BBC Trust
Response to the Department for Culture, Media and Sport’s Charter Review consultation
Technical Annex B: Market Impact
October 2015
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Introduction

The Government’s Green Paper raised two questions about the market impact of the BBC. In particular it asked where evidence suggested that the BBC has a positive or negative wider impact on the market and it asked whether the BBC was crowding out commercial competition.

The BBC Trust commissioned KPMG to conduct independent analysis in order to provide evidence about the BBC’s market impact in relation to the two questions raised. The independent analysis, carried out by KMPG, is published in two reports, each setting out the detailed methodology and assumptions used.

The first report looks at whether the BBC is crowding out commercial competition. In particular, it examines three areas where there have been some accusations that the BBC does ‘crowd out’ competition – namely news and entertainment on TV and more widely in local news.

The KPMG analysis has used historical data and econometrics to study how variations in BBC activities have affected commercial competitors. In particular, it tested whether the BBC’s news and entertainment on TV and the BBC’s local news have affected commercial competitors’ ability to gain audience, increase revenues and increase content expenditure.

The analysis concludes that there is no clear evidence that any increase in the overall level of BBC activity has resulted in a decline in commercial broadcasters’ viewer hours or revenues, or local newspapers’ readership or revenues (or the opposite). Additionally the literature review on crowding out show that there is little evidence of other Public Service Broadcasters across the world crowding out private sector activity.

The second report looks at the question of potential positive impacts on the wider market. It focuses on the BBC’s impact in particular areas where it is often asserted that the BBC has had a positive effect on the market, namely two areas of investment in the last ten years – its move to Salford and its innovation online, as well as its relationship with the music industry.

The analysis found a positive contribution of the BBC to the Salford area in terms of employment, increased skill levels and spill-over effects. The BBC’s activities in relation to music provide support to the commercial music industry, through radio appearances as well as BBC TV programmes featuring music. In the online sector the report finds that the BBC has had a positive economic impact on the sector via two channels, both resulting in overall market development and expansion:

- technology spill-overs driven by the BBC’s innovation in the market; and
- knowledge and skills spill-overs arising from BBC Online collaborations, partnerships and wider industry initiatives.

Although the independent reports that KPMG have presented us with do not find evidence of negative impacts from the BBC’s operations in various markets, the Trust believes that it is very important to guard against the risk of future negative impacts and stifling of innovation and creativity in the market. The greatest risk of this is likely to be at the micro- rather than macro- level and so in any regulatory environment it is essential that a body that is sufficiently independent of the BBC and of other companies in the market can assess the evidence (including Market Impact Assessments conducted by Ofcom) and come to an impartial decision about whether proposed new BBC services should proceed.
An economic review of the extent to which the BBC crowds out private sector activity

A KPMG Report commissioned by the BBC Trust

October 2015

FINAL REPORT
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The opinions and conclusions expressed in this report are those of KPMG and do not necessarily align with those of the BBC Trust.
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Executive summary

The Department for Culture, Media and Sport (‘DCMS’) recently published the BBC Green Paper; a public consultation seeking views that will inform the UK Government’s future decisions about the British Broadcasting Corporation (‘BBC’).

Does the BBC ‘crowd out’ private sector provision of broadcasting? And does the BBC website ‘crowd out’ the provision of local news by local and regional newspapers?

These are the questions that KPMG has been asked to investigate by the BBC Trust in the context of the Green Paper.

We focus, in our analysis, on a definition of ‘crowding out’ that is, we consider, both realistic in practice and that can be measured; what happens to the level of activity in commercial broadcasting, and to local newspaper readership and revenues, when the BBC’s activity increases or decreases by amounts observed in recent history.

We do not try to ascertain what the commercial broadcasting or local newspaper businesses would have looked like had the BBC never existed, or how they would perform if the BBC ceased to operate in certain sectors. One is a hypothetical question that bears no relevance to choices that could be made today, and the other has not, as far as we are aware, been suggested as a potential policy decision.

The question is, rather, about the BBC’s optimal size.

The concern being aired in the present debate is, in particular, that the BBC could be too large and might be engaged in activities to an excessive degree that would have taken place in the private sector anyway. If the BBC were reduced in size, so the argument runs, the private sector would step forward and generate the content. It would follow that the benefits from the BBC being there – in terms of provision of essential content that would not be provided at a low price by commercial channels – are actually low. Not for everything the BBC does, of course, but for the activities that the BBC potentially does to excess.

Consequently, our analysis focuses on questions relevant to the current debate (whether the BBC increasing or decreasing the scale of its activity is likely to have any discernible effect on commercial broadcasters or local papers’ businesses) as opposed to theoretical questions (what the world would look like if the BBC were not there or, even, were reduced in size by a much larger amount than is realistic to assume).

We consider this crowding out question from an economic perspective. We look at historical measures of the size of the BBC and seek to establish the extent to which variations in the size of the BBC appear to affect the size of the commercial sector.

We have looked at three relevant measures of size when it comes to commercial television broadcasters:

- the amount of broadcast content consumed, measured by viewer hours;
- the amount of revenue generated; and
- the amount of that revenue which is spent on creating content (making programmes).

All three are, potentially, important to assessing the crowding out question.

What people choose to watch can be expected to be one of a small number of important drivers of the revenues earned by commercial broadcasters (whether from advertisers or subscriptions), their profits and, consequently, what they are willing and able to spend on the supply of content. If what
the BBC does affect commercial broadcasters’ viewer hours, this might also be expected to impact on their revenues, profits and investments in programming.

Commercial broadcasters’ profits (which cannot be measured as accurately from publicly available sources for the sector as a whole, in contrast to revenues which can be measured) are the ultimate objective of any commercial operator. It seems, therefore, a pertinent question as to whether a public service broadcaster (‘PSB’) is infringing on commercial organisations’ ability to make profits from broadcasting in a way that might not be present in other sectors where profit-seeking businesses do not face similar competition from a large not-for-profit supplier.

Arguably, the most important measure of crowding out is the third, since one of the suggested purposes of shrinking the BBC is that more programmes should be made by the commercial sector.

KPMG has undertaken, in this report, an analysis of ‘crowding out’ in specific genres. In this study, we have been asked to look at the impact of the BBC on the provision, by private sector broadcasters, of news and entertainment.

We have also been asked to look at the impact of the BBC website on local newspapers. To do this, we ask questions similar to those set out above; has the growth of the BBC’s online presence had any discernible effect on local newspapers’ readership and / or on their revenues?

We have assembled data on the consumption of broadcasting, measured in viewer hours, from 2002 to 2014, for the commercial sector and for the BBC.

We have also collected data on the circulation, readership and revenues of local newspapers, together with BBC News website hits.

The report displays these time series in chart form, to allow the reader to judge whether the evidence supports the proposition that BBC activity ‘crowds out’ – i.e. is negatively correlated with – private sector activity.

We have also carried out a large number of econometric regressions, the purpose of which is to control for the other factors which influence the size of the commercial broadcasting sector. For each of the crowding out hypotheses that we were asked to test, we followed the same two-step econometric procedure:

1. we sought to find the equation which best explained the size of the commercial sector without including any variable which represented BBC activity; and
2. we then added, to our baseline equation, an explanatory variable which represented BBC activity (e.g. BBC spending on programmes in the relevant genre).

The econometric analysis of broadcasting estimates equations to explain commercial viewer hours and revenues. These are influenced by factors such as the quantity and quality of commercial programmes provided, which depends on the revenues available to finance them, which in turn depends on the state of the economy. If consumer spending is buoyant, advertising revenue will be buoyant, and the quality and quantity of commercial programming will expand. The question is whether, when all possible explanation of variations in commercial viewer hours have been included in the equation, the addition of a variable which captures the strength of competition from the BBC (e.g. BBC viewer hours) adds significantly to the explanation. If no significant BBC effect can be found, then there is no evidence of crowding out.

Similarly, if we find that the decline in local newspaper readership / circulation can be satisfactorily explained by variables such as the degree of Internet penetration, the growth of household incomes, advertising revenues, consumer spending and time trends that antedate the creation of the BBC website, with no significant correlation with the number of BBC News website hits, then we will have found no evidence of crowding out. If the number of BBC News website hits emerges from the regression with a significant negative coefficient, then we would conclude that crowding out has occurred in this market.
The general finding from our analysis is that there is no clear evidence, from the available data, that any increase (decrease) in the level of BBC activity has resulted in a decline (increase) in commercial broadcasters’ viewer hours or revenues, or local newspapers’ readership or revenues.

It would be a step too far to say that our analysis demonstrably proves there is no possibility that the BBC has, to some degree, crowded out commercial broadcasters’ or local newspapers’ activity. We can only assess whether actual changes in BBC activity have appeared to have any impact on commercial broadcasters or local newspapers. It might be that if the BBC were to increase or reduce the level of its activity by a larger degree than has been seen in the last 10-20 years, this might have a discernible effect on commercial broadcasters or local newspapers. But there is no way of knowing whether this would, or would not, be the case.

Also noteworthy is that the conclusions we reach, that there is little or no evidence that the BBC’s activity does crowd out commercial broadcasters or newspapers, are consistent with a raft of other third party analyses, which we summarise in the literature review section of this paper.

Moreover, it is accepted (again, in a number of academic articles that we summarise in our report) that there are benefits that accrue to competition from public sector broadcasters like the BBC, as well as potential crowding out, including benefits in quality, innovation, and the provision of content that would otherwise not be supplied by commercial broadcasters alone. These would need to be set against any potential crowding out effects.

We now summarise the evidence that leads us to the conclusion that there is no clear evidence that the BBC’s activity crowds out that of commercial broadcasters or newspapers.

**Broadcast television: analysis of viewer hours**

In these sections of the report, the hypothesis tested is whether an increase in consumption of BBC television broadcasts, measured by viewer hours per month, crowds out consumption of commercial broadcasting. The report examines two genres: entertainment and news.

**Entertainment**

The chart evidence (Figure 5, page 21) reveals (after abstracting from the strong seasonal pattern), a decline in BBC viewer hours from 2002 to 2005, stability from 2005 to 2009 and a strong rise between 2009 and 2011 to a higher level which is then sustained.

Commercial viewer hours in the 2002-05 period are stable or declining.

After 2005, they rise and in 2011 they rise again. So commercial entertainment viewer hour rose in the last years of the boom, were stable in the recession and rose again as the recovery took hold.

There is, thus, a strong positive correlation (evidence not consistent with crowding out) with BBC viewer hours from 2007 to 2014 (flat in the recession, rising in the recovery) and a weak negative correlation between 2002 and 2007 (when BBC viewer hours fell a little and commercial viewer hours rose by very much more).

Our econometric analysis confirms that there is no firm, statistically significant, evidence that any increase (decrease) in the BBC’s activity results in a reduction (increase) in commercial broadcasters’ viewer hours in the entertainment category.

**Broadcast news**

Consumption of news broadcasts (viewer hours per month) shows a much less pronounced seasonal pattern than entertainment, with spikes associated with by big new events (e.g. the Iraq war).

Commercial broadcast news viewership has been in continuous steady decline since 2006.
BBC news programmes consistently attract more viewers than commercial news channels in the data analysed but since 2003, consumption of BBC news has been broadly stable while commercial news consumption was declining.

Since 2010, the BBC has also seen lower consumption of its news programmes.

The overall picture that emerges (see Figure 7, page 22) is that commercial news has been steadily declining while BBC news has been flat or very slightly declining. Any correlation between the two series is positive and the data, thus, provide no support for the crowding out hypothesis.

Our econometric analysis, like with the entertainment category, confirms that there is no firm, statistically significant, evidence that any increase (decrease) in the BBC’s activity results in a reduction (increase) in commercial broadcasters’ viewer hours in the news broadcasting category.

**Analysis of revenues and spending on programmes (in real terms, £m at 2014 prices)**

This section of the report focuses on incomes and programme spending.

Figure 8 (page 23) shows how broadcasting revenues from all sources have evolved since 2008.

BBC revenue allocated to television increased between 1998 and 2004 but has been in decline since.

Total commercial broadcasters’ revenues, in contrast, increased rapidly, by an average of 3.1 per cent a year, in real terms, between 1998 and 2014. There was, over this period, a marked change in the composition of those revenues. Advertising revenue increased between 1998 and 2005 but have been in decline since 2005, by an average of 2.1 per cent a year in real terms. By contrast, subscription revenues have risen throughout the period, by an average of 7.3 per cent a year, in real terms, since 1998, and are now comfortably the largest source of broadcasting revenues.

The clear message from Figure 8 is that the strong increase in subscription revenue from 1998 to 2014 has swelled total revenue available to spend on television broadcasting, despite the decline in advertising revenues since 2004.

The strong growth in commercial television operators’ revenues in real terms, therefore, suggests that there is no evidence that any change in the BBC’s activities have damaged commercial television operators’ commercial performance.

**BBC online and local newspapers**

The circulation of local newspapers has been in decline since 2001, with a clear acceleration in the pace of this decline taking place after the economic crisis struck in 2007 (Figure 15, page 32).

Local newspapers’ revenues show a similar pattern, rising between 1996 and 2004 (despite declining circulation) when the economy was strong, and falling from 2007 onwards after the recession struck.

However, Figure 15 reveals that the downturn in advertising revenues was already underway, in 2005, while the economy was still strong.

One possibility is that this decline is, at least in part, attributable to the rise in Internet penetration, which increased from nearly a third of all households in 2001 to 85 per cent of households in 2014. The Internet provides users with access to much of the information that was previously sourced from local newspapers.

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1 The revenue data was only available on an annual basis, giving only 14 observations; not enough for a robust econometric analysis. Any regression results we were able to produce were consistent with the hypothesis that any reduction in BBC revenues would have no effect on the revenues available to commercial broadcasters. We do not, however, consider that the available data are sufficient for a regression analysis to be relied upon in this area, either to prove or disprove crowding out.
Another possibility is that the increase in the provision, and use of, BBC news online can, at least in part, explain the decline in local newspapers’ readers and revenues. Statistically and graphically (Figure 16, page 33), it is difficult to isolate the effect of the growth of BBC online from the general growth of the Internet. This is because there is a very strong positive correlation between the growth in BBC News website hits and the growth of Internet penetration.

The numbers, therefore, need to be considered alongside other, more qualitative, information.

In particular, an analysis of the impact of the BBC on local newspapers should be mindful of the fact that the BBC’s News website overlaps only with a subset of the content and services provided by local newspapers:

- Local newspapers’ news coverage tends to be more localised than the BBC News website’s local news coverage. Although there is some overlap in the news content provided by local newspapers and the BBC, local papers provide a significant amount of additional content that is simply not available from the BBC website.

- It is not only the BBC that reports news online at a local level in the UK. A number of other commercial news providers offer websites supporting similar services, including local papers themselves. Clicks on these websites, as well as on the BBC, could potentially have affected local newspaper circulation.

- As the Internet has grown, the way that people share information has changed. The advent of Facebook, Twitter, MySpace, Instagram, and a multitude of specialist websites now allow people with niche interests to share information quickly and at a low cost with like-minded people. Local newspapers still have a role, but the information they convey can now be shared in numerous different ways; something not possible even a decade ago. These services are not provided by the BBC or by other online news providers. Yet they increasingly pose a threat to the unique content provided by online papers.

- A prominent service of local newspapers is to allow local businesses to advertise to local people and individuals to post classified advertisements. No BBC website offers such services. Arguably, however, a large number of non-BBC websites do offer people the opportunity to conduct these alternative functions online (e.g. eBay, Rightmove, Gumtree, eHarmony). Potentially, this multitude of websites allow local business and individuals to reach a larger, yet still targeted, audience than was possible with local newspapers and at lower cost. For that reason, a feasible hypothesis must be that the growth in general Internet usage has been responsible for a consumer shift away from local newspapers and towards other forms of information sharing, even at the local level.

For these reasons, there is good reason to suppose that the increased adoption of the Internet, and the way we all share information across it, has had a larger effect on local newspapers’ performance than the growth of the BBC online in isolation. Our econometric analysis, which attempts to discriminate between the two effects, appears to corroborate this view.

Our econometric analysis of local newspaper circulation and advertising revenues found that the decline in both can be explained by a combination of the economic recession and long period of slow growth which followed, and the steady rise in Internet penetration. The BBC’s online presence (i.e. BBC News website clicks) had no statistically significant effect when added to this equation.

This conclusion is consistent with the experience of other markets which are not characterised by competition from large PSBs. For example, in the United States, Sunday and daily newspaper circulation has declined in ten and eleven of the last twelve years respectively. Furthermore, between 2008 and 2012, the International Federation of Audit Bureaux of Circulations (IFABC)’ data suggest that circulation has fallen for almost 65 per cent of paid regional and local newspapers across twelve member countries and for more than 85 per cent of paid regional and local titles across sixteen member countries.
DCMS considers in its Green Paper whether the BBC crowds out commercial media

The Department for Culture, Media and Sport (‘DCMS’) recently published the BBC Green Paper; a public consultation seeking views that will inform the UK Government’s future decisions about the British Broadcasting Corporation (‘BBC’).

The four areas identified as the focus of the Green Paper are the BBC’s:

- mission, purpose and values;
- scale and scope;
- funding; and
- governance.

The Green Paper outlines that when assessing the scale and scope of the BBC, it is important to assess not only the range of services, audiences and content mix of the BBC, but also the BBC’s impact on the rest of the UK media sector.

The Green Paper acknowledges that the BBC may have had some positive effects on the media sector. For example, it states that the BBC may have encouraged:
- high standards of content;
- investment in independent production; and
- the development of media distribution infrastructure.

However, the Green Paper also notes that there have been some concerns raised that, due to its high level of public funding, the BBC might hold an unfair advantage over its competitors. The consequence could be for some commercial broadcasting and media business models to potentially be undermined (i.e. it may ‘crowd out’ private sector activity).

