by the provider and programmes that command high willingness to pay among a relatively small audience will be produced, as long as sufficient revenues are generated to cover fixed costs. Subscription funding gives providers a direct incentive to invest in higher quality, as long as the resulting increase in consumers' willingness to pay (and providers' ability to extract this) exceeds the additional production costs.

Alongside the expansion of capacity on existing distribution systems, new platforms—especially internet-based 'over the top' (OTT) services—have reduced the cost of distributing content to consumers in different countries. Global platforms and internet search tools also assist consumers in finding content of which they might previously have been unaware. By helping providers to aggregate pockets of demand across many countries, these developments stimulate the production of niche programming serving minority tastes.

For given production and distribution technologies and market size, there is a trade-off between higher quality and greater diversity: fixed costs increase with higher quality, which limits the number of varieties that the market can support.¹⁵ However, these trade-offs are improved as costs fall and/or globalisation expands effective market size, allowing both an expansion in variety and higher quality. Given the enormous changes in the broadcasting sector, these improvements have been very significant. While it is difficult to ascertain whether the market achieves exactly the 'optimal' degree of diversity or level of quality from the perspective of consumers—general issues on which there is

¹⁴ For a fuller discussion of these results see Armstrong and Weeds (2007) and Weeds (2013).

¹⁵ Sutton (1991) predicts that the number of products increases less than proportionally with market size as these also experience greater investment in fixed costs to raise quality. This phenomenon is observed empirically in many markets.

extensive economic literature¹⁶—there is no longer the clear under-provision of both characteristics that arises under purely commercial analogue broadcasting.¹⁷

While global accessibility benefits consumers by increasing the amount and diversity of content that is available to each individual, it may potentially generate a ‘tyranny of alien majorities’. Waldfogel (2007) notes the influence of increased cross-border trade on the character of Hollywood movies: as US movie studios focused more on winning international audiences, they repositioned their output towards global tastes and away from idiosyncratic American preferences. The globalisation of television content may have a similar impact, shifting production away from local culture and interests and towards material that appeals to international viewers. For example, streaming service Netflix, which invests significant amounts in original production,¹⁸ faces ‘a big challenge in that it’s targeting a very wide audience: families, hardcore movie fans, international viewers.’¹⁹ The implications of globalisation for UK television viewers is not straightforward to predict: while idiosyncratic UK tastes may gain less attention from global providers, the appeal of some UK-focused content to non-UK audiences, facilitated by the English language—witness the international success of *Downton Abbey*, for example—may stimulate the production of such programming.

3.3 Empirical evidence on consumer market effects

Empirical assessments of the theoretical predictions outlined above typically consider the impact of market size on the number and variety of products, quality and other outcomes by analysing cross-sectional data. While not a direct test of the impact of changing technology, such analyses also cast light on the likely impact of lowering fixed costs relative to a given market size.

The empirical findings discussed in this section are derived largely from US data: the variation between local US markets, which can differ significantly in the programming and services on offer, makes the country a fertile ground for econometric studies. Nonetheless, their findings are of more general applicability, including to the UK, especially insofar as they bear out the predictions of theoretical models.

Content variety and quality

Several studies find that larger markets support more products and display greater variety.²⁰ Evidence can also be seen of consumers moving away from lowest common denominator output in bigger markets: for example, in larger music radio markets the most common format (country music) and generalist formats (full service or variety) account for a smaller share of listening while formats such as jazz and classical music (that tend to be supplied only in large markets) have higher shares.

Higher quality can be measured in terms of greater expenditure on inputs that contribute to raising quality. For daily newspapers, Berry and Waldfogel (2010) find the number of pages and staffing

¹⁶ See Dixit and Stiglitz (1977), Salop (1979), Mankiw and Whinston (1986), Sutton (1991) and much related literature.

¹⁷ Digital platforms also offer new ways of tailoring services to individual preferences, helping consumers find content that is of interest to them (e.g. personalised recommendations) and allowing them to sample content before purchasing.

¹⁸ Netflix was expected to spend around \$15bn globally on the production and licensing of TV shows and films in 2019, with a budget of \$500m for the UK (Sweney and Conlan, 2019).

¹⁹ Dan Rayburn, chairman of the Streaming Summit, quoted in Christian (2019).

²⁰ See studies for local television stations (Waldfogel, 2004), radio stations (Berry and Waldfogel, 2001; Rogers and Woodbury, 1996; Sweeting, 2010) and daily newspapers (Berry and Waldfogel, 2010; George, 2007; George and Waldfogel, 2003).

levels—both indicative of higher quality—to be increasing in market size (as measured by population). They also find that direct measures of quality, such as the number of Pulitzer Prizes per newspaper, are higher in larger markets. For radio stations, Duncan (1994) finds higher salaries (exceeding cost of living differences) for on-air talent in larger markets, again indicating higher quality.

Provision of more varieties and higher quality raise consumer satisfaction and tend to increase media consumption. Thus higher consumption levels indicate that the products on offer are more closely matched to consumers' preferences and/or of higher quality. Waldfogel (2003) finds that the tendency to listen to radio increases with market size (as measured by population), and that in larger markets additional stations attract listeners by providing greater variety. Similarly, looking at daily newspaper markets George and Waldfogel (2003) find that the tendency to purchase a paper is positively related to market size.

Industry observers have claimed that digitisation has created a 'golden age of television'.²¹ Waldfogel (2017a, 2017b) argues that digitisation is responsible for the creation of many successful products that previously would not have been produced or made available to consumers, substantially improving the welfare of television viewers. Noting the inherent unpredictability of the appeal of creative products, he finds that in the US a large and growing share of successful new television shows—measured by user ratings and nominations for Emmy Awards—are from non-traditional providers (e.g. pure online providers such as Netflix and Amazon) rather than traditional broadcast (terrestrial) and cable channels.

Impacts on distinct consumer groups

Turning to the impact of preference externalities on distinct groups of consumers, several papers find evidence of marked differences in preferences between groups according to ethnicity and other characteristics. Looking at radio in the US, Waldfogel (2003) finds that the ethnic composition of listeners to different formats is highly polarised with, for example, 97% of the audience for country music made up of non-black listeners, while around 90% of audiences for formats that include the word 'black' in the name (e.g. 'black/adult contemporary') are black listeners. Significant preferences differences are also found in television. For the US, Anderson and Waldfogel (2015) report how the top-rated show among white viewers can be ranked very low among black viewers, and vice versa. For the UK, Phillips (2016) reports that of the top 20 television programmes across all individuals (as measured by BARB ratings), only half are in the top 20 among BAME individuals. Preferences towards media products also differ between men and women and by age. Differences are found between national groups, with a country's consumers displaying a preference for domestically-produced goods ('home bias').