The Green Paper outlines a number of specific areas that may be of concern when considering the impact of the BBC on the media sector. These include:

- Television: the commercial television sector may struggle to compete with freely distributed content. The Green Paper uses the example of BBC News 24 and how its introduction in 1997 may have affected other news providers including Sky News, Channel 4 and ITV.
- Radio: concerns have been aired that, unless commercial advertising revenues remain robust, the BBC’s radio market share could continue to grow.
- Online news provision:
  - the popularity of the BBC News website could impede the ability of other UK news outlets to develop profitable business models such as paywalls and subscriptions; and
  - local newspaper readership has declined in recent years due to a number of factors including the introduction of new technologies, changing consumer behaviour, loss of advertising and other market pressures, of which the BBC could be considered one.
- Cross-promotion of services: the BBC’s ability to cross-promote its own services could also have an impact on the wider media market.

The BBC Trust has commissioned KPMG to undertake an independent economic review of the extent to which the BBC crowds out private sector activity. Our economic review evaluates evidence on the extent to which the BBC crowds out private sector activity in the television broadcasting and local newspaper markets.
For television broadcasting, the foci of our independent review are the news and entertainment genres. We have considered these genres in particular since they form part of the BBC’s stated public purposes and remit, and are, to some degree, mentioned in the Green Paper with respect to crowding out.
An economic framework to assess crowding out in the local newspaper and television broadcasting markets

2.1 Crowding out is a concern that should be considered alongside potential countervailing positive effects

In the provision of UK public service broadcasting, the term ‘crowding out’ refers to the BBC’s activities replacing similar activities that would be provided by private sector firms.

It prompts two questions:

1. Firstly, if the BBC were smaller how many the private sector respond? Would they decrease, maintain, or increase their supply of content?

2. Secondly, if private providers increase their supply of content, would they do so to a greater or lesser extent than any reduction in BBC activity i.e. might overall supply in the marketplace increase or decrease in size if the BBC were to be scaled back?

Our analysis assesses the BBC’s impact on commercial news and entertainment broadcasters and local newspapers when there are changes in the level of the BBC’s existing activities in these genres.

This is the only question that we can answer with respect to crowding out based on actual historical data.

Any assessment on how the market may react if the BBC ceased to exist / never existed in certain areas of operation can only be based on hypothetical and theoretical analysis, since the UK market has never undergone such an experience.

For these reasons, we have focused our analysis to marginal historical variations of BBC activities that can be tested and how they have affected our focus markets.

2.2 We have evaluated whether the BBC crowds out private sector activity, based on academic literature and available data, by testing a series of hypotheses in news broadcasting, entertainment broadcasting and local newspaper readership

Our analysis focuses on a historical assessment of how the BBC’s activity in news and entertainment broadcasting and local news might have affected private sector provision of the same or similar content, controlling for all other potential influencing factors on private sector activity (e.g. economic, demographic and technological changes).

Our approach relies on three components to make an assessment on the extent to which the available evidence is consistent with the notion that the BBC crowds out private sector activity in these markets:

1. a comprehensive review of academic papers focusing on how crowding out by public service broadcasters (‘PSBs’) across media markets has been addressed and tested by other experts and commentators (including academics and other consultancies) (Section 3);

2. an analysis of how measures of commercial broadcasters’ activity that may reflect any instances of crowding out have evolved over time (Sections 4 and 5); and
3. an econometric analysis\(^4\) to diagnose the extent to which there is evidence, based on the available data, that the BBC crowds out private sector activity in the genres and markets of interest (Sections 4.5 and 5.2).

We consider, in the rest of this section, the economic rationale behind our approach to measuring and assessing the degree of possible crowding out in news and entertainment broadcasting and the local newspaper market.

### 2.2.1 Approach to analysing broadcast news and entertainment content

We have considered three ways to measure the extent of crowding out of news and entertainment television broadcasting:

1. how the volume of viewer hours changes with the supply of content by the BBC;
2. how commercial revenues (from both subscription and advertising) changes with BBC revenue from the licence fee; and
3. how expenditure by private firms on supplying content changes with BBC expenditure on the same content.

We have conducted our analysis at the genre level for viewer hours. We have asked what might happen if the BBC produced:

- less news / entertainment programming, would the private sector get more revenue, expand its production of news / entertainment and, as a consequence, achieve higher audience numbers?; and
- less broadcast news and news website content, would the private sector get more revenue and expand its production of local news content?

We have, where the data allow, also considered private firms’ expenditure at the genre level. However, commercial broadcasters’ revenues are available only at an aggregate level; this is, not least, because both advertising and subscription revenues (together the clear majority of commercial broadcasters’ revenues) are common across multiple genres.

We now consider the three measurements in further detail.

#### 2.2.1.1 Viewer hours

The BBC competes with commercial broadcasters directly for viewers.

If the BBC were shrunk, it seems plausible that commercial audiences might expand.

Our analysis tests this proposition by analysing whether there has been a material and statistically significant negative relationship between BBC and commercial broadcasters’ viewing hours for news and entertainment.

Our econometric analysis, based on the available data, aims to assess the extent to which commercial audiences vary with changes to the quantity of BBC viewer hours. The analysis quantifies the impact of other potential drivers of commercial viewer hours, such as, and not limited to, advertising revenues, subscription revenues, and economic activity\(^5\) which may also impact on commercial viewer hours. Once the impact of other possible and observable explanatory factors of variation in commercial viewer hours has been established, our regressions determine whether changes in BBC viewer hours can be seen to have any significant (both statistically and in terms of magnitude) impact on commercial viewer hours. If there is no significant explanatory impact from a

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\(^4\) Regression analysis is a statistical technique that estimates how one variable (the ‘dependent’ or ‘explained’ variable) responds to changes in more than one other variables (the ‘independent’ or ‘explanatory’ variables) based on a sample of observations for the variables in the regression equation.

\(^5\) For example, the quantity and quality of commercial programmes provided might be a function, in part, of the revenues available to finance them, which in turn depends on the state of the economy. If consumer spending is buoyant, advertising revenue will be buoyant, and the quality and quantity of commercial programming should, as a result, expand.
BBC effect measure, then this is consistent with there being no evidence of crowding out based on the available data.

This analysis is divided between entertainment viewer hours and news viewer hours.

2.2.1.2 Revenue

Commercial broadcasters’ revenues (which can be measured) and their profits (which cannot be measured as accurately from publicly available sources for the sector as a whole) are the ultimate objective of any commercial operator. It seems, therefore, a pertinent question as to whether a public sector broadcaster is infringing on commercial organisations’ ability to make profits from broadcasting in a way that might not be present in other sectors where profit-seeking businesses do not face similar competition from a large not-for-profit supplier.

The same principles outlined in Section 2.2.1.1 can be applied to changes in private sector and BBC revenue.

However, this analysis has to be conducted at aggregate level. Advertising revenues are not collated in a manner that will allow such analysis to be performed and satellite television subscriptions are for a bundle of programmes across multiple genres.

Based on the available data, we explain the impact of the explanatory variables on commercial revenue streams (advertising plus subscription). The explanatory variables include economic activity, consumer spending and BBC licence fee income. The primary purpose of this equation is to answer the question: how would commercial revenue change if BBC revenue were to decrease?

The analysis assesses the total level of BBC vs. private sector (both subscription and advertising) revenue.

2.2.1.3 Spending on programmes

Arguably, the most important measure of crowding out is commercial broadcasters’ expenditure on programming.

One concern being aired in the present debate is that despite the potential benefits attached to the BBC’s activities, is it the case that the BBC is too large and might be doing things to an excessive degree that would have taken place in the private sector anyway? If the BBC was reduced in size, so the argument runs, the private sector would step forward and generate the content, and more programmes would be made by the commercial sector.

Our analysis seeks to assess whether there is any evidence that affirms this view.

Consistent data reported by genre over a frequent and long time period across broadcasters are not available.

As a consequence, our analysis focuses not on programme expenditure at a genre level, but at an aggregate level for the private sector.

In addition, our econometric analysis tests whether commercial broadcasting revenues are affected by the size of the licence fee itself, and by the amount of that fee spent on entertainment/news programmes, or both.

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6 In part because it is conceptually difficult to do this; what genre would you apportion advertising revenues to for commercials aired between The X-Factor and the News at 10pm?

7 These data are not made readily available publicly for the commercial sector over a sufficiently long time period for us to draw any inference. There are some data for some multi-channel broadcasters.
2.2.2 Approach to analysing local print news and BBC activity

Our approach to assessing the impact of BBC activity on local newspapers follows a similar pattern to our analyses of broadcast media.

We assess the extent to which local newspaper circulation and revenues vary with changes to, for example, BBC activity in local news by using hits on the BBC News website as a proxy for hits on local news webpages on the BBC website.

Any statistical assessment of the BBC’s impact on local newspapers must be conducted being mindful of the fact that the BBC’s News website overlaps only with a subset of the content and services provided by local newspapers:

- Local newspapers’ news coverage tends to be more localised than the BBC News website’s local news coverage. It is not uncommon for local papers to report on events, marriages, deaths, and sporting events for individual small towns or boroughs. By contrast, the BBC News website reports local news stories down to county and city level. Whilst there is some overlap in the news content provided by local newspapers and the BBC, local papers provide a significant amount of content that is not available from the BBC website.

- It is not only the BBC that reports news online on a local level in the UK. ITV, for example, has a website that offering a similar local news service. Clicks on these websites, as well as on the BBC, could potentially have affected local newspaper circulation. It has not been possible for us to collate data over a time series for hits from websites other than the BBC News website, so we cannot test this proposition. We note, though, that like the BBC, none of the other commercial news providers – other than the local papers themselves – provide as comprehensive highly local news online as has traditionally been provided by the local newspapers.

- As the Internet has grown, the way people share information has changed. The advent of Facebook, Twitter, MySpace, Instagram, and a multitude of specialist websites now allow people with niche, special interests to share information quickly and at low cost with like-minded people. Schools no longer have to rely on the local paper to share the results of their prize day and exam results; apps such as ParentMail and the school website allow them to do so at the click of a button. People now post their wedding pictures on Facebook instead of in their local weekly newspaper. The under 11 football team ‘Tweets’ its results to anyone who might be interested – you no longer have to rely on the local paper for this information. And so on. Local newspapers still have a role and remain popular among their readership. But the information they convey can now be shared in numerous different ways; something not possible even a decade ago. None of these services are provided either by the BBC or by other online news providers. Yet they increasingly pose a threat to the unique content provided by online papers. It is hard to believe that the growth of the Internet, and the rapidly changing way people share niche information, has not had a significant impact on the use, and future, of local newspapers. For this reason, we consider in our analysis the possibility that the general growth of the Internet is likely to have had a larger effect on their readership than the growth of the BBC alone, a service that competes with only a fraction of what the local paper provides.

- Prominent services of local newspapers are to allow: i) local businesses to advertise to local people; and ii) individuals to post classified advertisements. No BBC website offers such services. Arguably, however, a large number of non-BBC websites do offer people the opportunity to conduct these alternative functions online (e.g. eBay, Rightmove, Gumtree, eHarmony). Potentially, this multitude of websites allow local business and individuals to reach a larger, yet still targeted, audience than was possible with local newspapers and at lower cost. For that reason, a feasible hypothesis must be that the growth in general Internet usage (proxied, for example, by the growth in Internet penetration) has been responsible for a consumer shift away from local newspapers and towards other forms of information sharing, even at the local level.
In light of these observations about the evolution of the market, we have sought, in our analysis, to discriminate between two hypotheses:

1. that the decline of the local press is influenced by the availability of free content on the BBC website; and
2. that the decline of the local press is due to external factors such as the increase in competition for advertising revenues caused by the arrival and increase use of the Internet (and firms such as Google, eBay and Facebook), leaving a smaller number of potential readers and a smaller pot of advertising revenue available for the local press.

If the changes in local newspaper circulation can be satisfactorily explained by variables such as the degree of Internet penetration, the growth of household incomes, advertising revenues, consumer spending and time trends that antedate the creation of the BBC website, with no significant correlation with the number of BBC News website hits, then there is no evidence of crowding out based on the data available.

If, conversely, the number of BBC News website hits emerges from the regression with a significant negative coefficient, and the other variables do not, then crowding out could have occurred in this market.
An economic review of the academic literature on crowding out

In order to inform our approach in evaluating the hypotheses set out in Section 2, we have analysed the economic literature to consider how crowding out by public service broadcasters across media markets has been addressed and tested by other experts and commentators (including academics and other consultancies). We also summarise how this literature has considered the potential positive role of PSBs in media markets and how this balances against empirical evidence, if any, of crowding out.

We have found and reviewed 19 papers which consider the impact of PSBs on broadcasting markets. These papers were compiled through a thorough and comprehensive review of the literature including from academic journals.

The broad findings of the literature we surveyed are:

- there is evidence of only limited crowding out of private sector activity by PSBs both in the UK and globally; and
- PSB activity can, and does, have positive effects on the market such as enhancing quality through competition, providing for positive externalities and taking on high risk projects which commercial operators would not invest in but which bring market wide benefits;

We now consider these points in turn.

3.1 Commentators have found little tangible evidence of PSBs crowding out private sector activity

Our literature review was comprehensive, though we identified only six papers that attempted to quantify the extent of crowding out by PSBs in the UK and other markets.

The papers we reviewed on the subject found no, or limited, evidence of crowding out.

In general, two approaches were taken towards quantifying the extent of crowding out:

1. assumption based financial analysis looking at counterfactuals; and
2. econometric analysis.

The six papers which do attempt to quantify crowding out are outlined in Table 1.

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8 In Appendix 1 we also summarise what drivers of broadcasting market activity, other than PSB activity, have been considered in these papers. We find that: i) when analysing the level of activity in broadcasting markets, it is common to look at audience numbers, revenues and programme formats; and ii) the main influences on the level of activity in broadcasting markets are found to levels of investment / funding, education and GDP.
Table 1: Summary of papers that attempt to quantify the extent of crowding out by PSBs

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<thead>
<tr>
<th>Paper</th>
<th>Approach</th>
<th>Conclusions</th>
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<tr>
<td>Berry &amp; Waldfogel (1999)³</td>
<td>Cross-sectional econometric study of radio stations for 165 major radio markets in the US during Spring 1993 looking in particular at channels specialising in jazz music, classical music and news.</td>
<td>No evidence of crowding out between PSBs and commercial broadcasters providing news. Evidence of only limited potential crowding out by PSBs of commercial broadcasters specialising in classical music and jazz. Without a PSB, the authors found that over 88 per cent of markets would lose access to classical radio channels and over 80 per cent of markets would lose access to jazz radio channels.</td>
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<tr>
<td>Graf (2004)¹⁰</td>
<td>Graf highlights a KPMG report, commissioned in 2003, which outlines that the impact of BBC Online may have reduced total expenditure on UK advertising by around £5 million per annum, out of an estimated total of £200 million per annum.</td>
<td>Graf indicates that although the KPMG report does not conclusively show that BBC Online has only had a limited adverse impact on the market, the statistical information presented does not show competition has been eliminated across wide areas of content. Graf suggests that BBC Online could theoretically reduce competition in the media market by deterring investment by commercial operators no robust evidence is provided of tangible examples where the BBC has reduced competition in a range of online content markets.</td>
</tr>
<tr>
<td>McKinsey (2004)¹¹</td>
<td>Cross-sectional statistical correlation analysis of 13 countries looking at content broadcast markets. Study assessed how factors including PSB funding per head, GDP per head and language impacted on the level of commercial funding per head in terms of subscription funding and advertising funding.</td>
<td>McKinsey concluded that: &quot;...there is no evidence that commercial funding is commonly 'crowded out' by high levels of public funding&quot;. Level of public funding per head had no statistically significant effect on the level of advertising and subscription funding per head. GDP had the most statistically significant effect on the level of advertising and subscription funding per head for commercial broadcasters.</td>
</tr>
<tr>
<td>Ofcom (2004)¹²</td>
<td>Sensitivity analysis, conducted with Spectrum Strategy Consultants, of Oliver &amp; Ohlbaum Associates report assessing the market impact of BBC’s new digital services. Oliver &amp; Ohlbaum Associates¹³ undertook an assumption-based, financial model to estimate that the total impact on commercial TV revenues was between -£3.3 million and -£31.1 million per annum, whilst that on radio was +£2.9 million per annum.</td>
<td>The analysis found that BBC activity could drive up the cost of original content and reduce the funds available for new programming by commercial operators. However, Oliver &amp; Ohlbaum Associates’ estimates are sensitive to changes in the underlying drivers. The study also found that the BBC had brought benefits in contributing to the digital uptake amongst households which may even lead to increased commercial revenues in the future. Overall, the analysis was scenario-based, sensitive to assumptions and inconclusive regarding the actual extent of historical crowding out.</td>
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¹² Ofcom, 2004, Assessment of the Market Impact of the BBC’s New Digital TV and Radio Services: An analysis by Ofcom, conducted as an input into the independent reviews of the BBC’s new digital TV and radio services.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Approach</th>
<th>Conclusions</th>
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  ● Study assessed how commercial market outcomes (a composite of revenues per capita, investment per capita in original programmes and schedule diversity) were impacted by PSB health (a composites of public funding per capita, investment per capita in original programmes and schedule diversity) and GDP per capita. | ● Statistically significant positive correlation between commercial market outcomes and PSB strength.  
  ● GDP per capita coefficient was not statistically significant in explaining the level of commercial television operator performance. |
| Barwise & Picard (2014) | ● Assumption-based financial model producing a counterfactual scenario of the impact of there being no BBC.  
  ● The authors produced ‘optimistic’ and ‘pessimistic’ scenarios based on assumptions around commercial operator’s subscription income, advertising income and investment (determined as a proportion of revenues and flexed for optimistic and pessimistic scenarios).  
  ● ‘Optimistic’ scenario assumes all £2.72 billion of the 2012 Licence Fee income will transfer to commercial operators through, for example, higher subscription fee-based revenue and that advertising revenue will increase by 22 per cent.  
  ● ‘Pessimistic’ scenario assumes that commercial operators do not increase revenues through a transfer of Licence Fee income and that advertising revenues fall by 15 per cent. | ● The counterfactual analysis suggests that the extent of crowding out, insofar as it exists at all, is limited.  
  ● The paper finds in its counterfactual analysis that without the presence of the BBC:  
    - industry revenues, although uncertain, might be lower;  
    - content investment might be between 5 per cent to 25 per cent lower; and  
    - first-run content investment might be between 25 per cent to 50 per cent lower.  
  ● Authors suggest that, on theoretical grounds, most economists are likely to conclude that the BBC has at least some crowding out effect overall across the markets in which it operates. However, this is not quantified and no actual proof of such outcomes are provided. |

We found no papers that assessed the extent to which publicly provided online news sources had affected on local commercial print media with respect to crowding out.