Since population shares of different ethnic groups (unlike gender and age) can vary significantly between geographic areas, research into the impact of preference externalities has tended to focus on the influence of ethnic mix on the provision and consumption of media products appealing to each group. In a study of local radio stations in the US, Waldfogel (2003) finds that the number of stations targeting each ethnic group generally increases with the size of that group (i.e. there is a positive own-group effect). Examining daily newspaper markets in the US, George and Waldfogel (2003) find positive own-group effects on consumption, especially for black people: they find that, all else being equal, increasing own-group population by one million increases newspaper consumption by about 5% for white people and 40% for black people. Negative cross-group effects are also apparent, running from the majority population to consumption by the minority: adding one million white people

²¹ See, for example, Carr (2014).

reduces newspaper consumption among the black population by about 15%. Using a welfare analysis, Berry, Eizenberg and Waldfogel (2016) assess the extent to which market outcomes are biased against preference minorities in US radio markets.

As distribution and consumption patterns change, media outlets may change alter their content to target different groups. Examining changing physical distribution patterns—a precursor of today's online distribution—George and Waldfogel (2006) examine the introduction and expansion of national distribution of the *New York Times* (NYT). They find that the NYT's target audience (readers with a college degree) shifted their reading away from local newspapers, which responded by shifting their coverage towards more local issues and increased their circulation among populations with lower rates of higher education. Thus it can be seen that changing the distribution of one product may have an impact on the content choices and consumption patterns of other outlets.

Impact of PSBs on commercial provision

Evidence on the PSBs' impact on commercial provision is limited, with few economic studies of the issue published in peer-reviewed journals. When considering whether PSBs fill in gaps that are ignored by commercial providers or 'crowd out' similar content that such operators would otherwise provide, simply showing that a high proportion of certain niche programming (e.g. in arts and classical music) comes from PSBs is uninformative as this could reflect either phenomenon. Similarly, positive correlations between performance indicators for public and private operators (e.g. funding levels; production expenditures) found in cross-sectional analysis of international data—sometimes cited as evidence of PSB's positive impact on commercial provision via 'competition for quality'²²—reveal nothing about causality as both may be driven by common background factors (e.g. higher incomes and greater willingness to pay for television both publicly and privately).

In a rare economic study on the impact of public broadcasting on commercial provision, Berry and Waldfogel (1999) consider whether public radio in the US displaces commercial stations. The US Corporation for Public Broadcasting (CPB) provides government subsidies to public stations offering classical music, jazz and news, but not to more popular formats. Berry and Waldfogel find that in large markets public broadcasting displaces commercial programming, particularly in classical music and to a lesser extent in jazz (though not in news, where public and private programming are rather different in character and therefore coexist rather than displacing one another). This would suggest that, if markets are sufficiently large (or, equivalently, fixed costs are sufficiently small) that the market is capable of supporting a wide variety of products, PSB is likely to result in some crowding out, in which case the increase in provision for niche tastes resulting from PSB is less than would appear. However, further research is needed in this area before firm conclusions can be drawn.

3.4 Implications for public service broadcasting

In the past, public service broadcasting was justified by inefficiencies that arise when broadcasting capacity is tightly constrained and television services are financed purely from advertising, discussed above. In that setting, a PSB system with broadcasters mandated to provide high-quality, diverse content serving niche tastes, not just popular ones, can be rationalised as a response to those inefficiencies.

With the technological advances referred to collectively as digitisation, reductions in fixed production and distribution costs allow a huge expansion in output, while a variety of business models, including viewer charges, can be used to finance video services (which are no longer limited to the television

²² E.g. BBC (2013).

set). In this environment, both variety and quality of programming are far higher than would be the case in the purely commercial analogue world. Given this, it seems a natural time to ask whether the extent of public intervention established in the analogue age is still required to generate the range and quality of programming that consumers desire. If intervention is seen as justified only when there is a clear directional failing in market provision which can readily be improved by public intervention,²³ economic theory and empirical evidence suggest that widespread consumer market failures arising from preference externalities no longer provide a compelling basis for PSB.

There are some caveats to this conclusion. One concerns provision for minority groups with markedly different preferences from the majority population. While digitisation will have increased provision for small groups with distinct preferences as part of the overall diversification of content, evidence outlined in Section 3.3 above suggests that groups such as ethnic and linguistic minorities may be underserved relative to the majority. While globalisation may improve the range of content available to minority groups that share some tastes with consumers in other countries (e.g. by making Bollywood movies more accessible to UK audiences), there may remain a role for intervention to increase the provision of content which is of particular interest to minority groups in the UK.²⁴

While globalisation benefits consumers by increasing the amount and diversity of content available to each individual, there may be a concern that programme content is shifted away from specific UK tastes (including national, regional and local interests). Although online distributors are spending increasingly large amounts on original production, much of this output is directed towards international audiences: as a result, their focus tends to be on formats that are globally transportable rather than tailored to idiosyncratic UK preferences. To the extent that some consumer attention is diverted towards global providers, audiences for content reflecting distinctive UK tastes may be lower than pre-digitisation. Although the huge output expansion resulting from cost reductions suggests that the provision of such content is likely to increase overall, this may nonetheless fall short of what is desired by UK consumers.

When considering what the UK television sector might look like in the absence of (or with greatly reduced) public intervention, it is important to bear in mind that the outcome would not be current television production *minus* the output of the BBC and other PSB channels. There is a substantial overlap between the outputs of public and private providers in terms of genre and programme formats, and the popularity of much of the PSBs' programming would ensure its continued provision under either an advertising- or subscription-funded model.

Some inferences may be drawn from international comparisons of television (while bearing in mind that public funding is only one source of variation between countries). Data provided in Ofcom (2017) show no evidence of a positive relationship between average daily TV viewing—indicative of consumer satisfaction—and public funding of television (either the amount per capita or the percentage of TV

²³ Public broadcasters, too, cannot easily ascertain the socially optimal provision of variety and quality: since they do not charge viewers, public broadcasters lack direct measures of consumer preferences. They may consequently be less informed and less incentivised than pay TV operators to provide content that best meets consumer demands.

²⁴ One can debate whether PSBs have in fact fulfilled this role: Phillips (2016) takes the view that 'people of colour are paying a hundred and fifty pounds a year [the TV licence fee] for the upkeep of services that actually do not serve them.' This concern is more pressing when television viewers are compelled to pay for services that they may not choose.

revenue).²⁵ Of the 15 countries for which average daily viewing data are provided, the US (where television receives just £0.30 per capita in public funds) has the highest viewing at 270 minutes, while the UK (with £58 per capita in public funds) ranks tenth with 212 minutes. Germany, with even greater public funding of television than the UK (£111 per capita), has relative low viewing at 223 minutes, putting it joint-eighth. WorldAtlas, an online geography resource, explains these viewing figures with reference to the numbers of channels and variety of content available in each country.²⁶

It might also be commented that diverse consumer preferences and a cost structure where production costs are mostly fixed and per-consumer costs are negligible are not unique to television: these features are shared by many creative products, including movies and music. While movie production is significantly globalised, being dominated by the Hollywood majors and other large studios,²⁷ and some countries subsidise and promote local production,²⁸ such support is rarely provided to music or other creative industries. In any case, in industries other than television public intervention—where this exists—is of a far smaller scale than PSB.

4. Wider impacts of television viewing

It has long been recognised that television can play an important role in shaping society through its influence on people's knowledge, attitudes and behaviour. The BBC's 'Reithian' founding principles—reflected in its mission statement to this day²⁹—are to inform and educate, as well as to entertain, its audiences.

In economic terms, benefits beyond the individual viewer—sometimes called 'citizen' aspects of broadcasting—can be understood as positive externalities generated by the viewing of certain television content.³⁰ As explained in Section 2.1 above, content that confers positive externalities will tend to be underprovided and under-consumed from the socially optimal perspective, as the individual viewer ignores external benefits when deciding whether and what to watch. Depending on their extent and the effectiveness of the available measures, positive externalities may justify public intervention to stimulate the supply and consumption of such content.

While the presence of positive externalities from certain forms of television viewing has long been understood, a recent strand of economic research seeks to identify wider impacts of television viewing econometrically and to quantify these effects. This section surveys the evidence, exploring first educational, social and behavioural impacts of television viewing and then the role of television as a forum for political information and debate.

²⁵ Ofcom (2017), Figure 46; complete data are provided for 12 countries. Correlation coefficients between TV viewing and public funding (either the monetary amount per capita or the percentage of TV revenue) are negative, indicating that (if anything) higher public funding is associated with lower viewing.

²⁶ <https://www.worldatlas.com/articles/which-country-watches-the-most-tv.html>.

²⁷ See Waterman (2005) for a detailed account of the growth of the Hollywood studios.

²⁸ For example, in France the Centre National de la Cinématographie (CNC) supports and promotes the French film industry, while several countries including the UK grant tax breaks for film production.

²⁹ The BBC's Royal Charter (DCMS 2016) states that '[t]he Mission of the BBC is to act in the public interest, serving all audiences through the provision of impartial, high-quality and distinctive output and services which inform, educate and entertain.'

³⁰ There may also be negative (rather than positive) externalities associated with certain television content, e.g. if watching violent videos fosters aggressive behaviour (though note the caveat below). Since negative externalities call for intervention to restrict distribution of such material on all outlets, this is a matter for broadcasting regulation (and regulation of other distribution channels, e.g. the internet) rather than PSB.

4.1 Educational, social and behavioural impacts of television

Recent economic research has sought to identify and measure the impact of exposure to television and other media on educational and behavioural outcomes. These cover a diverse range of areas, including education, health, family outcomes, occupational and migration decisions, environmental choices, consumption and savings behaviour, social attitudes and crime.

The literature draws on evidence from ‘natural experiments’ (situations where nature, or factors beyond researchers’ control, randomly assigns individuals to different groups, mimicking a randomised control trial), field experiments (where researchers randomly assign individuals to different groups in a real-world setting) and observational data. For example, the fact that licences to operate television services were granted in waves between 1941 and 1952 in the USA, where this timing was apparently uncorrelated with demographic or other relevant variables, has been exploited by researchers to identify impacts of exposure to television.

To understand the impact of television it is necessary not only to examine the direct effect of exposure but also to take account of the crowding-out of alternative activities (the ‘substitution effect’). For example, laboratory experiments typically find a marked increase in aggressive behaviour immediately following exposure to violent video clips, compared to a control group exposed to non-violent clips, supporting the ‘arousal hypothesis’. However, evidence from natural experiments based on cinema releases finds that, contrary to the arousal hypothesis, violent crime is lower on days when audiences for violent films are high (even after controlling for seasonality, weather and other potential confounding effects).³¹ Further investigation suggests that the explanation for this finding lies in substitution away from alternative activities, such as alcohol consumption, with a greater tendency towards violent behaviour.

To give a flavour of this literature, the findings of studies in a few areas are summarised below.³²

Education

Several studies have exploited variation in the geographic availability of television in the 1950s and 1960s to assess the impact of exposure to television during early childhood on later educational outcomes.

Gentzkow and Shapiro (2008) assess educational impacts of television in the United States by combining the variation in television coverage with data from the Coleman Study (a 1965 survey of standardised test scores for over 300,000 American students in grades 6, 9 and 12). As well as finding no evidence to support concerns that exposure to television during pre-school years might adversely affect educational achievement in later years, the study shows that television leads to an improvement in educational test scores in English (though not in mathematics) among minorities and children of immigrants. This can be understood as an example of the substitution effect: for children of non-native English speakers, television (in English) may substitute for activities in other languages, improving English-language skills, while for children of English speakers, substitution from other activities is neutral for language skills.

Similar techniques have been used to assess the impact of television programming aimed at raising educational outcomes. *Sesame Street*, an American television series for pre-school children first

³¹ See Dahl and DellaVigna (2009).

³² For details of these and other studies see the comprehensive and fascinating survey by Stefano DellaVigna and Eliana La Ferrara in the *Handbook of Media Economics* (DellaVigna and La Ferrara, 2015).

broadcast in 1969 on the country's Public Broadcasting Service (PBS), was designed to 'foster intellectual and cultural development in pre-schoolers,'³³ especially for disadvantaged children that might otherwise have little access to pre-school education.

To assess the impact of *Sesame Street* on educational and labour market outcomes, Kearney and Levine (2019) exploit variation in geographic access to UHF signals on which the PBS service was often broadcast, which meant that initially around a third of the population did not have access to the show. The study finds that the introduction of *Sesame Street* had a sizeable and significant impact on educational outcomes through the early school years, with the exposed student cohorts 14 percent more likely to be attending the grade appropriate for their age in middle and high school. Impacts are found to be larger for boys and for black and Hispanic children. Looking at longer-term outcomes, the study finds that cohorts exposed to the show are more likely to be employed as adults, and have somewhat higher wages (in line with the estimated improvements in test scores and grade-for-age status).

Family outcomes

Television can play a role in shaping family and social outcomes by providing role models that are then imitated (or in some cases avoided) in the viewer's own behaviour. Research has investigated the impact of role models in the media on family outcomes, such as family planning and age at marriage (important for policy targets regarding fertility rates in some developing countries), and attitudes towards domestic violence.

La Ferrara, Chong and Duryea (2012) estimate the effect of broadcaster Globo's highly popular television soap operas ('telenovelas') on fertility rates in Brazil by exploiting differences in the timing of Globo's entry between municipal areas. Between 1965 and 1999 these programmes predominantly showed female characters with just one or no children, in marked contrast with fertility rates in Brazil at that time. The study finds that exposure to Globo's broadcasts decreases the probability of giving birth by 0.5 percentage points (an effect comparable to increasing a woman's education by 1.6 years), with the effect beginning exactly one year after Globo's entry.³⁴ Taken together, the effects identified in the paper suggest that Globo's expansion accounted for around 7 percent of the reduction in the probability of giving birth between 1980 and 1991.