However, a recent Enders Analysis paper (2015) did look at the BBC’s effect on regional and national news providers. The paper finds that UK newspaper publishers have faced challenges from the move to the Internet, and the associated loss in print advertising revenues, and have struggled to monetise online audiences.

It concludes that the BBC has not exacerbated these challenges.

Rather, the Enders Analysis paper concludes that the BBC does not crowd out commercial providers since:

- BBC News is not a close substitute for the service offered by commercial news publishers as many consumers rate BBC News more highly for trustworthiness, impartiality and quality;
- some of the online traffic other publishers currently receive comes from the BBC News site; and
- some of the publishers best placed to take advantage of a BBC retreat from online News are UK newspapers, but others, including US brands, could also take advantage thus limiting the benefit for UK news publishers.

The paper also concludes that the effect of general Internet activity on the news business model is a far greater issue for local newspaper publishers than any impact from BBC activities.

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14 BBC, 2013, Public and private broadcasters across the world – the race to the top.  
15 Barwise & Picard, 2014, What if there were no BBC television? The Net Impact on UK Viewers, Reuters Institute for the Study of Journalism.  
16 Enders Analysis, 2015, The BBC, the press and online news.
Oliver and Ohlbaum (2015)\textsuperscript{17}, in a report for the News Media Association, offer similar limited evidence of the BBC crowding out private sector news providers but does suggest there is a potential future risk of this occurring if BBC investment increases further. The report highlights the BBC’s intention, outlined in its ‘Future of News’ report\textsuperscript{18}, to expand its local and international news offering. The paper outlines that the wider news sector is facing challenges but remains vibrant and further BBC expansion could put the sector at risk. We consider, however, that even though we cannot rule out this eventuality transpiring, it is uncertain given current available evidence.

Gentzkow (2006)\textsuperscript{19}, in his analysis of the market for print on online newspapers in Washington, concludes that, under conditions of observed and unobserved heterogeneity, print news and online news act as substitutes. In a counterfactual analysis, he estimates that the online paper had reduced print readership by around 27,000 per day.

In summary, in our analysis of the available literature on the subject, there are only a small number of papers which conduct robust analysis quantifying the impact of crowding out by PSBs. Of those papers outlined above, whilst crowding out is pointed to as a theoretical possibility, the empirical evidence points to no or little crowding out by PSBs.

### 3.2 PSB activity can, and does, have positive effects

Whilst the literature, overall, finds evidence of only limited crowding out by PSBs, some papers do highlight the positive roles that PSBs can play in media markets.

In particular, several papers consider how public sector spending and investment, rather than crowding out investment by private operators, can benefit the market as a whole.

Our review includes eight papers that focus on this area.

O’Hagan and Jennings (2003) outline five potential benefits of PSBs:

1. Diversity: The evidence suggests that PSBs ensure a greater diversity of programmes which increases consumer welfare.
2. Democracy/equality: The evidence suggests that PSBs provide independent platforms to disseminate information, which is considered to be a necessary condition for democracy.
3. Network externalities: The paper asserts that PSBs ensure that programming that provides a shared experience and unites people under a common culture will reach a universal audience.
4. Innovation and investment: The paper finds that PSBs take risks that commercial broadcasters will not and consider the long term more than their commercial counterparts.
5. Public broadcasting as ‘insurance’: The evidence suggests that PSBs provide insurance: of standards; against a private operator monopolising broadcasting infrastructure; and against all private broadcasters shutting down and providing no service.

The wider literature provides further insight into these points.

Waldfogel (2011)\textsuperscript{20} considers content diversity, highlighting the greater marginal impact of public stations on news variety. In addition, Van Der Wurff (2005)\textsuperscript{21} suggests that the presence of a PSB guarantees greater programme diversity and supply of minority programmes, even if this is not proportional to the number of PSBs in a market. Foster, Egan & Simon (2002)\textsuperscript{22} considers the potential of private sector broadcasters not providing certain types of programmes (e.g. children’s television and regional content) if they are not profitable. The paper finds that this diversity of content carries with it an opportunity cost that can be high for commercial providers.

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\textsuperscript{17} Oliver and Ohlbaum Associates Ltd, 2015, The news market in the 21st Century and the likely implications for the BBC’s role.

\textsuperscript{18} BBC, 2015, Future of news.


\textsuperscript{20} Waldfogel, 2011, Station Ownership and the Provision and Consumption of Radio News.


\textsuperscript{22} Foster, Egan & Simon, 2002, Measuring Public Service Broadcasting.
The literature considers that media generates positive externalities in the form of shared cultural, social and political values (Picard & Siciliani, 2013; Barwise & Picard, 2012). These positive externalities may be lost in the absence of a PSB if, for example, commercial providers reduced their content range. The evidence suggests that the presence of a PSB expands output and ensures that the wider social benefit of broadcasting is captured.

The literature finds that PSBs invest in areas where the private sector may not due to the high risk nature of PSBs’ investment. However, once PSBs have made this investment: i) there are benefits to the wider industry; and ii) the private sector may learn from PSBs investment in these areas. As a result, public sector investment, in these instances, is complementary to private sector investment. In Picard & Siciliani (2013), Mazzucato highlights examples where the BBC has invested in high risk projects that the paper considers may not have been picked up by the private sector, but which, subsequently, produced market wide benefits. These areas include: investing in innovative programs, technologies, processes, services, solutions; training and mentoring for small enterprises; and promoting foreign direct investment (‘FDI’). For example, the paper highlights the development of Stagebox. BBC (2013) finds that increased competition in media markets, which might lead to investment by the public sector, can help to generate greater innovation in the industry and, as a result, greater overall growth.

The virtuous cycle hypothesis is the basis for much of the academic literature in the area which considers how competition between PSBs and the private sector affects programming quality. BBC (2013) found a positive relationship between a PSB investing in high quality and diverse content and the strength (revenues) of the commercial market in the country, having analysed 14 countries. The paper finds that countries with a PSB with a high proportion of key public service genres tend to have main commercial channels that also produce a higher proportion of these programs. In all the markets considered in the study, PSB channels are judged by audiences to be of a higher quality than commercial channels. In its counterfactual analysis, Barwise & Picard (2014) highlight that if there was no BBC, there might be a significant fall in content investment, with lower value for money to customers. Ofcom (2004) outlines that, following the move to digital TV and radio services, the role for the BBC in providing competition would likely fall as competition grew and channels became better funded. However, even under these conditions, the paper highlights that the BBC would still have a role in setting standards and encouraging different forms of competition.

Overall, the evidence outlined above points to a wide range of potential benefits to the presence of a PSB in the broadcasting market. Although these are not quantified, they should be taken into consideration when assessing the market impact of a PSB.

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23 An externality is a market failure whereby the social benefit/cost of a good is greater than the private benefit/cost. As a result the free market will under/over provide the good.
26 Allows HD multi-camera productions to use standard internet technologies to link equipment.
27 BBC, 2013, Public and private broadcasters across the world – the race to the top.
28 Competition between public and private providers produces better programs for audiences.
29 BBC, 2013, Public and private broadcasters across the world – the race to the top.
30 Barwise & Picard, 2014, What if there were no BBC television? The Net Impact on UK Viewers, Reuters Institute for the Study of Journalism.
31 Ofcom, 2004, Assessment of the Market Impact of the BBC’s New Digital TV and Radio Services: An analysis by Ofcom, conducted as an input into the independent reviews of the BBC’s new digital TV and radio services.
The evidence on whether the BBC crowds out private sector broadcasting

4.1 BBC activity in the entertainment and news broadcasting

4.1.1 There has been an increase in BBC broadcast and viewer hours in the entertainment genre and an increase in news broadcasting hours since 2002.

As part of its stated public purposes and remit, the BBC has obligations to provide journalism of the highest quality and to provide a wide range of enjoyable and entertaining content. It is, however, to a large degree, up to the BBC to decide how much of this content it provides, although the BBC Trust sets a range of minimum quotas on certain genres of broadcast output.

Figure 1 below shows total broadcast and viewer hours in the entertainment genre for BBC channels between 2002 and 2014.

BBC broadcast and viewer hours in the entertainment genre declined by an average of 0.8 per cent and 4.6 per cent respectively between 2002 and 2009. There has been a sharp increase in broadcast and viewer hours since 2009 however; in 2014, broadcast hours in entertainment were 74 per cent higher than in 2009 and viewer hours 76 per cent higher.

Figure 1: Total entertainment broadcast and viewer hours for BBC channels, 2002 – 2014

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32 Table 1, BBC Charter Review, Public Consultation (16 July – 8 October 2015), Department for Culture, Media and Sport.
33 See, for example, http://downloads.bbc.co.uk/bbctrust/assets/files/pdf/regulatory_framework/service licences/shv/2013/bbc_one.pdf.
34 Due to a change in the BARB dataset in 2010, the data changed considerably post 2010. To correct for this, we have set broadcast and viewer hours in December 2009 equal to January 2010 and used the monthly growth rates to calculate the pre-2010 numbers. The trend in, and not level of, activity is what we are most interested in. This has been done for all graphs with viewer and broadcast hours.
35 There was an unexplained spike in entertainment broadcast hours in June, July and August 2014. For the purpose of the Figure 1, we set the broadcast hours equal to the equivalent month in 2013.
This increase in news broadcast hours has not been reflected in viewer hours which have declined by an average of 0.6 per cent per annum since 2012.

Figure 2: Total news broadcast and viewer hours per month for BBC channels, 2002 – 2014

4.1.2 BBC income and programme spend declined, in real terms, since 2004

Although the number of hours of news and entertainment broadcast by the BBC has increased over the period, overall spending on programmes has been in decline.

As can be seen in Figure 3, the BBC increased its spending on programmes by 0.7 per cent between 2003 and 2004, however spending has since declined. BBC spending on programmes fell by an average of 3.3 per cent per annum, in real terms, between 2004 and 2014.

Figure 3: BBC income allocated to TV and spend on programmes, 2003 – 2014 (£’000, 2014 prices)\(^36\)

Source: Ofcom communications market reports.

These data do not include BBC Worldwide profits returned to the BBC.
A similar decline in the BBC’s income allocated to television (which declined by an average of 1.6 per cent per annum, in real terms, between 2004 and 2014), shown in Figure 3, may go some way to explaining the fall in the BBC’s spending on programmes since 2004.

4.2 Commercial news and entertainment broadcasting activity has also increased considerably since 2002

4.2.1 With the exception of news viewer hours, commercial broadcast and viewer hours follows a similar pattern to the BBCs between 2002 and 2014

4.2.1.1 Entertainment broadcasting

Entertainment viewer hours have increased for both the BBC and commercial broadcasters between 2002 and 2014.

However, the growth for commercial broadcasters has been more rapid, increasing at an average of 5.2 per cent per annum between 2002 and 2014, compared to the BBC’s average growth of 1.9 per cent per annum.

By 2014, commercial broadcasters’ viewer hours were 168 per cent larger than the BBC’s; in 2002 they were 84 per cent larger.

Figure 4: BBC and commercial broadcasters’ entertainment viewer hours per month, 2002 – 2014

Although entertainment broadcast hours have followed relatively similar trends for the BBC and commercial broadcasters since 2009, this was not the case between 2002 and 2009. Commercial broadcasters’ entertainment broadcast hours increased by an average of 6.8 per cent per annum, whereas BBC entertainment broadcast hours fell by 0.8 per cent per year on average between 2002 and 2009. Since 2009, the growth in commercial entertainment broadcast hours fell to an average of 3.0 per cent per annum whereas BBC entertainment broadcast hours increased by an average of 11.7 per cent per year between 2009 and 2014.

Although over the whole period, both BBC and commercial broadcasters’ entertainment broadcast hours have increased, commercial broadcasters’ hours have done so at a faster rate than the BBC’s. In 2002, commercial broadcasters aired approximately 12 times more entertainment content than the

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Commercial entertainment viewer and broadcast hours are equal to the sum of the ITV, Channel 4, Channel 5, UKTV and Sky (including Flextech) portfolios as reported by BARB. Prior to 2010, BBC and commercial digital channel data were collected separately (on the multi-channel reporting platform) and added to the terrestrial totals.
BBC; this increased to approximately 20 times as much entertainment content in 2009 before falling back to approximately 14 times as much entertainment content by 2014.

Viewer hours followed a similar trend over this period, peaking in 2009 when commercial broadcasters’ entertainment viewer hours were approximately 3.5 times larger than the BBC’s. This factor was 1.8 times in 2002 and 2.7 times in 2014.

**Figure 5: BBC and commercial broadcasters’ entertainment broadcast hours per month, 2002 – 2014**

![Graph showing BBC and commercial broadcasters' entertainment broadcast hours per month, 2002–2014](image)

Source: BARB data supplied by the BBC Trust.

Between 2002 and 2014, there was a relatively strong positive 64 per cent correlation between the BBC’s and commercial broadcasters’ entertainment broadcast hours. There was an even stronger 81 per cent positive correlation for entertainment viewer hours. Based on the available data, there does not, therefore, appear to be any crowding out of commercial broadcasters by the BBC in entertainment, when measured by broadcast and viewer hours. In fact, entertainment broadcast and viewer hours for commercial broadcasters have increased at a faster rate than for the BBC during the period analysed.

**4.2.1.2 News broadcasting**

Other than the spike in March 2003, which coincides with the start of the Iraq war, Figure 6 shows that the BBC’s news viewer hours have remained relatively constant, increasing by a total of just 2.9 per cent, between 2002 and 2014.

However, there has been a steady decline in viewer hours for commercial news broadcasters. From its peak in 2003, Figure 6 shows that commercial broadcasters’ news viewer hours have declined by an average of 5.9 per cent per annum to 2014.
Given that, up until 2014, there has not been any significant increase in BBC viewer hours, and the BBC’s news broadcast hours have not increased more rapidly than commercial broadcasters’ broadcast hours, it is by no means clear that this pattern in commercial broadcasters’ news viewer hours is driven by an increase in the BBC’s activity in the provision of news relative to that of commercial broadcasters.

Figure 7 shows the BBC’s and commercial broadcasters’ news broadcast hours per month between 2002 and 2014.

Commercial news viewer and broadcast hours are equal to the sum of ITV/Breakfast (including HD & +1), CH4 (Stagger), Channel 5 Portfolio, and Sky (including Flextech) Portfolios as reported by BARB.

Prior to 2010, BBC News data were collected separately (on the multi-channel reporting platform) and added to the BBC terrestrial news total hours.

There is significant variation in commercial broadcasters’ broadcast hours in 2014. December 2014 was significantly below all previous months. For the purpose of Figure 7, we have presented broadcast hours for news up until November 2014.
After remaining relatively flat between 2002 and 2008, then declining up until 2010, news broadcast hours for the BBC and commercial broadcasters have been on an upward trend between 2010 and 2013, with commercial broadcasters’ news broadcast hours falling in 2014.

Between 2010 and 2012, commercial news broadcast hours increased by an average of 30.4 per cent per annum on average compared to an average annual increase of 2.1 per cent per year for the BBC. This trend resulted in commercial channels broadcasting 26.9 per cent more news than the BBC in 2012. However, a decline in commercial broadcasters’ news provision between 2012 and 2013 meant that commercial channels broadcast 20.8 per cent more news than the BBC in 2013. Whereas the BBC’s news broadcast hours continued to increase by 2.5 per cent between 2013 and 2014, commercial broadcasters news broadcast hours declined by 23.8 per cent.

Despite the increase in BBC broadcast hours, the charts above demonstrate that BBC viewer hours have remained relatively constant whereas commercial broadcasters’ viewer hours have declined; the fact that the relative amount of news provided by the BBC compared to commercial channels has not widened implies that although there has been much change in the provision of news, and in the behaviour of people who watch news, there is no clear evidence that viewers have switched from watching commercial broadcast news to BBC news or any behaviours that are consistent with the notion of the BBC ‘crowding out’ commercial news broadcasters’ viewers.

In summary, between 2002 and 2014, there was a positive 30 per cent correlation between the BBC’s and commercial broadcasters’ news broadcast hours and a stronger 54 per cent correlation for viewer hours. Based on the available data, therefore, there does not appear to be any crowding out of commercial broadcasters by the BBC in terms of news broadcast and viewer hours.

4.3 A significant increase in subscription revenues has led to an increase in commercial broadcasters’ revenues since 1998

Figure 8 shows television broadcasting revenues for the BBC and commercial providers, in real terms, between 1998 and 2014.

Figure 8: Broadcasting revenues by source, 1998 – 2014 (£’000, 2014 prices)\(^{41}\)

Source: Ofcom communications market reports, KPMG analysis

\(^{41}\) Other commercial broadcasting revenue include, inter alia, Sponsorship, Programme sales, interactive, TV shopping, pay-per-view and S4C income.
The BBC’s income allocated to television has remained relatively constant, in real terms, since 1998. After increasing by an average of 5.5 per cent per annum, in real terms, between 1998 and 2004, it then declined by an average of 1.6 per cent per annum between 2004 and 2014.

Over the same period, commercial broadcasting revenues have increased. They grew by an average of 5.4 per cent per annum, in real terms, between 1998 and 2007. This growth continued, albeit at a slower pace of 0.3 per cent per annum, in real terms, between 2007 and 2014, after the global economic and financial crises took hold. Nevertheless, commercial broadcasters’ revenues are now almost 65 per cent higher in real terms than they were in 1998.