While positive role models may generate imitation, portrayal of a difficult situation can have persuasive effects in the opposite direction. Kearney and Levine (2015) examine the impact of the American reality television series *16 and Pregnant*, which shows high school students dealing with the hardships of pregnancy, on teenage fertility in the United States. The study finds suggestive evidence that the programme triggers information-seeking and discussion on birth control and abortion: a spike is seen for these terms in Google searches and Twitter messages on the day a new episode is released. Using a database of US birth data, the authors estimate that the show leads to a 5.7% reduction in teen births in the 18 months following its introduction, around a third of the total decline in teen births over that period.

³³ Cooney (2019). The publication of the report in 1966 led to the creation of *Sesame Street* and the company that oversaw its production, the Children's Television Workshop.

³⁴ In a further demonstration of imitative behaviour, the study finds evidence of the naming of babies after characters shown in the novela broadcast during the year in which they were born.

Health

A number of researchers have considered the impact of media exposure on health. Some older investigations into potential ‘copycat’ effects of media coverage of suicide (e.g. of a celebrity) find evidence of a large imitation effect, but follow-up studies find this evidence to be unreliable (e.g. due to the lack of proper controls for seasonality).³⁵

Investigations into the effectiveness of smoking cessation messages provide some supportive evidence for the effectiveness of media exposure, though (as for suicide imitation) further evidence is needed. In a field experiment in the southern United States, smoking cessation messages were broadcast on radio in some areas but not others. Surveying 2,000 adolescents 18 months after exposure to the radio messages, Bauman, LaPrelle, Brown, Koch and Padgett (1991) find an impact on the self-reported valuation of smoking, but not smoking rates. In another study, Farrelly, Nonnemaker, Davis and Hussin (2009) evaluate the effect of exposure to a U.S. smoking prevention campaign (which was not randomised), estimating that this may have reduced smoking initiation by as much as 20 percent.

Soap operas can be a means of promoting awareness of important health issues and influencing behaviour. Between 1993 and 1999, Radio Tanzania broadcast the soap opera *Twende na Wakati* (*Let's Go with the Times*), produced together with the government and United Nations Population Fund (UNFPA) to convey messages about HIV prevention and other health-related themes. Vaughan, Rogers, Singhal and Swalehe (2000) evaluate its effectiveness by comparing outcomes with a ‘control group’ in a region of the country where the programme was not broadcast between 1993 and 1995. They find it to have been effective in promoting HIV-responsible behaviour, such as increasing the adoption of condoms and reducing the number of sexual partners.

Conclusion on educational, social and behavioural impacts

The studies surveyed here, together with many others, provide compelling evidence that television (and radio) coverage can have significant and sizeable impacts on educational outcomes, health awareness and family and social behaviours. Nonetheless, further research is needed to assess the robustness of some findings and the duration of the identified effects.

The studies also illustrate the importance of providing socially beneficial material in a form that is entertaining to the viewer. As DellaVigna and La Ferrara (2015) point out, the demand for entertainment plays a key role in this area, with the economic and social impacts of the media emerging largely as by-products.

4.2 Role of the media in the political process

Television (together with other media) plays several key roles in the political process. Television is an important source of information to voters on political matters, most notably through news coverage. It offers a forum for discussion and debate on issues of political and national importance, e.g. current affairs programmes and phone-ins, and provides politicians with a channel for conveying messages to voters. Finally, broadcaster investigations scrutinise the actions of politicians and public bodies, bringing to light failings and abuses which might otherwise go unnoticed.

The benefits conferred by media coverage of political affairs go beyond the individual viewer. Other members of a democracy benefit when voters are well informed about political topics and exposed to political debate, and monitoring of politicians’ activities benefits all citizens. These benefits represent

³⁵ Bollen and Phillips (1982); Baron and Reiss (1985).

positive externalities, hence—as explained in Section 2.1 above—the associated programming is likely to be underprovided and under-consumed from the social perspective.

Recent literature in political economy explicitly models the media sector and its role in the political process. Key elements include the way in which media outlets filter information (i.e. what they choose to publish), responses of viewers/voters to the information they receive and resulting impacts on political accountability and policy outcomes. Empirical studies investigate voter responses to media presence (e.g. voter turnout and knowledge of political matters), media outlets' choice of political coverage and impacts on political outcomes.³⁶ This literature covers various types of media: local newspaper markets provide a rich ground for econometric studies due to the variation between areas, while timing differences in the introduction of television and radio across regions form the basis for empirical research into these media types. As evidence of underlying mechanisms, findings from studies of other media are likely also to have relevance to television.

Media presence and voter behaviour

A number of studies examine the impact of media presence on political participation in the form of voter turnout. Gentzkow, Shapiro and Sinkinson (2011) study the effect of newspaper entry and exit on political participation in the United States between 1869 and 2004, finding that an additional newspaper title increases voter turnout in both presidential and congressional elections by 0.3 percent. The authors attribute this positive relationship to the presence of newspapers rather than competition between titles: the effect is greatest for the first newspaper in a market while subsequent entrants raise voter participation to a lesser degree, thus competition is not the main driver but also does not weaken political effects.

Using evidence from the introduction of radio in the US over the period 1920-1940, Strömberg (2004) finds that increased consumption of radio led to an increase in voter turnout in gubernatorial elections (by which state governors are selected), especially in rural areas where prior newspaper readership was low due to high delivery costs. Gentzkow (2006) finds that the introduction of television in the US in the 1940s and 1950s reduced voter turnout in congressional elections by two percent, a finding he attributes to the crowding-out of more informative newspaper consumption.

Prat and Strömberg (2005) provide evidence of the impact of television on political knowledge and voting behaviour. Drawing on evidence from the entry of commercial television in Sweden, in competition with the state broadcaster, they find that commercial television news attracted viewers who were previously undersupplied with political information. Political knowledge and voter participation increased significantly more among people who started watching commercial television news than for those who did not, with the effects being largest among the young and people that were previously not well-informed on political matters. This study provides an alternative interpretation of cross-sectional findings that commercial television is watched by people who are, on average, less well-informed and suggests that concerns that the commercialisation of television undermines information provision and worsens the informational divide are unfounded.

Media's choice of political coverage

If competition between media outlets weakens investment in news coverage, this may have a negative impact on the provision of political information and on voter participation. Some evidence of this mechanism is found by Cagé (2020), using data on local newspapers and voter turnout in France between 1944 and 2014. She finds that an increase in the number of newspapers is associated with

³⁶ For an in-depth survey of the literature see Strömberg (2015).

substantial declines in the average number of journalists, fewer articles, lower provision of 'hard' news and, ultimately, decreased voter turnout in local elections (in contrast to the findings of Gentzkow, Shapiro and Sinkinson, 2011).

Audience size effects on political coverage have been identified by Snyder and Strömberg (2010). Using the match or 'congruence' between media markets and political districts in the United States, defined as the share of a newspaper's readership that lives in a particular congressional district, they find that an increase in congruence from zero to one is associated with 170 more articles written about the congressman in a two-year congressional period (compared with an average of 101 articles). Exploiting exogenous changes in congruence due to redrawing of district boundaries, they demonstrate the importance of local newspapers in providing political information, finding voters to be considerably better informed about their House representatives in areas where newspapers provide greater coverage.