This growth in commercial broadcasting revenues can be attributed primarily to the growth in subscription revenues. The average annual decline in advertising revenues of 0.5 per cent has been more than offset by the 7.3 per cent annual increase in subscription revenues since 1998.

As a result, subscription revenues now account for 57.0 per cent of total commercial broadcasting revenues, compared to just 30.4 per cent in 1998.

By 2014, BBC revenues, shown in Figure 8 above, allocated to television were:

- 40.7 per cent lower than commercial advertising revenues;
- 119.6 per cent lower than commercial subscription revenues; and
- 285.0 per cent lower than total commercial broadcasting revenues.

By contrast, BBC revenues allocated to television were 176.3 per cent lower than total commercial broadcasting revenues in 1998.

Figure 9: Composition of commercial broadcasting revenues, 1998 – 2014 (£’000, 2014 prices)

Based on the available data, there does not appear to be any evidence that any change in BBC activity, or the presence of the BBC, has prevented a real terms increase in commercial broadcasters’ revenues. BBC revenues allocated to television have not grown, and commercial broadcasters’ revenues have grown rapidly, albeit with a different composition with an increased proportion coming from subscription revenues.

Since revenues and profits drive commercial broadcasters’ capacity to spend money on content, this might also suggest little evidence of BBC activity crowding out commercial broadcasters’ expenditure.
4.4 There is little evidence that BBC spending has crowded out commercial broadcasters’ spending since 2003

4.4.1 Spending on programmes has declined for the BBC and increased for commercial broadcasters since 2003

Figure 10 below shows the trend of BBC and commercial broadcasters’ expenditure on programmes, in real terms, between 2003 and 2014. The BBC’s spending on programmes has declined by an average of 3.0 per cent per annum, in real terms, between 2003 and 2014. Income has also declined by an average of 1.0 per cent per annum over the same period. Spending on programmes by commercial broadcasters has increased by an average of 1.3 per cent per annum, in real terms, between 2003 and 2014, although this has varied over the period.

Figure 10: Broadcasters spending on programmes, 2003 – 2014 (£’000, 2014 prices)

![Figure 10: Broadcasters spending on programmes, 2003 – 2014 (£’000, 2014 prices)](image)

Source: Ofcom communications market reports, KPMG analysis.

Figure 11 shows commercial broadcasters’ spending on programmes as a proportion of BBC spend on programmes between 2003 and 2014.

Figure 11: Commercial broadcasters spend on programmes as a proportion of BBC spend on programmes, 2003 – 2014

![Figure 11: Commercial broadcasters spend on programmes as a proportion of BBC spend on programmes, 2003 – 2014](image)

Source: Ofcom communications market reports, KPMG analysis.
Commercial broadcasters spend more on programmes than the BBC in real terms and this gap has widened since 2003. Based on this trend, there does not appear to be any crowding out of commercial broadcasters by the BBC in terms of overall spend on programmes over the last decade.

Figure 12 shows BBC and commercial broadcasters’ spend on programmes as a proportion of their respective broadcasting revenue between 2003 and 2014. The BBC spends more on programmes as a proportion of income than commercial broadcasters. In 2003, the BBC spent approximately 62 per cent of its income allocated to television on programmes; commercial broadcasters spent approximately 46 per cent. Spending as a proportion of income for the BBC and commercial broadcasters has followed a similar trend over the past decade, with the BBC now spending approximately 50 per cent of its revenues on programmes and commercial providers approximately 43 per cent.

Figure 12: BBC and commercial broadcasters’ spend on programmes as a proportion of broadcasting revenue, 2003 – 2014

As shown in Figure 13 below, there is also no evidence, based on the data analysed, that multichannel broadcasters’ spend on entertainment or news has declined, in real terms, between 2004 and 2014. In fact, multichannel broadcasters’ spend on entertainment programmes has increased by an average of 7.0 per cent per annum, in real terms, over the period.

As shown in Figure 13 below, there is also no evidence, based on the data analysed, that multichannel broadcasters’ spend on entertainment or news has declined, in real terms, between 2004 and 2014. In fact, multichannel broadcasters’ spend on entertainment programmes has increased by an average of 7.0 per cent per annum, in real terms, over the period.

Source: Ofcom communications market reports, KPMG analysis.

Overall, the trends in the above data demonstrate little evidence to support the notion that an increase in BBC spending has coincided with, and caused, a reduction in commercial broadcasters’ activity, or, conversely, that a reduction in BBC activity has arrested a decline in commercial broadcasters’ activity or allowed more rapid expansion. In fact, commercial broadcasters’ spending on programmes has declined at a slower rate than that of the BBC over the past decade.

4.5 Based on the available data, our econometric analysis finds that there is no evidence that the BBC crowds out private sector broadcasting activity in news and entertainment

The charts shown above are consistent with the notion that the BBC does not crowd out commercial broadcasters’ activity.

However, commercial broadcasters’ performance is affected by a multitude of factors simultaneously.

Econometric regression analysis is a technique commonly used by economists to diagnose the relationship between a variable we are interested in analysing (technically known as the ‘dependent variable’) and a multitude of factors that affect it all at the same time (known as ‘explanatory variables’). This widely-used statistical technique allows us to isolate, to a level of statistical confidence, the underlying correlation between numerous variables and the dependent variable. This technique is a powerful approach when it is combined with a hypothesis that is grounded in a strong economic framework.

We conducted a detailed econometric regression analysis to diagnose how changes in both commercial broadcasters’ viewer hours and revenues respond to changes in a wide range of observable and collectable potential drivers of these variables. The level of BBC activity is one of them.

The detailed results of this analysis are shown in the Appendix 1 (pages 44 and 53 for entertainment and news respectively). A summary of the findings from our regression analysis is set out in the rest of this section.

4.5.1 Entertainment viewer hours econometric results

When conducting our regressions, we considered numerous different approaches, explanatory variables and functional forms.
In this case, our baseline regression model included the following explanatory variables:

- quarterly dummy variables\(^{43}\) to account for any seasonal variation;
- a time trend to account for any general trend between years, for instance the effects of technological factors such as increasing internet and digital penetration;
- a variable for 2010 onwards to account for a step change in commercial news viewing caused by a change in the measurement technique of the data used; and
- GDP per capita to account for any wider macroeconomic trends.

The baseline model was statistically well-specified and explained c.93 per cent of the variation in the data. It also was statistically better specified than other approaches (using different explanatory variables and different functional forms) that we considered.

Figure 4 (page 20) shows that there is evidence of seasonality for commercial and BBC entertainment viewer hours. Our regression analysis finds that controlling for seasonality and a general time trend explains c.93 per cent of the changes in viewer hours for commercial broadcast entertainment. This means that other factors, even if statistically significant, explain only a relatively small proportion of the overall variation.

In order to test for crowding out, we ran two additional regressions using the baseline and including variables for BBC activity. These variables were:

- the total number of minutes of entertainment television broadcast by the BBC (which captures the total supply of news television to the public by the BBC); and
- BBC spending per minute of BBC entertainment television programme broadcasting (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal)\(^{44}\).

We found that when the BBC’s minutes broadcast and spending per broadcast minute were included together in the regressions, neither had a statistically significantly impact on commercial broadcast entertainment viewer hours. This result is consistent with there being no crowding out of the BBC on commercial broadcasters’ entertainment broadcasting.

When we included only the BBC’s entertainment minutes broadcast, and exclude spending on entertainment per broadcast minute in our baseline regression, we find a similar result.

When, however we included only spending on entertainment per broadcast minute in our baseline regression, and excluded the BBC’s entertainment minutes broadcast, we find the BBC variable appears to have a weak statistically significant negative impact on commercial broadcast minutes of entertainment (at a 10 per cent significance level). We do not consider that this is sufficiently strong evidence of crowding out because:

- the coefficient on the BBC’s entertainment broadcasting spend has only a weak statistical significance in explaining changes in commercial broadcasters’ entertainment viewer hours;
- the finding is not robust to changes in the regression specification – normally, for us to be confident of such a finding, we would expect to see it hold when the regression functional form is changed and / or when different explanatory variables are added (neither of which hold in this case).

It is, therefore, difficult to conclude that there is any statistically significant relationship between BBC activity in entertainment broadcasting and commercial broadcasters’ entertainment viewer hours.

\(^{43}\) A ‘dummy variable’ allows the regression analysis (which can only use numerical data) to account for non-numerical factors, by converting them into numerical form.

\(^{44}\) The available data on BBC expenditure on content does not differentiate between broadcast categories, so we have used total BBC spending as a proxy for entertainment television spending. This requires the implicit assumption that a 10 per cent increase in the total spend by the BBC leads to a 10 per cent increase in the spending on BBC entertainment television.
4.5.2 News viewer hours econometric results

We adopted a similar approach to the econometric analysis of broadcast news television viewer minutes.

Our preferred baseline regression model included the following explanatory variables to explain the variation in commercial broadcast news viewer minutes:

- quarterly variables\(^{45}\) to account for any seasonal variation;
- a time trend to account for any general trend between years, for instance the effects of technological factors such as increasing internet and digital penetration;
- a variable from 2010 onwards to account for a step change in commercial news viewing caused by a change in the measurement technique of the data used;
- an event variable for two quarters of 2003 when commercial viewing minutes of television news increased substantially as a result of the start of the Iraq war; and
- GDP per capita to account for any wider macroeconomic trends.

The baseline model was statistically well-specified and explains c.89 per cent of the variation in the data.

Other regression models we considered which included other variables, lagged dependent variables, and different functional forms, were not statistically as well-specified as our baseline model.

Figure 6 (page 22) shows that there is evidence of seasonality in viewer hours for commercial and BBC broadcast news. Our regression analysis finds that controlling for seasonality and a general time trend explains c.87 per cent of the changes in viewer hours for commercial broadcast news. This means that other factors, even if statistically significant, will explain help explain only a relatively small proportion of the overall variation.

In order to test for crowding out, we ran two additional regressions using the baseline and including the following variables for BBC activity:

- the total number of minutes of news broadcast by the BBC (which captures the total supply of news television to the public by the BBC); and
- BBC spending per minute of BBC news programme broadcasting (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal).

We found no statistically significant impact of BBC’s activity, both in terms of minutes broadcast and spending per broadcast minute, on commercial broadcast news viewer hours from the data analysed.

That is, the econometric analysis provides no statistical indication that the BBC crowds out commercial broadcast news measured by viewer hours.

Furthermore, in any other specifications of the regressions we analysed, we found no evidence consistent with the notion of crowding out. Our results were not dependent on the functional form or regression approach we adopted.

4.5.3 Commercial broadcaster revenues econometric results

We considered several different approaches to regressions to analyse commercial broadcasters’ revenues.

\(^{45}\) A ‘dummy variable’ allows the regression analysis (which can only use numerical data) to account for non-numerical factors, by converting them into numerical form.
All of the regression models that we specified using total commercial broadcaster revenues on broadcasting as the dependent variable yielded results that were not statistically robust. This was due to a lack of available data and the associated limitations regarding the amount of data that we were able to analyse.

While we are unable to say from the statistical analysis, with any confidence, what the underlying drivers of commercial broadcaster revenues are, what we can say is that there is no evidence, based on the data that we were able to analyse, that a change in the BBC’s activity has any statistically significant effect on them. That is, our analysis of the data available to us was consistent with the hypothesis that the BBC does not crowd out commercial broadcasters’ revenues.

This is consistent with the charts above that show a steady and consistent increase in commercial broadcasters’ revenues regardless of changes to the BBC’s activity or revenues.
The evidence on whether the BBC crowds out local newspapers’ activity

5.1 An acceleration in the decline of local newspaper circulation coincided with the start of the global economic crisis

Local and regional newspaper circulation has been in decline for many years.

Between 2001 and 2007, their circulation declined at an average rate of 1.3 per cent per annum.

Figure 14 shows that this decline accelerated after the economic downturn took hold, when circulation fell by an average of 10.0 per cent per annum between 2007 and 2014.

Figure 14: Average local and regional newspaper circulation and UK GDP per capita, 2001 – 2014 (£’000, 2014 prices)

Like many businesses, the evidence suggests that local newspapers suffered as a result of businesses spending less on discretionary purchases – such as advertising in the local press, which, as can be seen in Figure 15, appears to move in line with GDP per capita – and consumers tightened their belts, cutting back on non-necessities (of which newspapers may have been one such item).

After peaking in 2004, regional and local newspaper print advertising revenues have declined by an average of 12.5 per cent per year, in real terms, to 2014.

Although regional and local digital advertising revenues have increased by an average of 8.3 per cent annually between 2011 and 2014, the level is still small and its growth has not, by a substantial margin, mitigated the decline in print advertising revenues. Even after the significant decline in print advertising revenues, digital advertising revenues still formed less than a fifth of total regional and local newspaper advertising revenues in 2014.
Despite what appears to be an acceleration in the decline of revenues after the economic downturn, local newspapers, and their advertising revenues, were falling even when the economy was growing and continued to decrease after the economy began to pick up.

There is clearly more to the story than economic growth alone.

Picking up from the discussion in Section 2 above, there are a number of possible explanations.

One obvious potential explanation is the growth of the Internet, as people increasingly get their local news in different ways.

Another is the growth of the BBC News online, as measured by the number of clicks on the website.

On the face of it, the data are consistent with both explanations.

As Figure 16 shows, the number of BBC News website page views (i.e. all news, not only local news)46 has increased rapidly at the same time as Internet penetration has been increasing. There is a positive 91 per cent correlation between the two data series.

So, how much of the decline in regional and local newspaper circulation is attributable to the general adoption of the Internet, and how much of the decline is due to the growth of the BBC News alone (in terms on the number of clicks on the BBC News website)?

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46 The BBC collects website hits overall and does not split these data between local news website hits and other BBC News website hits. We have, therefore, used BBC website hits in total to proxy web hits for BBC News.
To address this question, it is helpful to consider the overlap between the provision of services from regional and local newspapers and the BBC and statistical analysis.

Regarding the former, as the discussion in Section 2 above explains, the BBC’s online services provide only a subset of the content and services provided by regional and local newspapers. On that basis, the evidence is consistent with the notion that the BBC’s online services can provide only partial competition to regional and local newspapers, at most. And, in turn, this implies that it seems unlikely that the BBC’s online content alone – when accounting for the huge amount of information the average UK citizen gets from the Internet in the modern day and age – is unlikely to be the main reason for the decline in local newspapers. It is more likely, given the discussion in Section 2 above and the data, that Internet penetration had a more prominent role in the change in local newspaper circulation and advertising income.

This conclusion is consistent with the experience of national newspaper circulation in the UK and, also, other markets which are not characterised by competition from large PSBs. For example, in the United States, Sunday and daily newspaper circulation has declined in ten and eleven of the last twelve years respectively. Furthermore, between 2008 and 2012, the International Federation of Audit Bureaux of Circulations (‘IFABC’) data suggest that circulation has fallen for almost 65 per cent of paid regional and local newspapers across twelve member countries and for more than 85 per cent of paid regional and local titles across sixteen member countries.

A statistical analysis of the data corroborates this view.

5.2 Based on the available data, our econometric analysis finds no evidence that the BBC website crowds out local newspapers

While econometric analysis can help diagnose how factors affect a variable of interest, Figure 16 captures the challenge in trying to unpick what has been the driving force behind the change of local newspaper circulation over time when using econometric techniques. The charts show that both Internet penetration and BBC News website clicks for all news stories have increased over the time

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49 Countries analysed for paid newspapers: Argentina, Brazil, China, Denmark, Finland, Hungary, India, Republic of Korea, Malaysia, Poland, Romania, Serbia, Spain, Sweden, Switzerland and The Netherlands. Countries analysed for free newspapers: Argentina, Belgium, Canada, Denmark, Hungary, Republic of Korea, Poland, Romania, Spain, Sweden and Switzerland and The Netherlands. Titles only included if data for all years between 2008 and 2012 inclusive is available in the IFABC dataset.
period analysed with very similar trends. The correlation between Internet penetration and BBC News website clicks is 88 per cent. The fact that these two variables are so highly correlated means that, even without having conducted any regressions, it will necessarily be difficult to isolate the effects of the BBC from those of general Internet adoption on local newspaper readership and revenues.

This, indeed, proved to be the case when we conducted the regression analysis.

The BBC collects data on website hits overall but does not split these data between local news website hits and other BBC News website hits. We have, therefore, used in our analysis BBC website hits to proxy for hits on local news web pages on the BBC website.

We use Internet penetration as a proxy for the general take-up of the Internet and the use of websites such as eBay, GumTree, ParentMail, Facebook, and so on – all described in Section 2.2.2 above – that compete with a large number of services traditionally provided by local papers.

Our regression analysis included both variables (i.e. BBC website clicks and Internet penetration) and GDP per capita. We expect the latter to influence local newspaper circulation because: i) as incomes fall, people may choose to buy fewer newspapers; and ii) advertising revenues will fall for both free and paid local print newspapers with a decline in GDP.

We found, in this regression, no statistically significant impact of BBC website hits on local newspaper circulation. However, there was a statistically significant negative effect attributable to Internet penetration.

The analysis, however, relied upon a smaller number of data points (19) than considered preferable (i.e. 30 or more). This is because the BBC News website hits data are available only from 2005 onwards.

Nevertheless, it appears from what data that are available, that Internet penetration holds greater power when explaining changes in local newspaper circulation than BBC News website hits.

The findings from our econometric analysis for local newspaper circulation are consistent with our econometric analysis of local and regional newspaper advertising revenues. In our advertising revenue analysis, we rely upon data between 1998 and 2014. We tested both print advertising revenues and total (i.e. print and online) advertising revenues\(^5\). We find, across both types of advertising revenue variables analysed, that there is no evidence, based on the available data, of a statistically significant negative effect attributable to BBC News website clicks when, as with our local newspaper circulation analysis, we include Internet penetration and GDP per capita.

This is not unexpected, given the discussion set out in Section 2.2.2; the BBC competes with only a subset of the content and services provided by local papers whereas the Internet arguably competes with all of it.