Impact of media on political outcomes

A number of studies examine the impact of the media on political outcomes, such as electoral results, politicians' behaviour and policy choices. Ferraz and Finan (2008) demonstrate the influence of local radio on electoral outcomes in Brazil, finding that corrupt politicians were punished (by not being re-elected) relatively more in areas where local radio stations were present to divulge the findings of municipal audit reports. They also find radio greatly to enhance the re-election chances of non-corrupt politicians. In a similar study of the impact of radio and television in Mexico, Larreguy, Marshall and Snyder (2014) find that voter response to corrupt mayors depends on the presence of local media stations.

Media coverage is found to influence the behaviour of politicians. Using data on voting, committee assignments and witness appearances for 1982-2004, Snyder and Strömberg (2010) find that US congressman representing districts with (exogenously) high media presence are less ideologically extreme, vote more frequently against their party leaders, appear more frequently as witnesses before congressional hearings and may be more likely to serve on constituency-oriented committees (and less on broad policy-oriented committees). These outcomes appear to be a combination of selection effects (i.e. which individual is elected) and incentive effects (how the elected representative behaves).

Media coverage and consumption are found to have significant impacts on policymaking and public expenditure. The studies by Strömberg (2004), Besley and Burgess (2002) and Snyder and Strömberg (2010) demonstrate that geographic areas with greater media presence and higher levels of political coverage (e.g. access to radio, higher newspaper circulation, greater coverage of local politicians) benefit from greater public expenditure than other areas. These studies also provide evidence that voter groups with greater access to media are favoured in the direction of government policy.

Public service broadcasters and the provision of news

In many democratic countries public service broadcasters are major providers of political information. In line with their remit and obligations, PSBs provide substantial coverage of news and current affairs, including political matters. It is likely that, by expanding news output relative to the level that would be chosen by fully commercial operators, the PSBs' coverage makes a significant contribution to raising political awareness and participation.

However, as Prat and Strömberg (2013) note, there is limited empirical evidence on the respective impacts of PSBs and commercial broadcasters on the provision and uptake of political information or on political outcomes. The findings of Prat and Strömberg (2005) suggest that commercial

broadcasters also contribute to the spread of political information, especially among viewers that tended to be undersupplied by the public broadcaster.

Media bias

Concern is often expressed that media coverage may favour certain politicians, political parties or interest groups, and that its influence on voter behaviour—discussed above—may be exploited to distort democratic outcomes. While a review of the extensive theoretical and empirical literature on media bias is beyond the scope of this paper,³⁷ the role of PSBs in relation to media bias is an important topic for examination.

To provide a counterweight to potential media bias, the PSBs' news coverage needs to be, and be regarded by consumers to be, more accurate, trustworthy and impartial than that of other news providers. There is little quantitative evidence on the degree or direction of any bias in the PSBs' news coverage: while measures of media slant have been estimated for other media outlets using the approaches developed by Groseclose and Milyo (2005) and Gentzkow and Shapiro (2010), as yet no such assessment has been completed for public service broadcasters.³⁸

Turning to how news coverage is regarded, evidence on viewers' perceptions of the PSBs' output is mixed. Ofcom's News Consumption Survey 2020 finds that, among regular users of each media type, television as a whole scores highly for accuracy, trustworthiness and impartiality, being ranked second (after magazines), followed by (in order) print-only newspapers, radio and other websites/apps, with social media being rated significantly lower.³⁹ The high ratings given to television news as a whole may reflect regulation of the sector: under the Ofcom Broadcasting Code all broadcast licensees, not just the PSB channels, are covered by requirements of due impartiality and due accuracy.

Among the TV news channels, however, (non-PSBs) Sky News and CNN are rated more highly than the PSBs on all three attributes (accuracy, trustworthiness and impartiality); notably on impartiality the BBC ranks lowest among the channels surveyed.⁴⁰ The perceived trustworthiness of the PSBs has declined in recent years (perhaps linked in part to the divisive Brexit debate): Ofcom's PSB Tracker research, reported in Ofcom (2020c), finds that the percentage of viewers rating the PSB channels highly for trustworthy news decreased from 67% in 2014 to 60% in 2019.

4.3 Implications for public service broadcasting

The literature surveyed in this section provides evidence that some television programming generates positive externalities in the form of beneficial educational, social and behavioural impacts, and important contributions to the democratic process. Externalities are a well-recognised source of market failure: when a product exhibits positive externalities, the level of production and consumption generated by the market will be too low from the social perspective. Thus, positive externalities provide a rationale for public intervention to increase the provision and consumption of

³⁷ For surveys of the theoretical and empirical literature on media bias see, respectively, Gentzkow, Shapiro and Stone (2015) and Puglisi and Snyder (2015).

³⁸ Gregory S. Crawford and Vardges Levonyan are conducting ongoing research into this topic, but there are as yet no published results.

³⁹ See Ofcom (2020b), Figure 11.4.

⁴⁰ See Ofcom (2020b), Figure 11.5. On accuracy, the percentages of regular users rating the source highly are: CNN 81%, Sky News 76%, BBC TV 72%, ITV and Al Jazeera (each) 71%, Channel 4 70% and Channel 5 65%. On trustworthiness, the percentages are: CNN 79%, Sky News 74%, BBC TV and ITV 71%, Channel 4 70%, Al Jazeera 69% and Channel 5 65%. On impartiality, the percentages are: CNN 77%, Sky News and Al Jazeera 69%, Channel 4 66%, ITV 63%, Channel 5 61% and BBC TV 58%.

the relevant programming. While the current system of public service broadcasting is not the only means by which this might be achieved, positive externalities generated by certain programming provide a basis for continued public intervention in some form.⁴¹

Considering the output of UK PSBs, some falls into categories of programming likely to generate significant positive externalities, e.g. coverage of news (including local) and current affairs, educational material and certain other programming that has beneficial social and behavioural impacts. However, other parts of their broad range of programming, while appealing to individual viewers, would appear to generate few external benefits. Thus, the output of UK PSBs may be seen as a combination of content satisfying individual consumer demands, much of which would otherwise be provided by the market, and programming conferring positive externalities, which the market will tend to underprovide.

Additional considerations arise in relation to news. While criticisms are often levelled at the BBC in particular, there is little quantitative research (of the type conducted for other media outlets) on the degree or direction of bias in the PSBs' output. Another area for consideration is institutional design: what governance and funding structures best protect the impartiality of the PSBs and promote viewers' trust in their coverage of news and current affairs.⁴²

Clearly, socially beneficial programming needs to be made attractive to viewers so that they choose to watch it, especially in the face of the huge expansion in the range of alternative material and services. There is also a danger that excessive amounts of 'worthy' programming seeking to achieve public policy aims might deter viewers, as well as generating complaints of a 'nanny state'. The days when the BBC could rely on its broadcasting monopoly to shield its service from competition and ensure viewing of its output have long since passed. This issue is considered next in Section 5.

5. The effectiveness challenge

The proliferation of content in the digital world poses a particular challenge for interventions aimed at generating positive externalities such as social and educational benefits from programming. While PSBs may readily be instructed to provide socially beneficial content, the benefits are realised only if this is actually watched, whether on television, catch-up services or online.

The viewer's choice of content is driven by their own demand for entertainment and/or information, with external effects emerging as a by-product of this activity. Now that a vast array of content is available for consumers to choose from and many media outlets compete for viewers' attention, it is a considerable challenge for public service broadcasting to be effective in attracting viewers to socially desirable content.

Recognising this point, John Reith advocated the 'brute force of monopoly' as a means for the BBC to determine what people watched, and for several decades the BBC's control of the airways was

⁴¹ Viewing of some television content generates negative externalities. Mitigating these, however, requires controls to be imposed on all outlets, not just a small number of selected broadcasters. Such measures can be seen in the Ofcom Broadcasting Code, which includes sections on protecting the under-eighteens; harm and offence; and crime, disorder, hatred and abuse.

⁴² See Weeds (2016) for an assessment of PSB funding against a number of criteria including political considerations.

absolute.⁴³ But this time has long since passed. Since the introduction of multi-channel services on satellite, cable and digital terrestrial television in the 1980s and 1990s and, more recently, the launch of streamed video services including Netflix, Amazon Prime Video, Disney+ and YouTube, a huge range of content is available to consumers. The problem facing PSB in the digital age was put succinctly by Richard Eyre, then Chief Executive of ITV, in 1999⁴⁴:

‘[f]ree school milk doesn’t work when the kids go and buy Coca-Cola because it’s available and they prefer it and they can afford it. So public service broadcasting will soon be dead.’

To achieve its aims, public service programming needs to be attractive to its target audiences. This requires more creativity and, perhaps, greater diversity of output than may have been the case in the analogue era, especially to attract younger audiences whose viewing of PSB channels has fallen more steeply than that of older age groups.⁴⁵ One possible approach is to integrate public service messages into popular programmes, a strategy akin to ‘product placement’ employed by advertisers. A comment by then-Culture Secretary Tessa Jowell, which was criticised in the press at the time, might be understood in this context⁴⁶:

‘those episodes of *EastEnders* that tackle difficult issues of child abuse, drug taking, teenage pregnancy, and so forth, are actually—when they do it responsibly—providing an important public service.’

There is an argument for providing content that confers positive externalities as part of a broad offering alongside purely popular output to draw in viewers. In traditional linear television, techniques such as hammocking⁴⁷ and cross-promotion (e.g. programme trailers) are used to draw viewers from one programme to another, including to boost viewing of socially beneficial content. Must-offer/must-carry regulations ensure that subscribers to cable and satellite TV packages continue to have ready access to the UK PSB channels, helping to maintain their viewing. With video consumption—especially that of younger viewers—increasingly shifting towards streamed services, a similar approach might suggest incorporating socially beneficial content into online services, including the platforms favoured by these consumers (rather than just on the PSBs’ own catch-up services). Integration of socially beneficial content into online platforms would also allow it to be promoted using the recommendation systems employed by these providers.⁴⁸

⁴³ In the 1930s John Reith and others lobbied against competition to the BBC (e.g. from wire broadcasting, an early form of cable retransmission) because it might undermine the ability of the BBC to control the content received by the public. See Coase (1948) and Coase (1950), also discussed in Armstrong and Weeds (2007).

⁴⁴ Eyre (1999), page 5.

⁴⁵ Ofcom (2020c) finds that the decline in viewing of PSB channels between 2014 and 2018 is most marked for younger age groups, with viewing by 16-24 year-olds down by 38% over the period compared with a 18% decline for all individuals, and that this reduction does not appear to be offset by viewing of programming via on-demand services such as BBC iPlayer.

⁴⁶ Quoted in *The Independent*, 2004.

⁴⁷ Hammocking is a broadcasting technique whereby an unpopular programme is scheduled between two popular ones in the hope that viewers will watch it, due to audience stickiness between times slots.

⁴⁸ This may already be happening to an extent, e.g. incorporation of some disaggregated BBC content into the Sky Q box. Intervention may be required to achieve greater integration of socially beneficial content into streaming services, through either broader distribution of the existing PSBs’ programming or the commissioning of additional content with public funding.

An economic assessment of the future of PSB should consider the benefits and costs of public intervention in order to inform recommendations on its purposes, scale and form of provision. Such an analysis would balance estimates of positive externalities such as social and educational benefits against the costs of providing the programming and achieving the viewing levels required to bring about these benefits. If the benefits of PSB are little changed by digitisation while the costs of achieving effectiveness have increased due to greater competition for attention, this might suggest that the appropriate scale of PSB intervention is now lower. On the other hand, it is possible that some social benefits are now greater (e.g. the provision of reliable and impartial coverage in a world of fake news), offsetting potentially higher costs of reaching consumers.

6. Conclusion

This report has discussed the economic rationale for public service broadcasting in the context of the technological developments and market changes collectively described as 'digitisation'. Massively expanded distribution capacity, lower video production costs and the ability for consumers to pay directly for their desired content via a variety of business models greatly mitigate problems generated by preference externalities, largely eliminating the consumer market failures traditionally found in advertising-funded analogue broadcasting. Market provision is now capable of providing a wide variety of high-quality programming, meeting diverse consumer preferences.

However, some caveats to this conclusion should be noted. First, evidence reviewed in this report suggests that minority ethnic and linguistic groups with distinct preferences may be underserved relative to the majority population. Secondly, while globalisation increases the quantity and diversity of content available to each individual, and UK consumers also benefit when international demand stimulates UK production, it may lessen the focus on specific national and local interests. Further research is desirable to assess the impact of these factors on UK consumers and possible interventions that might be required to mitigate them.

Recent economic literature has sought to demonstrate and quantify the impact of television and other media on a variety of social, educational and behavioural outcomes. Since many of these benefits go beyond the viewer themselves, they represent positive externalities which purely market provision is likely to underprovide. While further research is needed to consider the types of programming for which substantial externalities arise and to quantify the benefits, there is a rationale for intervention to increase the production and consumption of the relevant programming. This might be achieved through the PSB system, although other means of provision and delivery of such content could also be considered.

The evidence reviewed in this report shows that media coverage can have demonstrable effects on voter behaviour and political outcomes. Since coverage of news and current affairs generates positive externalities there is a danger of underprovision, which is mitigated by the substantial contributions of the PSBs in this area. Media bias is an important topic for further research: while quantitative studies of political slant have been carried out for commercial media outlets, little such research has been conducted in relation to PSBs. Another area for consideration is institutional design, to assess what governance and funding structures best protect the impartiality of the PSBs and build viewer trust.