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\(^5\) We did not attempt to conduct an econometric analysis of online local and regional newspaper advertising revenues as data for online advertising revenues were available between 2011 and 2014 only.
Appendix 1  Insights from the economic literature regarding dependent and explanatory variables

In the literature that focuses on the crowding out issue, there are several variables that are commonly analysed to assess whether PSBs have a negative (or positive) impact on commercial broadcasters’ activity.

Table 2 summarises the measures most typically used to assess the crowding out hypotheses.

Table 2: Variables used in the literature when analysing broadcasting activity

<table>
<thead>
<tr>
<th>Paper</th>
<th>Variable 1</th>
<th>Variable 2</th>
<th>Variable 3</th>
<th>Variable 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berry and Waldfogel (1999)</td>
<td>Listening</td>
<td>Programming format</td>
<td>Entry</td>
<td>Revenues</td>
</tr>
<tr>
<td>Anderson and Coate (2000)</td>
<td>Number of viewers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBC report (2013)</td>
<td>Revenues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buhler and Wey (2013)</td>
<td>Profits/ Revenues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oliver (2009)</td>
<td>Audience share</td>
<td>Broadcasting revenues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enders - The BBC, the press and online news (2015)</td>
<td>Advertising revenues of newspapers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gentkov (2006)</td>
<td>Readership</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Graf (2004)</td>
<td>Expenditure on online advertising</td>
<td>Revenue and costs of online services</td>
<td></td>
<td></td>
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<tr>
<td>Ofcom - Measuring public sector broadcasting</td>
<td>Additional production costs of PSB programmes</td>
<td>Net advertising revenue forgone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohangan and Jennings (2003)</td>
<td>Total number of broadcasting hours for PSB</td>
<td>Total number of broadcaster hours for broadcaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mckinsey (2004)</td>
<td>Quantity of PSB genre</td>
<td>Level of commercial funding</td>
<td>Level of advertising funding</td>
<td></td>
</tr>
<tr>
<td>Ofcom (2004)</td>
<td>Commercial subscription revenues</td>
<td>Commercial advertising revenues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barwise and Picard (2014)</td>
<td>Revenues</td>
<td>Investment</td>
<td>Viewer share</td>
<td></td>
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<tr>
<td>Ofcom (2015)</td>
<td>Viewing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrowclough (2001)</td>
<td>Level of advertising</td>
<td>Broadcast revenue</td>
<td>Audience size</td>
<td></td>
</tr>
<tr>
<td>Vandervuff (2005)</td>
<td>Channel distinctiveness</td>
<td>Channel open and reflective diversity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waldfogel (2002)</td>
<td>Number of stations in each market</td>
<td>Market aggregate television viewing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waldfogel (2011)</td>
<td>Available stations by format</td>
<td>Listening by format</td>
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</tbody>
</table>
Revenue was the most commonly used variable to analyse the level of broadcasting activity. Five out of the seven papers outlined above used revenues as part of their analysis and other papers, such as reports by Enders\textsuperscript{51} and Barrowclough 2001\textsuperscript{52}, also used revenues in their consideration of broadcasting markets. Revenues are considered as they can reflect the success of different providers and can be compared easily across PSBs and commercial stations.

Audience numbers were also thought to be a useful representation of broadcaster activity. Three out of seven papers that we were able to find which considered the issue of crowding out used audience numbers to conduct empirical analyses. Others, such as a 2015 report by Ofcom\textsuperscript{53}, comment on audience figures in their assessment of BBC broadcasting.

Programme format was also used on occasion when determining how PSBs affected the diversity of programs on offer. Other commonly used variables include advertising revenue (Minkinsey 2004\textsuperscript{54} and Enders\textsuperscript{55}) and number of stations in each market (Waldfogel 2002\textsuperscript{56}).

The crowding out literature assesses a variety of possible influences on commercial broadcasters’ activity as well as the level of activity by PSBs.

Table 3 below provides a summary of the variables considered in a number of the papers we reviewed, in addition to PSB activity. As outlined in Section 3.1, some of these papers rely upon econometric analysis, though others rely upon qualitative and hypothetical research. In the case of studies which use regression analysis, we have included data variables below which are reported in each paper as potentially relevant in explaining possible influences on commercial broadcasters’ activity.

The level of investment or funding was most often thought to influence the broadcasting market. Six papers that we reviewed included this variable in their analysis.

Other commonly used variables included education and GDP. Education levels may, for example, influence taste in programme genre and potentially quality.

Although not as common, other papers included age, race and other demographic variables in their empirical studies (Waldfogel 2002\textsuperscript{56} and 2011\textsuperscript{57}). More qualitative papers such as Ohagan and Jennings\textsuperscript{57} (2003), propose that the relative size of the market, number of commercial providers in the country and government regulations are also aspects to consider.

\textsuperscript{51} Enders 2011, BBC TV: impact on investment in UK content.
\textsuperscript{52} Barrowclough, 2011, Spilling Over and Crowding Out: The effects of Public sector/ Private sector convergence and competition in the provision of Public Goods.
\textsuperscript{53} Ofcom, 2015, Public Service Broadcasting in the Internet Age.
\textsuperscript{54} McKinsey, 2004, Review of Public Service Broadcasting around the world.
\textsuperscript{55} Waldfogel 2002, Consumer Substitution among Media, Federal Communications Commission.
\textsuperscript{56} Waldfogel, 2011, Station Ownership and the Provision and Consumption of Radio News.
Table 3: Variables identified in the literature that are considered to impose an influence on audience numbers or programme revenues

<table>
<thead>
<tr>
<th>Paper</th>
<th>Variable 1</th>
<th>Variable 2</th>
<th>Variable 3</th>
<th>Variable 4</th>
<th>Variable 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anderson and Coate (2000)</td>
<td>Advertising levels</td>
<td></td>
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<tr>
<td>Barrowclough (2001)</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barwise and Picard (2014)</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBC report (2013)</td>
<td>Levels of Investment in originations</td>
<td>Diversity of schedule</td>
<td>Audience perceptions of quality</td>
<td>GDP per capita</td>
<td></td>
</tr>
<tr>
<td>Berry and Waldfogel (1999)</td>
<td>Population</td>
<td>Average income</td>
<td>Distribution of education</td>
<td>Number of colleges and education</td>
<td></td>
</tr>
<tr>
<td>Buhler and Wey (2013)</td>
<td>Investment</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Enders - The BBC, the press and online news (2015)</td>
<td>N/A</td>
<td></td>
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<tr>
<td>Graf (2004)</td>
<td>Investment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mckinsey (2004)</td>
<td>Level of public funding per head</td>
<td>GDP</td>
<td>Language spoken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ofcom - Measuring public sector broadcasting</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ofcom (2004)</td>
<td>Audience share</td>
<td>Take up of pay TV</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ofcom (2015)</td>
<td>Levels of Investment</td>
<td>Genres</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohangan and Jennings (2003)</td>
<td>Public funding for each PSB</td>
<td>Channel categories</td>
<td>Relative size of market</td>
<td>Number of commercial providers in the country</td>
<td>Government regulations</td>
</tr>
<tr>
<td>Oliver (2009)</td>
<td>Spending</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Vandervuff (2005)</td>
<td>Number of channels</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Waldfogel (2002)</td>
<td>Age</td>
<td>Education</td>
<td>Gender</td>
<td>Race</td>
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<tr>
<td>Waldfogel (2011)</td>
<td>Demographic information</td>
<td></td>
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</tbody>
</table>
Appendix 2  Econometric analysis

Summary
We have undertaken a detailed econometric analysis to assess if there is any evidence of crowding out of commercial operators by the presence of the BBC in broadcast markets.

This econometric analysis adds to our review of existing literature in the area and our analysis of historical data trends.

Our econometric analysis concentrates on three particular markets:

- the market for entertainment television broadcasting;
- the market for news television broadcasting; and
- the market for local print newspapers.

This Appendix details the methodology, assumptions, and calculations used in our analysis.

It also summarises the results of the econometric analysis.

Approach
Our econometric analysis was based on the overall regression model specification outlined below. This theoretical equation considers the impact of BBC activity on commercial activity, while controlling for a range of other variables and seasonal factors which could plausibly affect commercial operators.

\[
\text{Outcome for commercial operators} = \alpha + \beta \text{Activity of BBC} + \gamma \text{Supply of commercial activity} + \phi \text{Macroeconomic factors} + \lambda \text{Demographic factors} + \mu \text{Technological factors} + \delta \text{Seasonal factors} + \theta \text{Other factors} + \epsilon
\]

Previous academic studies in this area, as well as economic theory, influenced our choice of other variables.

In this specification, a negative and statistically significant ‘Activity of BBC’ variable would be consistent with – though not necessarily conclusive proof of – crowding out by the BBC of commercial activity.

Conversely, if we were to find that the ‘Activity of BBC’ variable is not statistically significantly different to zero, this would be consistent with the notion that the BBC does not crowd out commercial broadcasters’ activity. Again, it would not, however, necessarily be conclusive proof of no crowding out since it is possible that:

- there is insufficient variation in the data over the period analysed; and / or
- relatively small changes in BBC activity might have little or no crowding out effects but larger changes might.

If, therefore, the ‘Activity of BBC’ variables considered in this analysis are not statistically significantly different to zero, the most that can be said is that there is no statistically significant evidence of any crowding out effects in the markets considered over the period analysed.
The different variables used to measure for the factors outlined in the specification and for BBC activity are outlined in the data section below, as well as in the individual regression sections.

In addition to these variables, we also tested a variety of functional specifications including:

- lagged explanatory variables;
- alternative functional forms of explanatory variables (e.g. powers);
- lagged dependent variables; and
- time trends.

In our calculations, we express all prices and economic variables in ‘real terms’.

The price of any good or service generally increases over time in line with general inflation and, typically, with increasing incomes. Consumers’ demand for any product or service is affected not by changes in the price per se, but in the price of that product or service relative to the price of other products and relative to incomes.

For that reason, when diagnosing how changes in price levels affect the consumption of a product or service, it is common practice to strip out the effects of general inflation and express price changes in ‘real terms’ i.e. changes in prices over and above the general effects of inflation.

If prices increase in real terms, this means that the price of the product or service being considered has risen faster than the price of other goods and services.

If prices decline in real terms, this means that the price of the product or service being considered has increased by less than the price of other goods and services. It is this, as opposed to the absolute price change, which, it is typically agreed by economists, is likely to influence consumption levels.

The regressions presented in this section are in a ‘double log’ specification. Often, economists run regressions using a ‘double log’ regression specification due to the ease of interpretation. This specification is used for convenience as the coefficient on variables is an approximation of the elasticity of demand for that variable. The interpretation of a coefficient in a ‘double log’ specification is that for a 1 per cent increase in the explanatory variable there will be a corresponding X per cent change in the dependent variable. Our results are consistent whether the analysis is run in logs or levels.

All of our regressions used ‘robust standard errors’. This removes any potential problems of heteroskedasticity (explained below in Table 4), if it is present, without affecting the magnitude or sign of the explanatory variables’ coefficients.

By no means are all the regressions that were conducted outlined in the subsequent sections of this Appendix; we considered literally hundreds of different options in our analysis, including numerous different functional specifications and combinations of different explanatory variables. In this Appendix, we present what we consider are the most insightful series of regression results. However, we can confirm that none of our conclusions would be changed had we presented the full suite of results from the many different regressions we analysed. Our findings are consistent across many more regression specifications than we have, in the interests of relative brevity, been able to present here.

We used, in line with good practice, a range of econometric diagnostic tests to check the validity of our regression specifications. A description of the potential issues faced by the regressions and the tests used to check for them in this report is outlined in Table 4.
<table>
<thead>
<tr>
<th>Table 4: Diagnostic tests used to test the quality of regression specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue and impact on regression results</strong></td>
</tr>
<tr>
<td><strong>Heteroskedasticity</strong></td>
</tr>
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<td></td>
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<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Functional form, omitted variable bias, biassedness</strong></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Serial correlation</strong></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Multicollinearity</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Model significance</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
**Issue and impact on regression results**  
- be particularly robust or meaningful.
- Considering the R-squared, which measures the amount of variability in the data captured by the model, and a joint significance F-test are known methods of understanding model significance.
- Reviewing the graph of actual data vs predicted data from the model.

---

**Data**

This section outlines in further detail the data that we have used when conducting the econometric analysis. These data can be grouped into three separate groupings:

- dependent variables;
- explanatory variable to study the impact of BBC activity; and
- other explanatory variables.

Table 5 outlines the data for the dependent variables for each of the three regressions.

Table 6 details the summary statistics for these variables.

**Table 5: Data sources for dependent variables used in the econometric analysis**

<table>
<thead>
<tr>
<th>Regression</th>
<th>Dependent variable</th>
<th>Time period</th>
<th>Frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>News television</td>
<td>Total viewer minutes of commercial broadcaster news television</td>
<td>2002 – 2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
<tr>
<td>Entertainment television</td>
<td>Total viewer minutes of commercial broadcaster entertainment television</td>
<td>2002 – 2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
<tr>
<td>Local print newspapers</td>
<td>Total circulation of local print newspapers in the UK</td>
<td>2001 – 2014</td>
<td>Quarterly/ biannual</td>
<td>JICREG</td>
</tr>
<tr>
<td>Local newspaper print and online advertising revenue</td>
<td>Total advertising revenue of local newspapers from print and online operations in the UK</td>
<td>1982 – 2014</td>
<td>Quarterly</td>
<td>WARC</td>
</tr>
</tbody>
</table>

**Table 6: Summary statistics for dependent variables used in the econometric analysis**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>St. Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial broadcaster news viewer minutes</td>
<td>156</td>
<td>12,700,000</td>
<td>3,057,681</td>
<td>6,188,666</td>
<td>27,700,000</td>
</tr>
<tr>
<td>Commercial broadcaster entertainment viewer minutes</td>
<td>156</td>
<td>38,400,000</td>
<td>10,900,000</td>
<td>17,500,000</td>
<td>66,100,000</td>
</tr>
<tr>
<td>Circulation of local print newspapers</td>
<td>33</td>
<td>30,800,000</td>
<td>6,370,704</td>
<td>16,100,000</td>
<td>36,400,000</td>
</tr>
<tr>
<td>Total advertising revenue from local newspaper’s print and online operations</td>
<td>110</td>
<td>563,000,000</td>
<td>168,000,000</td>
<td>232,000,000</td>
<td>815,000,000</td>
</tr>
</tbody>
</table>

Table 7 shows our BBC explanatory variables which we have used to assess crowding out for each of the four regressions.

Table 8 details the summary statistics for these variables.
Table 7: Data sources for the activity of BBC variables used in the econometric analysis

<table>
<thead>
<tr>
<th>Regression</th>
<th>BBC explanatory variable</th>
<th>Time period</th>
<th>Frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>News television</td>
<td>Total broadcast minutes of BBC news television</td>
<td>2002 – 2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
<tr>
<td></td>
<td>Spending by BBC per broadcast minute of news television</td>
<td>2002 – 2014</td>
<td>Annual</td>
<td>Ofcom / BBC</td>
</tr>
<tr>
<td>Entertainment television</td>
<td>Total broadcast minutes of BBC entertainment television</td>
<td>2002 – 2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
<tr>
<td></td>
<td>Spending by BBC per broadcast minute of entertainment television</td>
<td>2002 – 2014</td>
<td>Annual</td>
<td>Ofcom / BBC</td>
</tr>
<tr>
<td>Local print newspaper circulation</td>
<td>Total clicks on BBC News website</td>
<td>2005 – 2014</td>
<td>Monthly</td>
<td>BBC</td>
</tr>
<tr>
<td>Local newspaper print and online advertising revenue</td>
<td>Total clicks on BBC News website</td>
<td>2005 – 2014</td>
<td>Monthly</td>
<td>BBC</td>
</tr>
</tbody>
</table>

Table 8: Summary statistics for the activity of BBC variables used in the econometric analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>St. Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC news broadcast minutes</td>
<td>156</td>
<td>69,556</td>
<td>3,892</td>
<td>62,559</td>
<td>81,042</td>
</tr>
<tr>
<td>BBC entertainment broadcast minutes</td>
<td>156</td>
<td>16,502</td>
<td>13,431</td>
<td>8,800</td>
<td>175,617</td>
</tr>
<tr>
<td>Total BBC spending on television programming</td>
<td>12</td>
<td>1,635,704</td>
<td>203,657</td>
<td>1,315,386</td>
<td>1,910,768</td>
</tr>
<tr>
<td>BBC online clicks</td>
<td>113</td>
<td>1,470,000,000</td>
<td>625,000,000</td>
<td>591,000,000</td>
<td>3,050,000,000</td>
</tr>
</tbody>
</table>

The available data on BBC content expenditure does not differentiate between broadcast categories. We have used total BBC spending as a proxy for entertainment and news television spending. This requires the implicit assumption that a 10 per cent increase in the total spend by the BBC leads to a 10 per cent increase in the spending on BBC entertainment and news television. We generated the BBC spending variables per broadcast minute by taking the BBC spending, applying it on a quarterly basis, then dividing by broadcast minutes for news and entertainment respectively.

As outlined in our approach, along with a variable to assess the impact / activity of the BBC, we tested a range of variables which may also influence commercial activity in the broadcasting and local newspaper markets. These include variables covering technological change, macroeconomic factors, and the availability of substitutes.

Table 9 outlines the data used for these additional explanatory variables.