The huge expansion in content and services competing for audience attention creates an effectiveness challenge for public interventions aimed at promoting socially beneficial programming which generates positive externalities. It is not sufficient for such content merely to be made available to consumers: for the wider benefits to be realised it must also be watched. Socially beneficial content

needs to be made attractive to viewers, especially target audiences, so that they choose to watch this over the vast range of alternative content that is now available. This consideration becomes more pressing as viewers—especially those in younger age groups—increasingly turn away from broadcast TV, reducing the effectiveness of this form of intervention. Recommendations on the future form and scale of PSB should be informed by evidence on how its costs and benefits are changing to ensure that it remains relevant and effective for the digital age.

References

- Anderson, Simon P., and Joel Waldfogel (2015). "Preference Externalities in Media Markets." In *Handbook of Media Economics*, edited by Simon P. Anderson, David Strömberg and Joel Waldfogel, Elsevier North-Holland, pp. 3-40.
- Armstrong, Mark, and Helen Weeds (2007). "Public Service Broadcasting in the Digital World," in *The Economic Regulation of Broadcasting Markets*, edited by Paul Seabright and Jürgen von Hagen, Cambridge University Press, pp. 81-149.
- BARB (2020). "The SVOD Report 2020," 12 May 2020.
- Baron, James N., and Peter C. Reiss (1985). "Same Time, Next Year: Aggregate Analysis of the Mass Media and Violent Behavior." *American Sociological Review*, Vol. 50, No. 3, pp. 347-363.
- Bauman, K.E., J. LaPrelle, J.D. Brown, G.G. Koch and C.A. Padgett (1991). "The Influence of Three Mass Media Campaigns on Variables Related to Adolescent Cigarette Smoking: Results of a Field Experiment." *American Journal of Public Health*, Vol. 81, No. 5, pp. 597-604.
- BBC (2013). "Public and Private Broadcasters Across the World – The Race to the Top." December 2013.
- Beebe, Jack H. (1977). "Institutional Structure and Program Choices in Television Markets." *Quarterly Journal of Economics*, Vol. 91, No. 1, pp. 15-37.
- Berry, Steven T., Alon Eizenberg and Joel Waldfogel (2016). "Fixed Costs and the Product Market Treatment of Preference Minorities." *Journal of Industrial Economics*, Vol. 64, No. 3, pp. 466-493.
- Berry, Steven T., and Joel Waldfogel (1999). "Public Radio in the U.S.: Does it Correct Market Failure or Cannibalize Commercial Stations." *Journal of Public Economics*, Vol. 71, No. 2, pp. 189-211.
- Berry, Steven T., and Joel Waldfogel (2001). "Do mergers increase product variety? Evidence from radio broadcasting." *Quarterly Journal of Economics*, Vol. 116, No. 3, pp. 1009-1025.
- Berry, Steven T., and Joel Waldfogel (2010). "Product quality and market size." *Journal of Industrial Economics*, Vol. 58, No. 1, pp. 1-31.
- Besley, Timothy, and Robin Burgess (2002). "The Political Economy of Government Responsiveness: Theory and Evidence from India." *Quarterly Journal of Economics*, Vol. 117, No. 4, pp. 1415-1451.
- Bollen, Kenneth A., and David P. Phillips (1982). "Imitative Suicides: A National Study of The Effects of Television News Stories." *American Sociological Review*, Vol. 47, No. 6, pp. 802-809.
- Cagé, Julia (2020). "Media Competition, Information Provision and Political Participation: Evidence from French Local Newspapers and Elections, 1944-2014." *Journal of Public Economics*, Vol. 185, Article 104077.
- Carr, David (2014). "Barely Keeping Up in TV's New Golden Age." *New York Times*, 9 March 2014.
- Christian, Alex (2019). "Why do critics hate Netflix movies so much?" *Wired Magazine*, 17 August 2019.
- Coase, Ronald H. (1948). "Wire broadcasting in Great Britain." *Economica*, Vol. 15, No. 59, pp. 194-220.
- Coase, Ronald H. (1950). *British Broadcasting: A Study in Monopoly*, Longmans, Green and Co., London.
- Cooney, Joan Ganz (2019). "The Potential Uses of Television in Preschool Education," New York, NY: Joan Ganz Cooney Center at Sesame Workshop. (Original work, a report to the Carnegie Corporation of New York, published 1966.)

- Crawford, Gregory S., Lachlan Deer, Jeremy Smith and Paul Sturgeon (2017). "The Regulation of Public Service Broadcasters: Should there be more advertising on television?" University of Zurich Department of Economics Working Paper No. 268, November 2017.
- Dahl, Gordon, and Stefano DellaVigna (2009). "Does Movie Violence Increase Violent Crime?" *Quarterly Journal of Economics*, Vol. 124, No. 2, pp. 677-734
- Davies, Gavyn (1999). "The Future Funding of the BBC," Report of the Independent Review Panel to Department of Culture, Media and Sport.
- DCMS (2016). "Royal Charter for the continuance of the British Broadcasting Corporation." Cm9365.
- DellaVigna, Stefano, and Eliana De Ferrara (2015). "Economic and Social Impacts of the Media." In *Handbook of Media Economics*, edited by Simon P. Anderson, David Strömberg and Joel Waldfogel, Elsevier North-Holland, pp. 723-768.
- Dixit, Avinash K., and Joseph E. Stiglitz (1977). "Monopolistic Competition and Optimum Product Diversity." *American Economic Review*, Vol. 67, No. 3, pp. 297-308.
- Duncan, James H. (1994). *Duncan's Radio Market Guide*. Available at www.americanradiohistory.com.
- Eyre, Richard (1999). MacTaggart lecture at the Edinburgh International Television Festival, 27 August 1999.
- Farrelly, M.C., J. Nonnemaker, K.C. Davis and A. Hussin (2009). "The Influence of the National truth Campaign on Smoking Initiation." *American Journal of Preventive Medicine*, Vol. 36, No. 5, pp. 379-384.
- Ferraz, Claudio and Frederico Finan (2008). "Exposing Corrupt Politicians: The Effects of Brazil's Publicly Released Audits on Electoral Outcomes." *Quarterly Journal of Economics*, Vol. 123, No. 2, pp. 703-745.
- Friedman, Milton (1962). *Capitalism and Freedom*. University of Chicago Press.
- Gentzkow, Matthew (2006). "Television and Voter Turnout." *Quarterly Journal of Economics*, Vol. 121, No. 3, pp. 931-972.
- Gentzkow, Matthew, and Jesse M. Shapiro (2008). "Preschool Television Viewing and Adolescent Test Scores: Historical Evidence from the Coleman Study," *Quarterly Journal of Economics*, Vol. 123, No. 1, pp. 279-323.
- Gentzkow, Matthew, and Jesse M. Shapiro (2010). "What Drives Media Slant? Evidence from U.S. Daily Newspapers." *Econometrica*, Vol. 78, No. 1, pp. 35-71.
- Gentzkow, Matthew, Jesse M. Shapiro and Michael Sinkinson (2011). "The Effect of Newspaper Entry and Exit on Electoral Politics." *American Economic Review*, Vol. 101, No. 7, pp. 2980-3018.
- Gentzkow, Matthew, Jesse M. Shapiro and Daniel F. Stone (2015). "Media Bias in the Marketplace: Theory." In *Handbook of Media Economics*, edited by Simon P. Anderson, David Strömberg and Joel Waldfogel, Elsevier North-Holland, pp. 623-645.
- George, Lisa M. (2007). "What's fit to print: the effect of ownership concentration on product variety in daily newspaper markets." *Information Economics and Policy*, Vol. 19, No. 3-4, pp. 285-303.
- George, Lisa M., and Joel Waldfogel (2003). "Who Benefits Whom in Daily Newspaper Markets?" *Journal of Political Economy*, Vol. 111, No. 4, pp. 765-784.
- George, Lisa M., and Joel Waldfogel (2006). "The New York Times and the market for local newspapers." *American Economic Review*, Vol. 96, No. 1, pp. 435-447.
- Groseclose, Tim, and Jeffrey Milyo (2005). "A Measure of Media Bias." *Quarterly Journal of Economics*, Vol. 120, No. 4, pp. 1191-1237.

- Kearney, Melissa S., and Phillip B. Levine (2015). "Media Influences on Social Outcomes: The Impact of MTV's *16 and Pregnant* on Teen Childbearing." *American Economic Review*, Vol. 105, No. 12, pp. 3597-3632.
- Kearney, Melissa S., and Phillip B. Levine (2019). "Early Childhood Education by Television: Lessons from *Sesame Street*," *American Economic Journal: Applied Economics*, Vol. 11, No. 1, pp. 318-350.
- La Ferrara, Eliana, Alberto Chong and Suzanne Duryea (2012). "Soap Operas and Fertility: Evidence from Brazil." *American Economic Journal: Applied Economics*, Vol. 4, No. 4, pp. 1-31.
- Larreguy, Horacio, John Marshall and James M. Snyder, Jr. (2020). "Publicising Malfeasance: When the Local Media Structure Facilitates Electoral Accountability in Mexico." *Economic Journal*, Vol. 130, No. 631, pp. 2291-2327.
- Mankiw, N. Gregory, and Michael D. Whinston (1986). "Free Entry and Social Inefficiency." *RAND Journal of Economics*, Vol. 17, No. 1, pp. 48-58.
- Osborne, Peter (2015). "Why I have resigned from the Telegraph." Open Democracy, 17 February 2015.
- Ofcom (2017). "International Communications Market Report 2017." 18 December 2017.
- Ofcom (2019). "Media Nations: UK 2019." 7 August 2019.
- Ofcom (2020a). "Media Nations 2020: UK." 5 August 2020.
- Ofcom (2020b). "News Consumption in the UK: 2020." 13 August 2020.
- Ofcom (2020c). "Small Screen: Big Debate – a five-year review of Public Service Broadcasting (2014-18)." 27 February 2020.
- Oliver & Ohlbaum (2020). "TV streaming habits in lockdown." 15 May 2020.
- Phillips, Trevor (2016). Speech at the IPPR Oxford Media Conference, 2 March 2016.
- Prat, Andrea, and David Strömberg (2005). "State television and voter information," CEPR Discussion Paper No. 4989.
- Prat, Andrea, and David Strömberg (2013). "The Political Economy of Mass Media." In *Advances in Economics and Econometrics: Tenth World Congress*, edited by Daron Acemoglu, Manuel Arellano and Eddie Dekel, Cambridge University Press, pp. 135-187.
- Puglisi and Snyder (2015). "Empirical Studies of Media Bias." In *Handbook of Media Economics*, edited by Simon P. Anderson, David Strömberg and Joel Waldfogel, Elsevier North-Holland, pp. 647-667.
- Rogers, Robert P., and John R. Woodbury (1996). "Market structure, program diversity, and radio audience size." *Contemporary Economic Policy*, Vol. 14, No. 1, pp. 81-91.
- Salop, Steven C. (1979). "Monopolistic competition with outside goods." *Bell Journal of Economics*, Vol. 10, No. 1, pp. 141-156.
- Scannell, Paddy (1990). "Public service broadcasting: the history of a concept." In *Understanding Television*, edited by Andrew Goodwin and Garry Whannel, Routledge, pp. 11-29.
- Snyder, James M., and David Strömberg (2010). "Press Coverage and Political Accountability." *Journal of Political Economy*, Vol. 118, No. 2, pp. 355-408.
- Steiner, Peter O. (1952). "Program patterns and preferences, and the workability of competition in broadcasting," *Quarterly Journal of Economics*, Vol. 66, No. 2, pp.194-223
- Strömberg, David (2004). "Radio's Impact on Public Spending." *Quarterly Journal of Economics*, Vol. 119, No. 1, pp. 189-221.
- Strömberg, David (2015). "Media Coverage and Political Accountability: Theory and Evidence." In *Handbook of Media Economics*, edited by Simon P. Anderson, David Strömberg and Joel Waldfogel, Elsevier North-Holland, pp. 595-622.

- Sutton, John (1991). *Sunk Costs and Market Structure*, MIT Press.
- Sweeting, Andrew (2010). "The effects of mergers on product positioning: Evidence from the music radio industry." *RAND Journal of Economics*, Vol. 41, pp. 372-397.
- Sweney, Mark, and Tara Conlan (2019). "Netflix to spend \$500m on British-made TV shows and films." *The Guardian*, 20 September 2019.
- Vaughan, Peter W., Everett M. Rogers, Arvind Singhal and Ramadhan M. Swalehe (2000). "Entertainment-education and HIV/AIDS Prevention: A Field Experiment in Tanzania." *Journal of Health Communications*, Vol. 5, No. 1, pp. 81-100.
- Waldfoegel, Joel (2003). "Preference Externalities: An Empirical Study of Who Benefits Whom in Differentiated Product Markets" *RAND Journal of Economics*, Vol. 34, No. 3, pp. 557-568
- Waldfoegel, Joel (2004). "Who benefits whom in local television markets?" *Brookings-Wharton Papers on Urban Affairs*, pp. 257-305.
- Waldfoegel, Joel (2007). *The Tyranny of the Market*, Harvard University Press.
- Waldfoegel, Joel (2017a). "The Random Long Tail and the Golden Age of Television." In *Innovation Policy and the Economy*, edited by Shane Greenstein, Josh Lerner and Scott Stern, Vol. 17, pp. 1-25.
- Waldfoegel, Joel (2017b). "How Digitization Has Created a Golden Age of Music, Movies, Books, and Television." *Journal of Economic Perspectives*, Vol. 31, No. 3, pp. 195-214.
- Waterman, David (2005). *Hollywood's Road to Riches*, Harvard University Press.
- Weeds, Helen (2013). "Digitisation, Programme Quality and Public Service Broadcasting," in *Is there Still a Place for Public Service Television?*, edited by Robert Picard and Paolo Siciliani, Oxford Reuters Institute/BBC Trust.
- Weeds, Helen (2016). "Is The Television Licence fee fit for Purpose in the Digital Era?," *Economic Affairs*, Vol. 36, No. 1, pp. 2-20.