Table 10 details the summary statistics for these variables.
Table 9: Data sources for other explanatory variables used in the econometric analysis

<table>
<thead>
<tr>
<th>Variable type</th>
<th>Variable description</th>
<th>Time period</th>
<th>Frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>Real GDP per capita in 2011 prices</td>
<td>1998–2014</td>
<td>Quarterly</td>
<td>ONS</td>
</tr>
<tr>
<td>Internet penetration</td>
<td>Households with internet access; quarterly between 1998 and 2004 followed by linear interpolation to quarterly frequency from 2005 onwards</td>
<td>1998–2014</td>
<td>Quarterly / Annual</td>
<td>ONS</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>Total broadcast minutes of news television by commercial operators</td>
<td>2002–2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>Total broadcast minutes of entertainment television by commercial operators</td>
<td>2002–2014</td>
<td>Monthly</td>
<td>BARB</td>
</tr>
</tbody>
</table>

Table 10: Summary statistics for other explanatory variables used in the econometric analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>St. Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (real terms)</td>
<td>68</td>
<td>24,797</td>
<td>1,572</td>
<td>21,188</td>
<td>26,868</td>
</tr>
<tr>
<td>Internet penetration</td>
<td>38</td>
<td>43</td>
<td>22</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>156</td>
<td>74,052</td>
<td>11,874</td>
<td>16,615</td>
<td>93,799</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>156</td>
<td>192,148</td>
<td>41,388</td>
<td>114,907</td>
<td>266,662</td>
</tr>
</tbody>
</table>

We present the detailed results from our econometric analysis for each of the three markets (news television broadcasting; entertainment television broadcasting; and the market for local print newspapers), in turn, in the rest of this Appendix.
Econometric analysis of the impact of BBC entertainment television viewing on commercial broadcasting news television viewing

**Summary of results**

Table 11 provides an overarching summary of all of the regressions presented in this section of the Appendix.

Table 11: Summary results of entertainment broadcasting regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression 1</th>
<th>Regression 2</th>
<th>Regression 3</th>
<th>Regression 4</th>
<th>Regression 5</th>
<th>Regression 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC entertainment broadcast minutes</td>
<td>-0.435</td>
<td>-0.625**</td>
<td></td>
<td>0.0715*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBC spend per minute of entertainment broadcast</td>
<td>-0.503</td>
<td>-0.696**</td>
<td></td>
<td>-0.0762*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.447***</td>
<td>0.492***</td>
<td>0.472***</td>
<td>0.479***</td>
<td>0.484***</td>
<td></td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>-1.026**</td>
<td>-0.610</td>
<td>-0.918**</td>
<td>-0.863**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time trend</td>
<td>0.0101***</td>
<td>0.00560***</td>
<td>-6.04e-05</td>
<td>-0.00281</td>
<td>0.00467***</td>
<td>0.00389*</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.165***</td>
<td>-0.155***</td>
<td>-0.148***</td>
<td>-0.152***</td>
<td>-0.151***</td>
<td></td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.269***</td>
<td>-0.251***</td>
<td>-0.247***</td>
<td>-0.256***</td>
<td>-0.254***</td>
<td></td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.158***</td>
<td>0.149***</td>
<td>0.145***</td>
<td>0.149***</td>
<td>0.134***</td>
<td>0.134***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.106***</td>
<td>0.0996**</td>
<td>0.103***</td>
<td>0.131***</td>
<td>0.0945**</td>
<td>0.0954**</td>
</tr>
<tr>
<td>Constant</td>
<td>18.13***</td>
<td>22.81***</td>
<td>24.70***</td>
<td>21.61***</td>
<td>20.56***</td>
<td>21.02***</td>
</tr>
</tbody>
</table>

| Observations | 52 | 52 | 52 | 52 | 52 | 52 |
| R-squared    | 0.906 | 0.940 | 0.946 | 0.944 | 0.944 | 0.945 |
| Durbin Watson | 1.292 | 1.717 | 1.774 | 1.757 | 1.645 | 1.665 |
| Ramsey RESET | 0.323 | 0.599 | 0.559 | 0.561 | 0.611 | 0.609 |
| VIF           | 2.31 | 3.68 | 40.78 | 36.41 | 3.54 | 3.79 |

In addition to the regressions outlined, we also tested a wide range of possible alternatives including other explanatory variables and different specifications. The results of these regressions were not

---

58 Explanatory variables denoted by *** are statistically significantly different to zero at the 99% level of confidence. Explanatory variables denoted by ** and * are statistically significantly different to zero at the 95% and 90% levels of confidence respectively.
preferable, statistically, to the analysis presented below and do not alter the conclusions of our analysis.

Outline of approach
This section considers whether the BBC crowds out commercial broadcasters in the entertainment television sector.

Our analysis uses data covering the period between Quarter 1 2002 and Quarter 4 2014, resulting in a total of 52 observations.

Our dependent variable is the total number of minutes of viewing of commercial broadcasters’ entertainment television programmes in each quarter. We use this measure to capture the total size of the market that is taken up by commercial broadcasters.

Our definition of crowding out refers to the hypothesis that BBC broadcasting leads to a fall in commercial channels’ entertainment television audiences. We considered two potential measures of BBC activity that could lead to crowding out in this case:

- the total number of minutes of entertainment television broadcast by the BBC (which captures the total supply of entertainment television to the public by the BBC); and / or
- BBC spending per minute of BBC entertainment television broadcasting (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal).

Should an increase in either or both of these values, representing higher levels of activity by the BBC, lead to crowding out, this would manifest itself with a negative coefficient in the regression equation.

The available data on BBC expenditure on content does not differentiate between broadcast categories, so we have used total BBC spending as a proxy for entertainment television spending. This requires the implicit assumption that a 10 per cent increase in the total spend by the BBC leads to a 10 per cent increase in the spending on BBC entertainment television.

The regressions below also include a number of other explanatory variables. These are:

- quarterly dummy variables to account for any seasonal variation;
- a time trend to account for any general trend between years, for instance through the effects of technological factors such as increasing internet and digital penetration;
- GDP per capita to account for any wider macroeconomic trends;
- a dummy variable for 2010 onwards to account for a step change in commercial news viewing caused by a change in the measurement technique of the data used; and
- broadcast minutes of entertainment television by commercial operators (which captures total supply of entertainment television to the public by commercial operators).

The regression results and diagnostic tests are outlined in the following sections.

---

59 There was an unexplained spike in entertainment broadcast hours in two of the months of June, July and August 2014. For the purpose of the econometric analysis presented in this Appendix, we do not make any adjustment for this.
Regression 1: Regression with dummies including seasonal variation, time trend and 2010 dummy

Regression 1 presents our starting point for studying the impact of BBC activity on commercial broadcast entertainment television. This regression seeks to establish how much variation in viewing minutes of commercial news television is explained by seasonality, annual trends (for instance brought on by technological change and population growth) and any other data specific factors. The full list of explanatory variables used in this regression are:

- dummy variables to account for seasonal variation;
- a time trend; and
- a dummy variable for 2010 onwards.

The results for Regression 1 are outlined in Table 12. In addition, the diagnostic tests are outlined in Table 13.

The dummy variable for 2010 was included as we were informed, by BARB, that the measurement methodology of the data underwent a one-off permanent change during this period.

The results indicate that seasonal variation and annual trends account for a large proportion of the variation commercial news television viewer minutes, with a reported R-squared of 0.91. The time trend is positive and statistically significant at a 1 per cent significance level, indicating a small general increase in commercial entertainment television viewer minutes over time, possibly brought on by technological factors. The quarterly dummy variables are all statistically significant at a 1 per cent significance level, with the Q2 and Q3 dummy variables displaying a negative coefficient and the Q4 dummy displaying a positive coefficient. The dummy for post 2010 onwards is positive and statistically significant at the 1 per cent significance level.

The regression passes the Ramsey RESET test. The Durbin Watson test, which is below the lower bound critical statistic at a 5 per cent significance level, indicates the presence of autocorrelation. A VIF of below 4 indicates low or no multicollinearity.

Table 12: Results for Regression 1 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time trend</td>
<td>0.0101***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.165***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.269***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.158***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.106***</td>
</tr>
<tr>
<td>Constant</td>
<td>18.13***</td>
</tr>
</tbody>
</table>

Table 13: Diagnostic tests for Regression 1 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.906</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.292</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.323</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>2.31</td>
</tr>
</tbody>
</table>
Regression 2: Baseline regression with seasonal variation, time trend, 2010 dummy and GDP per capita

Regression 2 presents our baseline regression. It builds on Regression 1 by further including:

- GDP per capita, to account for macroeconomic trends; and
- commercial television entertainment broadcast minutes, as a measure of supply of entertainment TV by commercial operators.

The results for Regression 2 are outlined in Table 14. In addition, the diagnostic tests are outlined in Table 15.

Results for all variables except GDP per capita and commercial entertainment broadcast minutes remain consistent with Regression 1. All of the variables maintain the same sign, although with a small change in coefficient magnitude. All variables that were statistically significant in Regression 1 remain so at the same significance levels, except for the post 2010 dummy variable which maintains statistical significance at a 5 per cent significance level.

The GDP per capita variable itself is negative and statistically significant at a 5 per cent significance level. This might appear, at first blush, counterintuitive. However, there could be some economic logic to this result e.g. if consumers choose to stay at home and watch TV rather during an economic downturn as the affordability of other alternative leisure activities outside of the home declines with falling incomes (i.e. entertainment television might be viewed as an inferior good).

The commercial entertainment broadcast minutes variable is positive and statistically significant at a 1 per cent significance level.

Regression 2 passes the Ramsey RESET test. The Durbin Watson test statistic, although higher than Regression 1, sits between the lower and upper bound of the critical statistic, with an inconclusive result. A VIF of below 4 indicates low or no multicollinearity.

Our baseline regression is statistically well-specified and accounts for 94 per cent of the variation in commercial entertainment television viewer minutes. In the following three regressions, we include variables to account for BBC activity in order to test if there is any statistically significant evidence of an impact on commercial entertainment television viewer minutes.

### Table 14: Results for Regression 2 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.447***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>-1.026**</td>
</tr>
<tr>
<td>Time trend</td>
<td>0.00560***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.155***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.251***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.149***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.0996**</td>
</tr>
<tr>
<td>Constant</td>
<td>22.81***</td>
</tr>
</tbody>
</table>
Table 15: Diagnostic tests for Regression 2 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.940</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.717</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.599</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>3.68</td>
</tr>
</tbody>
</table>

Regression 3: Baseline regression including BBC broadcast minutes of entertainment television and BBC spending on entertainment television

Regression 3 presents our baseline regression with the inclusion of two variables which capture BBC activity in the market. The BBC variables in this regression are:

- BBC broadcast minutes of entertainment television (which captures the total supply of entertainment television to the public by the BBC); and
- BBC spending per minute of broadcast entertainment (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal).

The results for Regression 3 are outlined in Table 16. In addition, the diagnostic tests are outlined in Table 17.

Results for the quarterly dummy variables and commercial broadcast minutes of entertainment television remain consistent with Regression 2. All variables remain statistically significant at a 1 per cent significance level and maintain the same sign, although with some small changes to the coefficient magnitude. The results for the post 2010 dummy variable also remains consistent with Regression 2, although it is statistically significant at a 1 per cent significance level in Regression 3.

GDP per capita and the time trend appear to indicate the presence of instability when comparing Regression 3 to Regression 2. GDP per capita remains negative but loses statistical significance and experiences a notable fall of coefficient magnitude. The time trend variable also loses statistical significance at any recognised significance level, with the coefficient sign changing from positive to negative. Table 11 demonstrates the instability of these variables and the presence, and effect, of multicollinearity in the regression.

Both the BBC broadcast minutes variable and the BBC spending per minute of broadcast news variable have a negative coefficient but are not statistically significant at any recognised significance level. These results are consistent with the finding of no evidence, from the data analysed, that BBC activity, whether that be the supply of BBC news television or spending on BBC news television, crowds out commercial activity in the news television market.

However, the statistical reliability of the Regression 3 is questionable. Although it passes the Ramsey RESET test and maintains an inconclusive result for the Durbin Watson (similar to Regression 2), a VIF of 40.78 indicates the presence of very high collinearity between explanatory variables, at over 10 times the critical statistic of 4. In particular, the individual VIF statistics are large for BBC spend per minute of entertainment broadcast (186.06), BBC broadcast minutes of entertainment (124.73) and the time trend (38.68). This indicates the presence of very high collinearity between these variables. This collinearity is unsurprising for the logged versions of spending per broadcast minute and broadcast minutes since they are have a correlation coefficient of -95 per cent.

The high multicollinearity, along with unstable coefficients for the time trend, GDP per capita and BBC broadcast minutes of entertainment television variables, means that we are unable to rely on
this regression to answer the question of crowding out. This means, in turn, that Regression 3 does not – either in terms of the coefficient values or the reliability of the regression – provide evidence of the presence of crowding out by the BBC in entertainment broadcasting.

Table 16: Results for Regression 3 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC entertainment broadcast minutes</td>
<td>-0.435</td>
</tr>
<tr>
<td>BBC spend per minute of entertainment broadcast</td>
<td>-0.503</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.492***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>-0.610</td>
</tr>
<tr>
<td>Time trend</td>
<td>-6.04e-05</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.148***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.247***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.145***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.103***</td>
</tr>
<tr>
<td>Constant</td>
<td>24.70***</td>
</tr>
</tbody>
</table>

Table 17: Diagnostic tests for Regression 3 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.946</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.774</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.559</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>40.78</td>
</tr>
</tbody>
</table>

Regression 4: Baseline regression excluding GDP per capita and including BBC broadcast minutes of entertainment television and BBC spending on entertainment television

As GDP per capita was not statistically significant in the case of Regression 3, we considered a second regression which presented Regression 3 but excludes GDP per capita. The results for Regression 4 are outlined in Table 18. In addition, the diagnostic tests are outlined in Table 19.

Results for Regression 4 are consistent with Regression 3 with respect to coefficient signs and statistical significance for all variables except BBC entertainment broadcast minutes and BBC spending per minute of broadcast entertainment television. In Regression 4, these two variables are both negative and become statistically significant at a 5 per cent significance level, potentially indicating crowding out by the BBC.

However, as with Regression 3, Regression 4 displays instability for the time trend and BBC broadcast entertainment television variables. In addition, a VIF of 36.41 indicates very high collinearity between explanatory variables, at over 9 times the critical statistic of 4. Again, the individual VIF statistics are particularly high for BBC spend per minute of entertainment broadcast (149.74), BBC broadcast minutes of entertainment (102.12) and the time trend (26.11), indicating very high collinearity between these variables.

The high multicollinearity, along with unstable coefficients for the time trend and BBC broadcast minutes of entertainment television variables, means that this regression should not be relied upon
as evidence of the existence, or otherwise, of crowding out. Regression 4 does not, therefore, provide any statistically reliable evidence of the presence of crowding out by the BBC in entertainment television.

**Table 18: Results for Regression 4 with commercial entertainment television viewing minutes as the dependent variable**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC entertainment broadcast minutes</td>
<td>-0.625**</td>
</tr>
<tr>
<td>BBC spend per minute of entertainment broadcast</td>
<td>-0.698**</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.472***</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.00281</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.148***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.246***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.149***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.131***</td>
</tr>
<tr>
<td>Constant</td>
<td>21.61***</td>
</tr>
</tbody>
</table>

**Table 19: Diagnostic tests for Regression 4 with commercial entertainment television viewing minutes as the dependent variable**

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.944</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.757</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.561</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>36.41</td>
</tr>
</tbody>
</table>

The following two regressions, Regression 5 and Regression 6, analyse the independent impact of the two BBC activity variables on viewing minutes of commercial entertainment television in order to analyse the impact when removing the issue of multicollinearity.

**Regression 5: Baseline regression including a variable of BBC broadcast minutes of entertainment television**

Regression 5 presents our baseline regression with the inclusion of a variable capturing BBC activity in the market. The BBC variable in this regression is BBC broadcast minutes of entertainment television, a measure of BBC supply into the market. The results for Regression 5 are outlined in Table 20. In addition, the diagnostic tests are outlined in Table 21.

Regression 5 passes the Ramsey RESET test. The Durbin Watson test statistic, although lower than Regression 2, sits between the lower and upper bound of the critical statistic, with an inconclusive result. A VIF of below 4 indicates low or no multicollinearity.

Results for all variables except BBC broadcast minutes of entertainment television remain consistent with Regression 2, with all variables remaining statistically significant at the same significance levels and maintaining the same sign, although with small changes to coefficient magnitude. The BBC broadcast minutes of entertainment television variable has a positive coefficient and is statistically significant at the 10 per cent significance level, indicating weak statistical significance. This is consistent with there being no evidence, from the data analysed, that BBC activity crowds out commercial activity in the entertainment broadcasting market.
Table 20: Results for Regression 5 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC entertainment broadcast minutes</td>
<td>0.0715*</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.479***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>-0.918**</td>
</tr>
<tr>
<td>Time trend</td>
<td>0.00467**</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.152***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.255***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.134***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.0945**</td>
</tr>
<tr>
<td>Constant</td>
<td>20.56***</td>
</tr>
</tbody>
</table>

Table 21: Diagnostic tests for Regression 5 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.944</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.645</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.611</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>3.54</td>
</tr>
</tbody>
</table>

Regression 6: Baseline regression including BBC spending on entertainment television

Regression 6 presents our baseline regression with the inclusion of a variable capturing BBC activity in the market. The BBC variable in this regression is BBC spend per broadcast minute of entertainment television, a measure which seeks to capture the quality of BBC programming. The results for Regression 6 are outlined in Table 22. The diagnostic tests are outlined in Table 23.

Regression 6 passes the Ramsey RESET test. The Durbin Watson test statistic again presents an inconclusive result. A VIF of below 4 indicates low or no multicollinearity.

Results for all variables except BBC broadcast minutes of entertainment television remain consistent with Regression 2, with all variables remaining statistically significant at the same significance levels and maintaining the same sign, although with small changes to coefficient magnitude.

BBC spending on entertainment television programmes appears to have a weak statistically significant negative impact on commercial broadcast minutes of entertainment (at a 10 per cent significance level). We do not consider that this is sufficiently strong evidence of crowding out because:

- the coefficient on the BBC’s spending on entertainment broadcasting has only a weak statistical significance in explaining changes in commercial broadcasters’ entertainment viewer hours;
- the size of the coefficient is very small, indicating that a 1 per cent increase in BBC spending on entertainment television would lead to a 0.08 per cent decrease in commercial viewing minutes of entertainment television; and
- critically, the finding is not robust to changes in the regression specification – for us to be confident of any regression coefficients, we would want estimates to remain invariant to
changes in the regression functional form and/or when different explanatory variables are added (neither of which hold in this case).

It is, therefore, not possible to conclude, from this regression, that there is any statistically significant relationship between BBC activity in entertainment broadcasting and commercial broadcasters’ entertainment viewer hours.

Table 22: Results for Regression 6 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC spend per minute of entertainment broadcast</td>
<td>-0.0762*</td>
</tr>
<tr>
<td>Commercial entertainment broadcast minutes</td>
<td>0.484***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>-0.863**</td>
</tr>
<tr>
<td>Time trend</td>
<td>0.00389*</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.151***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.254***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>0.134***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>0.0954**</td>
</tr>
</tbody>
</table>

Table 23: Diagnostic tests for Regression 6 with commercial entertainment television viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.945</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.665</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.609</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>3.79</td>
</tr>
</tbody>
</table>
Econometric analysis of the impact of BBC news television viewing on commercial broadcasting news television viewing

Summary of results

Table 24 provides a summary of our regressions of the impact of BBC news television viewing on commercial broadcasting news television viewing. As with our analysis of news broadcasting, we in addition tested a very large number of additional regressions, including other explanatory variables and different specifications. They do not alter the conclusions of our analysis and, in the interests of brevity, we do not present the results of the numerous alternative regressions we considered in this paper.

Table 24: Summary results of news broadcasting regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression 1</th>
<th>Regression 2</th>
<th>Regression 3</th>
<th>Regression 4</th>
<th>Regression 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC news broadcast minutes</td>
<td>0.430</td>
<td>-0.358</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBC spend per minute of news broadcast</td>
<td>0.622*</td>
<td></td>
<td></td>
<td></td>
<td>0.382</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>0.224****</td>
<td>0.301***</td>
<td>0.240***</td>
<td>0.283***</td>
<td></td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>1.097****</td>
<td>0.704**</td>
<td>1.052***</td>
<td></td>
<td>0.822**</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.00931***</td>
<td>-0.0121***</td>
<td>-0.0112***</td>
<td>-0.00773**</td>
<td></td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.121***</td>
<td>-0.117***</td>
<td>-0.117***</td>
<td>-0.119***</td>
<td></td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0883***</td>
<td>-0.0914***</td>
<td>-0.0974***</td>
<td>-0.0852***</td>
<td>-0.0905***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0214</td>
<td>-0.0147</td>
<td>-0.0238</td>
<td>-0.00970</td>
<td>-0.0166</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.188***</td>
<td>0.195***</td>
<td>0.208***</td>
<td>0.219***</td>
<td>0.221***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.135***</td>
<td>-0.0901***</td>
<td>-0.103***</td>
<td>-0.0899***</td>
<td>-0.0979***</td>
</tr>
<tr>
<td>Constant</td>
<td>17.93***</td>
<td>4.140</td>
<td>0.380</td>
<td>8.750</td>
<td>5.232</td>
</tr>
<tr>
<td>Observations</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.920</td>
<td>0.949</td>
<td>0.953</td>
<td>0.950</td>
<td>0.953</td>
</tr>
<tr>
<td>Durbin Watson</td>
<td>0.934</td>
<td>1.347</td>
<td>1.380</td>
<td>1.401</td>
<td>1.399</td>
</tr>
<tr>
<td>Ramsey RESET</td>
<td>0.615</td>
<td>0.172</td>
<td>0.322</td>
<td>0.241</td>
<td>0.349</td>
</tr>
<tr>
<td>VIF</td>
<td>2.18</td>
<td>2.59</td>
<td>13.04</td>
<td>2.89</td>
<td>6.51</td>
</tr>
</tbody>
</table>
Outline of approach

Our analysis uses data covering the period between Quarter 1 2002 and Quarter 4 2014, resulting in a total of 52 observations.

The dependent variable is the total number of minutes of viewing of commercial broadcasters’ news programmes in each quarter. We use this measure to capture the total size of the market that is taken up by commercial broadcasters.

Our definition of crowding out refers to the hypothesis that BBC broadcasting leads to a fall in commercial channels’ news audiences. We considered two potential measures of BBC activity that could lead to crowding out:

- the total number of minutes of news broadcast by the BBC (which captures the total supply of news television to the public by the BBC); and
- BBC spending per minute of BBC news programme broadcasting (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal).

Should an increase in either of these values, representing higher levels of activity by the BBC, lead to crowding out, this would manifest itself with a negative coefficient in the regression equation.

The available data on BBC expenditure on content does not differentiate between broadcast categories, so we have used total BBC spending as a proxy for news spending. This requires the implicit assumption that a 10 per cent increase in the total spend by the BBC leads to a 10 per cent increase in the spending on BBC news.

The regressions below also include, variously, a number of other explanatory variables. These are:

- quarterly dummy variables to account for any seasonal variation;
- a time trend to account for any general trend between years, for instance through the effects of technological factors such as increasing internet and digital penetration;
- GDP per capita to account for any wider macroeconomic trends;
- a dummy variable for 2010 onwards to account for a step change in commercial news viewing caused by a change in the measurement technique of the data used;
- an event dummy variable for two quarters of 2003 when viewing minutes of television news increased substantially as a result of the start of the invasion of Iraq; and
- broadcast minutes of news television by commercial operators (which captures total supply of news television to the public by commercial operators) 60.

The regression results and diagnostic tests are outlined in the following sections.

Regression 1: Regression with dummies including seasonal variation, time trend, 2010 dummy variable and Iraq war dummy variable

Regression 1 presents our starting point for studying the impact of BBC activity on commercial broadcast news television. This regression seeks to establish how much variation in viewing minutes of commercial news television is explained by seasonality, annual trends (for instance brought on by technological change and population growth) and any other data specific factors.

The full list of explanatory variables used in this regression are:

- dummy variables to account for seasonal variation;
- a time trend;

60 There is significant variation in commercial broadcasters’ broadcast hours in 2014. For the purpose of the econometric analysis presented in this Appendix, we make no adjustment to the underlying raw data.
• a dummy variable for 2010 onwards; and
• a dummy variable for the Iraq war.

Table 25 shows the results of our regression analysis and Table 26 outlines the findings from our diagnostic testing.

The results indicate that seasonal variation and annual trends account for a large proportion of the variation in commercial news television viewer minutes, with a reported R-squared of 0.92. The time trend is negative and statistically significant at a 1 per cent significance level, indicating a small general decline in commercial news television viewer minutes over time, possibly brought on by technological factors. The quarterly dummy variables are all negative with the Q2 and Q3 dummy variables displaying statistical significance at a 1 per cent significance level, whilst the dummy variable for Q4 is not statistically significant. In addition, the dummy variable accounting for coverage of the Iraq war is positive and statistically significant at a 1 per cent significance level. The dummy variable for 2010 onwards is negative and statistically significant at a 1 per cent significance level.

The regression passes the Ramsey RESET test. The Durbin Watson test, which is below the lower bound critical statistic at a 5 per cent significance level, indicates the presence of autocorrelation. A VIF of below 4 indicates low or no multicollinearity.

Table 25: Results for Regression 1 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time trend</td>
<td>-0.00931***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.121***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0883***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0214</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.188***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.135***</td>
</tr>
<tr>
<td>Constant</td>
<td>17.93***</td>
</tr>
</tbody>
</table>

Table 26: Diagnostic tests for Regression 1 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.920</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>0.934</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.615</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>2.18</td>
</tr>
</tbody>
</table>

61 Explanatory variables denoted by *** are statistically significantly different to zero at the 99% level of confidence. Explanatory variables denoted by ** and * are statistically significantly different to zero at the 95% and 90% levels of confidence respectively.
Regression 2: Baseline regression with seasonal variation, time trend, 2010 dummy variable, Iraq war dummy variable, GDP per capita and commercial news broadcast minutes

Regression 2 presents our baseline regression. It builds on Regression 1 by further including:

- GDP per capita, to account for macroeconomic trends; and
- Commercial broadcast news television, as a measure of supply by commercial operators.

The results for Regression 2 are outlined in Table 27. In addition the diagnostic tests are outlined in Table 28.

Results for all variables except GDP per capita and commercial news broadcast minutes remain consistent with Regression 1. All of the variables maintain the same sign, although with a small change in coefficient magnitude. All variables that were statistically significant in Regression 1 remain so at the same significance levels. The GDP per capita variable itself is positive, as would be expected through applying economic intuition, and statistically significant at a 1 per cent significance level. The commercial news broadcast minutes variable is also positive and statistically significant at a 1 per cent significance level.

Regression 2 passes the Ramsey RESET test. The Durbin Watson test statistic, although higher than Regression 1, sits between the lower and upper bound of the critical statistic, with an inconclusive result. A VIF of below 4 indicates low or no multicollinearity.

Our baseline regression is statistically well-specified and accounts for 95 per cent of the variation in commercial news television viewer minutes. In the following three regressions, we include variables to account for BBC activity in order to test if there is any statistically significant evidence of an impact on commercial news television viewer minutes.

Table 27: Results for Regression 2 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial news broadcast minutes</td>
<td>0.224***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>1.097***</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.0121***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.117***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0914***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0147</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.195***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.0901***</td>
</tr>
<tr>
<td>Constant</td>
<td>4.140</td>
</tr>
</tbody>
</table>

Table 28: Diagnostic tests for Regression 2 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.949</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.347</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.172</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>2.59</td>
</tr>
</tbody>
</table>
Regression 3: Baseline regression including BBC broadcast minutes of news television and BBC spending on news television

Regression 3 presents our baseline regression with the inclusion of two variables which capture BBC activity in the market. The BBC variables in this regression are:

- BBC broadcast minutes of news television (which captures the total supply of news television to the public by the BBC); and
- BBC spending per minute of broadcast news (which potentially captures the quality of BBC’s output, which might attract a larger audience all other things being equal).

The results for Regression 3 are outlined in Table 29. In addition, the diagnostic tests are outlined in Table 30.

Regression 3 passes the Ramsey RESET test. The Durbin Watson test statistic, although higher than Regression 2, still sits between the lower and upper bound of the critical statistic, with an inconclusive result. A VIF of 13.04 indicates high collinearity between explanatory variables. In particular there is high collinearity between BBC spend per minute of news broadcast, the time trend and BBC broadcast minutes of news.

Results for all variables except BBC broadcast minutes of news television remain consistent with Regression 2, with all variables maintaining the same sign, although with a small change in coefficient magnitude, and those which were statistically significant remaining so at the same significance levels, except for GDP per capita and the time trend which maintain significance at 5 per cent and 10 per cent significance levels respectively.

The variable for BBC broadcast minutes of news television has a positive coefficient, the opposite of what we would expect to see in the case of crowding out, and is not statistically significant at any recognised significance level.

The variable for BBC spending per minute of broadcast news has a positive coefficient, the opposite of what we would expect to see in the case of crowding out, and is statistically significant at the 10 per cent significance level.

These results indicate that there is no evidence, from the data analysed, that BBC activity, whether that be supply of BBC news television or spending on BBC news television, crowds out commercial activity in the news broadcasting market.

Table 29: Results for Regression 3 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC news broadcast minutes</td>
<td>0.430</td>
</tr>
<tr>
<td>BBC spend per minute of news broadcast</td>
<td>0.622*</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>0.301***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>0.704**</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.00601*</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.120***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0974***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0238</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.208***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.103***</td>
</tr>
<tr>
<td>Constant</td>
<td>0.380</td>
</tr>
</tbody>
</table>
Table 30: Diagnostic tests for Regression 3 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.953</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.380</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.322</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>13.04</td>
</tr>
</tbody>
</table>

The following two regressions, Regression 4 and Regression 5, analyse the independent impact of the two BBC activity variables on viewing minutes of commercial news television in order to analyse the impact when attempting to solve the problem of multicollinearity.

**Regression 4: Baseline regression including a variable of BBC broadcast minutes of news television**

Regression 4 presents our baseline regression with the inclusion of a variable capturing BBC activity in the market. The BBC variable in this regression is BBC broadcast minutes of news television, a measure of BBC supply into the market. The results for Regression 4 are outlined in Table 31. In addition, the diagnostic tests are outlined in Table 32.

Regression 4 passes the Ramsey RESET test. The Durbin Watson test statistic, although higher than Regression 2, still sits between the lower and upper bound of the critical statistic, with an inconclusive result. A VIF of below 4 indicates low or no multicollinearity.

Results for all variables except BBC broadcast minutes of news television remain consistent with Regression 2, with all variables maintaining the same sign, although with a small change in coefficient magnitude, and those which were statistically significant remaining so at the same significance levels. The BBC broadcast minutes of news television variable has a negative coefficient and is not statistically significant at any recognised significance level. This indicates that there is no evidence, from the data analysed, that BBC activity crowds out commercial activity in the news broadcasting market.

Table 31: Results for Regression 4 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC news broadcast minutes</td>
<td>-0.358</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>0.240***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>1.052***</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.0112***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.117***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0852***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.00970</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.219***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.0899***</td>
</tr>
<tr>
<td>Constant</td>
<td>8.750</td>
</tr>
</tbody>
</table>
Table 32: Diagnostic tests for Regression 4 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.950</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.401</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.241</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>2.89</td>
</tr>
</tbody>
</table>

Regression 5: Baseline regression including BBC spending on news television

Regression 5 presents our baseline regression with the inclusion of a variable capturing BBC activity in the news broadcasting market. The BBC variable in this regression is BBC spend per broadcast minute of news television, a measure which seeks to capture the quality of BBC programming. The results for Regression 5 are outlined in Table 33. In addition, the diagnostic tests are outlined in Table 34.

Regression 5 passes the Ramsey RESET test. The Durbin Watson test statistic sits between the lower and upper bound of the critical statistic, with an inconclusive result. The introduction of the BBC spend per broadcast minute of news television variable results in an increase in the mean VIF to 6.51. This indicates the presence of medium to high collinearity between explanatory variables. However, most of the collinearity is between the BBC spend per broadcast minute of news variable and the time trend.

Results for all variables except BBC spend per broadcast minute of news television remain consistent with Regression 2, with all variables maintaining the same sign, although with a small change in coefficient magnitude. All variables remain statistically significant at the same levels except for GDP per capita and the time trend which maintain statistical significance at a 5 per cent significance level. The BBC spend per minute of news television variable has a positive coefficient but is not statistically significant at any recognised significance level. This, again, indicates that there is no evidence, from the data analysed, that BBC activity crowds out commercial activity in the news broadcasting market.

Table 33: Results for Regression 5 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBC spend per minute of news broadcast</td>
<td>0.382</td>
</tr>
<tr>
<td>Commercial news broadcast minutes</td>
<td>0.283***</td>
</tr>
<tr>
<td>GDP per capita (real terms)</td>
<td>0.822**</td>
</tr>
<tr>
<td>Time trend</td>
<td>-0.00773**</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>-0.119***</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0905***</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0166</td>
</tr>
<tr>
<td>Dummy for 2003 Iraq war</td>
<td>0.221***</td>
</tr>
<tr>
<td>Dummy for post 2010</td>
<td>-0.0979***</td>
</tr>
<tr>
<td>Constant</td>
<td>5.232</td>
</tr>
</tbody>
</table>
Table 34: Diagnostic tests for Regression 5 with commercial news viewing minutes as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>52</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.953</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>1.399</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.349</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>6.51</td>
</tr>
</tbody>
</table>

**Econometric analysis of the impact of BBC online news on local print newspaper circulation**

Outline of approach

The premise being tested in this analysis is whether BBC online activity has crowded out local print newspaper circulation.

Our dependent variable is circulation of local print newspapers. This was aggregated from average circulation of a list of local newspapers which cover 90 per cent of the local print newspaper market in Great Britain (England, Wales and Scotland) by titles.

We have used BBC News website clicks (excluding World Service) to assess the impact of BBC activity on local newspaper circulation. A negative and statistically significant coefficient on this variable might be consistent with the BBC’s activity crowding out local newspapers.

We have also tested other explanatory variables to explain macroeconomic and technological factors which may influence consumption of local print newspapers. These are:

- GDP per capita captures general macroeconomic trends; and
- Internet penetration captures changes in technology.

Local newspaper circulation data, spanning May 2001 to April 2014, exhibits a shallow downward trend until 2007 when the decline in circulation becomes more rapid.

The BBC clicks data series, available from August 2005, covers both clicks on the BBC website and the BBC news app, introduced in July 2010. BBC clicks increased from August 2005 until the introduction of the news app. After an initial fall, BBC clicks continued rising between April 2011 and April 2014.

Due to the constraints of the available BBC data, we are unable to estimate a relationship between the local print newspapers circulation and BBC clicks prior to August 2005. Hence, the regressions presented in the section below study one of two time periods:

- the ‘Long’ time period regression utilises the full newspaper circulation data set between May 2001 and April 2014; and
- the ‘Short’ time period regression, as a result of being constrained by the BBC clicks data, utilises the data between August 2005 and April 2014.

Table 35 below demonstrates the high collinearity between variables in our analysis through the use of correlation coefficients between the dependent variables (i.e. local newspaper circulation) and our explanatory variables used throughout the regressions, presented for the period August 2005 to April 2014.
Table 35: Correlation coefficients between variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Circulation</th>
<th>Internet penetration</th>
<th>GDP per capita (real)</th>
<th>BBC news clicks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulation</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet penetration</td>
<td>-0.98</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP per capita (real)</td>
<td>0.47</td>
<td>-0.43</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>BBC news clicks</td>
<td>-0.88</td>
<td>0.88</td>
<td>-0.22</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 35 shows that there is a large and positive correlation between BBC news clicks and Internet penetration of +0.88. This indicates that both variables trend in a similar pattern, in this case upwards, over the time period analysed. Even we ran any regressions, we were aware that the strong correlation between BBC news clicks and Internet penetration meant that it was more than likely that it would be, statistically, difficult to isolate the effect on BBC activity on local newspaper circulation from that of the general growth of the Internet.

Another potential drawback is that we were unable to source website clicks over a long time period at consistent frequencies for other news websites (from publicly available sources and third party data providers). Hence, our work does not control for the impact of other news websites on local newspaper circulation explicitly. Based on reviewing qualitative studies of news website usage in the UK, we consider that news website hits other than the BBC are likely to have increased over time. It is likely, therefore, that the regression analysis risks attributing higher explanatory power to the BBC website hits variable, which might be explained by clicks on other news websites if the data were available.

All of the above means that – without further data that we have been unable to source – caution must be attached to any analysis of the effect of the BBC on local newspaper circulation.

Regression 1: Long period regression with GDP per capita and Internet penetration

Regression 1 assesses the impact of GDP per capita and Internet penetration on local newspaper circulation between May 2001 and April 2014.

The results indicate a statistically significant, positive impact of GDP per capita on local newspaper circulation. In addition, Internet penetration has a statistically significant, negative impact on local newspaper circulation.

The regression fails the Ramsey RESET test at 5 per cent indicating incorrect functional form and potentially omitted variables. The Durbin Watson test is also failed, indicating the presence of positive serial correlation. However, the test statistic is skewed by the irregular frequency of the data series which has been used. A VIF of below 4 indicates low or no multicollinearity.

The specification test results indicate that the model specified in Regression 1 might require alternative functional forms or variants of existing variables (Ramsey RESET and Durbin Watson test statistics). We performed further analysis on this model to consider the statistical significance of, for example, different functional forms of the variables and lagged dependent and explanatory variables. In all cases, different versions of the functional form, and different transformations of the explanatory variables, proved to add no statistical benefit to the regressions run.

However, it is likely that Regression 1 omits a series of variables that might help explain some of the variation of local newspaper circulation for the reasons mentioned in Section 2 and 5 of the report. It is likely that Internet penetration captures some of the impact that these other variables may have on local newspaper circulation, but not all. Based on the available collectable data, it has not been possible to control for all of the other influencing factors that we consider to be potentially relevant in explaining the changes in local newspaper variation over time.
Table 36: Results for Regression 1 with total circulation of local print newspapers as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (real terms)</td>
<td>3.411***</td>
</tr>
<tr>
<td>Penetration of internet</td>
<td>-1.336***</td>
</tr>
<tr>
<td>Constant term</td>
<td>-11.93**</td>
</tr>
</tbody>
</table>

Table 37: Diagnostic tests for Regression 1 with total circulation of local print newspapers as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>33</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.874</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>0.376</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>7.12e-06</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>1.75</td>
</tr>
</tbody>
</table>

Regression 2: Short period regression with GDP per capita, BBC clicks and Internet penetration

Regression 2 analyses the impact of GDP per capita, Internet penetration and BBC online clicks on local newspaper circulation between August 2005 and April 2014.

The results indicate a non-significant negative impact of GDP per capita on local newspaper circulation, a result which runs counter to what economic intuition would tell us. The results further show a non-significant negative impact of BBC clicks on local newspaper circulation, and a statistically significant, negative impact of Internet penetration on local newspaper circulation.

The regression fails the Ramsey RESET test at 5 per cent indicating incorrect functional form and potentially omitted variables. The Durbin Watson test is also failed, indicating the presence of positive serial correlation. However, the test statistic is skewed by the irregular frequency of the data series which has been used. The VIF has increased to 5.37, indicating medium to high multicollinearity between explanatory variables. Upon further inspection, the Internet penetration and BBC news clicks variables have an 88 per cent correlation.

The challenges with this model, failing diagnostic tests and displaying coefficients which are counter to economic intuition, are likely to be a function of the high correlation between explanatory variables and the limited number of observations in the analysis. Along with a lack of data on other competitors to local newspapers, such as other news websites, it reduces the reliability of the regression results.

Table 38: Results for Regression 2 with total circulation of local print newspapers as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (real terms)</td>
<td>-0.0705</td>
</tr>
<tr>
<td>Penetration of internet</td>
<td>-1.729***</td>
</tr>
<tr>
<td>BBC online clicks</td>
<td>-0.0303</td>
</tr>
<tr>
<td>Constant term</td>
<td>25.75*</td>
</tr>
</tbody>
</table>
Table 39: Diagnostic tests for Regression 2 with total circulation of local print newspapers as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>19</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.915</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>0.337</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>2.71e-06</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>5.37</td>
</tr>
</tbody>
</table>

**Econometric analysis of the impact of BBC online news on local newspaper advertising revenues**

**Outline of approach**

In addition to studying newspaper circulation as a measure of the local print newspaper market, we also conducted regressions to assess the effect of the BBC’s online news activity on local newspapers’ advertising revenues (the combination of print and online advertising revenues).

Our dependent variable is local newspaper print and online advertising revenue on a quarterly basis. These data cover 90 per cent of the local print newspaper market in Great Britain (England, Wales and Scotland) by titles.

We also tested regressions using local newspaper print advertising revenue only. The results from these regressions were in line for those with combined local newspaper print and online advertising revenue (perhaps unsurprising since online advertising represents only a small proportion of local papers’ total advertising revenues).

We used BBC News website clicks (excluding World Service) to assess the impact of BBC activity on local newspaper circulation. A negative and statistically significant coefficient on this variable might be consistent with the BBC’s activity crowding out local newspapers.

We also tested other explanatory variables to explain macroeconomic and technological factors which may influence consumption of local print newspapers including:

- GDP per capita to capture general macroeconomic trends; and
- Internet penetration to capture changes in technology.

Local newspaper print and online advertising revenue data, spanning 1998 to 2014, is generally increasing in the years to 2005, with the exception of slowdowns and declines in line with the general macroeconomic cycle. After an initial decline between 2005 and 2007, advertising revenues fell significantly between 2007 and 2009. From 2009, advertising revenues continued to decline, although at a slower rate.

The BBC clicks data series, available from August 2005, covers both clicks on the BBC website and the BBC news app, introduced in July 2010. BBC clicks increased from August 2005 until the introduction of the news app. After an initial fall, BBC clicks continued rising between April 2011 and April 2014.

Due to the constraints of the available BBC data, we are unable to estimate a relationship between the local newspaper online and print advertising revenues and BBC clicks prior to August 2005. Hence, the regressions presented in the section below study one of two time periods:

- ‘long’ time period regressions utilise the full local newspaper advertising revenues data set between 1998 and 2014; and
• ‘short’ time period regressions, as a result of being constrained by the BBC clicks data, utilise the data between 2005 and 2014

Regression 1: Long period regression with GDP per capita and Internet penetration

Regression 1 assesses the impact of GDP per capita and Internet penetration on local newspaper print and online advertising revenue between 1998 and 2014.

The results indicate a statistically significant, positive impact of GDP per capita on local newspaper print and online advertising revenue. In addition, Internet penetration has a statistically significant, negative impact on local newspaper print and online advertising revenue.

The regression fails the Ramsey RESET test at 5 per cent indicating incorrect functional form and potentially omitted variables. The Durbin Watson test is also failed, indicating the presence of positive serial correlation. A VIF of below 4 indicates low or no multicollinearity.

The specification test results indicate that the model specified in Regression 1 might require additional functional forms or variants of existing variables (Ramsey RESET and Durbin Watson test statistics). We performed further analysis on this model to consider the statistical significance of, for example, different functional forms of the variables and lagged dependent and explanatory variables. In all cases, these different versions of our regressions added no further statistically significant insight.

It is likely that Regression 1 omits a series of variables that might help explain some of the variation of local newspaper circulation for the reasons mentioned in Section 2 and 5 of the report. It is likely that Internet penetration captures some of the impact that these other variables may have on local newspaper circulation, but not all. Based on the available collectable data, it has not been possible to control for all of the other influencing factors that we consider to be potentially relevant in explaining the changes in local newspaper variation over time.

Table 40: Results for Regression 1 with local newspaper print and online advertising revenue as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (real terms)</td>
<td>3.345**</td>
</tr>
<tr>
<td>Penetration of internet</td>
<td>-0.684***</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>0.0465</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>0.0105</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0269</td>
</tr>
<tr>
<td>Constant term</td>
<td>-20.26</td>
</tr>
</tbody>
</table>
Table 41: Diagnostic tests for Regression 1 with local newspaper print and online advertising revenue as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>65</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.348</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>0.0440</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>3.1</td>
</tr>
</tbody>
</table>

Regression 2: Short period regression with GDP per capita, BBC clicks and Internet penetration

Regression 2 analyses the impact of GDP per capita, Internet penetration and BBC online clicks on local newspaper print and online advertising revenue between 2005 and 2014.

The results indicate a statistically significant positive impact of GDP per capita on local newspaper print and online advertising revenue. It also indicates a statistically significant negative impact of Internet penetration on local newspaper print and online advertising revenue.

The BBC clicks variable has a negative coefficient but is not statistically significant at any recognised significance level. This indicates that there is no evidence, from the data analysed, that BBC activity crowds out advertising revenues in the local newspaper market.

The regression fails the Ramsey RESET test at 5 per cent indicating incorrect functional form and potentially omitted variables. The Durbin Watson test is also failed, indicating the presence of positive serial correlation. A VIF of below 4 indicates low or no multicollinearity.

The challenges with this model, failing diagnostic tests are likely to be a function of the high correlation between explanatory variables and the limited number of observations in the analysis. Along with a lack of data on other competitors to local newspapers, such as other news websites, it reduces the reliability of the regression results.

Table 42: Results for Regression 2 with local newspaper print and online advertising revenue as the dependent variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita (real terms)</td>
<td>2.837***</td>
</tr>
<tr>
<td>Penetration of internet</td>
<td>-2.370***</td>
</tr>
<tr>
<td>BBC online clicks</td>
<td>-0.0753</td>
</tr>
<tr>
<td>Dummy for Q2</td>
<td>0.0430</td>
</tr>
<tr>
<td>Dummy for Q3</td>
<td>-0.0162</td>
</tr>
<tr>
<td>Dummy for Q4</td>
<td>-0.0320</td>
</tr>
<tr>
<td>Constant term</td>
<td>-7.104</td>
</tr>
</tbody>
</table>

We have run Regression 1 over the ‘Short’ time period (i.e. as Regression 2) to understand the extent to which our regression results for Regression 1 change when the time period is truncated. We find that the statistical significance and sign of each variable in Regression 1 over the ‘Short’ time period is consistent with the statistical significance and sign in Table 40. The R-squared for the ‘Short’ time period regression is 0.983.
Table 43: Diagnostic tests for Regression 2 with local newspaper print and online advertising revenue as the dependent variable

<table>
<thead>
<tr>
<th>Diagnostic tests</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of observations</td>
<td>35</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.984</td>
</tr>
<tr>
<td>Durbin Watson statistic for Autocorrelation</td>
<td>0.590</td>
</tr>
<tr>
<td>Ramsey RESET test for omitted variable bias</td>
<td>0.000236</td>
</tr>
<tr>
<td>VIF for multicollinearity</td>
<td>3.42</td>
</tr>
</tbody>
</table>
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Executive summary

The constitutional basis for the British Broadcasting Corporation (‘BBC’) is the Royal Charter. As the end of the current Charter period is approaching, the process of consultation and review about the framework under which the BBC will operate in the future is underway.

As one area under consideration by DCMS is the BBC’s positive or negative wider impact on the market, the BBC Trust commissioned KPMG to conduct an analysis of the economic contribution of the BBC in the following specific areas:

- the North West of England (linked to the BBC’s move to Salford);
- the online market; and
- the UK music industry.

We recognise that these areas are a subset of what the BBC does. They are chosen as examples of some of the areas in which the BBC operates, which have wider benefits to the UK economy, in addition to the direct benefits for audiences and licence fee payers.

The BBC, as a whole, will have a much wider economic impact across the UK, through the many more products and services it supplies. Its economic impact spans not only its public broadcasting activities, but also its commercial activities. And the BBC operates both domestically and with a significant international reach, meaning that the BBC’s ‘exports’ have an additional economic benefit to the UK.

The intention of this report is to provide a flavour of the breadth of BBC activities and the economic contributions they make.

The economic impact of the BBC in the North West of England

Historically, the majority of the BBC’s operations were based in London and the South East of England. Although its regional hubs were many and, in some cases, significant – the Bristol and Midlands broadcasting centres having a notably high profile during the 1970s and 1980s – the majority of the organisation’s employees and activities were undoubtedly centred upon London and the surrounding area.

More recently, this changed. In 2011, significant parts of the BBC’s activities, including Sport, Children’s, Radio 5 Live, and BBC Breakfast, were relocated to Salford, in the North West of England. For the first time, over half of the BBC’s staff are based outside London. The consequence has been that the BBC’s economic impact outside of the South East has grown materially.

We estimate that the BBC’s activities in the North West (predominantly driven by the Salford site) contributed a total of £277 million to UK Gross Value Added (GVA)\(^1\) in FY2014/15. This was comprised of:

- £137 million of indirect GVA for the BBC’s Tier 1 suppliers\(^2\);

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1. Our analysis is in gross terms
2. Tier 1 suppliers are those companies which are direct suppliers to the company that produces the finished product (in this case direct suppliers to the BBC)
• £80 million of indirect GVA in the wider supply chain; and
• £59 million of induced GVA.

This total GVA contribution is equivalent to approximately 5% of the GVA of Salford, 2% of the GVA of Manchester\(^3\) and 6% of the GVA of the UK’s programming and broadcasting activities sector\(^4\).

Although the BBC’s supplier expenditure is linked to BBC activity in the North West, as the wider supply chains will be spread across other regions of the UK, the indirect GVA benefits will also be spread across the UK. The same principle applies to the induced economic impacts arising from the expenditure of BBC and BBC suppliers’ employees.

A proportion of the expenditure will be retained within the region, however, adding to the positive economic impact that the BBC has on the local North West economy.

The BBC also contributes to employment in the North West, as well as more widely across the UK through its supply chain. In terms of its direct employment, our analysis indicates that:

• As of March 2015, there were over 2,500 Full Time Equivalent (FTE) employees based at the BBC’s Salford site (over 2,600 employees in headcount terms). There were also a further 116 FTE BBC employees at the other BBC sites in the North West.
• BBC employees in Salford account for approximately 80% of the BBC’s employment in the North of England and 13% of the BBC’s total employment in the UK.
• The large majority of employees in Salford are skilled specialists, with approximately 80% employed in journalist, production management and technical/digital roles.
• The BBC accounts for 40% of creative industry jobs in Salford and 2% of total employment in Salford.
• To further enhance its employees’ skills, the BBC invests in developing its staff through formal training and through supporting skills development and knowledge building and sharing. It also has specific schemes for young people, including an apprenticeship programme for individuals from the Greater Manchester area and a Young Ambassadors scheme for 16-19 year olds from Salford and Trafford.

The BBC has wider employment effects throughout the UK as a result of its activity in the North West through its purchases from suppliers and as a result of its direct and indirect employees spending. We estimate that the total indirect and induced employment is 3,778, comprised of:

• indirect employment at the BBC’s Tier 1 suppliers of 1,901;
• indirect employment in the wider supply chain of 1,196; and
• induced employment of 681.

We consider that there is evidence of further economic benefits arising from the BBC’s activities in the North West, particularly in Salford.

There is academic support for the idea that when a large, important, operator locates in a particular area, this tends to attract similar organisations looking to benefit from the same type of skills and

\(^3\) GVA of Salford and of Manchester sourced from Oxford Economics, Greater Manchester Forecasting Model, 2014

\(^4\) GVA of the UK’s programming and broadcasting activities sector sourced from ONS (2015) Annual Business Survey – 2013 Revised Results
experience⁵. These ‘agglomeration’ and ‘network’ effects are observed in many sectors: from scientific research in Cambridge, to Formula 1 teams in the M4 corridor, to financiers in the City of London.

There are signs that the BBC’s relocation to Salford has triggered the beginnings of a similar network in the North West.

With the establishment of MediaCityUK as a hub for firms with creative and digital capabilities – stemming from the BBC’s decision to locate there initially – these firms benefit from network effects and knowledge and skills spillovers from the BBC. Approximately 6,500 people are employed in MediaCityUK, around 40% of whom are BBC employees and forecasts suggest that there will be an additional 1,700 creative industry jobs in Salford by 2034⁶. This suggests that the positive spillover effects arising from the cluster of firms in Salford, catalysed by the BBC’s presence, could be considerable.

There is evidence that agglomeration and network effects are important for research, development and productivity. Some of the benefits highlighted to us of the effects of the BBC’s relocation to Salford include: reduced barriers to collaboration for smaller, independent digital agencies; improvements to the quality of outputs for firms collaborating with the BBC; and a greater flow of creative industry talent to the area.

The economic contributions arising from the BBC’s activity in the North West of England, particularly those contributions retained locally, are important in the context of the broader economic performance of the area. The economic contribution of the BBC and the wider MediaCityUK development is also important to the UK government’s commitments of “…rebalancing growth across the regions and nations of the UK and… to the creation of a Northern Powerhouse.”⁷

This is, not least, because:

- GVA per capita in the North West and in Greater Manchester has lagged behind the UK as a whole⁸; and
- the proportions of working age individuals in Salford with NVQ Level 3 qualifications and above continue to lag Great Britain as a whole, although there has been marked progress in the proportions of individuals with qualifications in Salford over recent years, coinciding with the BBC’s move to the area⁹.

The economic impact of the BBC’s online activity

An increasingly important element of the BBC’s offering as a public service broadcaster is its online activity. BBC Online now represents approximately 5% of the BBC’s annual PSB Group expenditure (£201 million out of £4,222 million¹⁰).

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⁶ Oxford Economics, The Greater Manchester Forecasting Model
⁷ HM Treasury, Budget 2015, March 2015, paragraph 1.20
⁸ ONS, Regional Gross Value Added, 2013 data set
¹⁰ BBC, Annual Report and Accounts, 2014/15
Not only has BBC Online grown rapidly in its importance to the BBC’s overall activity, its impact on consumers is significant. According to the BBC Annual Report 2014/15 around 50% of the UK adult population access BBC Online each week.11

BBC Online’s external spend generates GVA through the supply chain. Additionally, the BBC’s investment and innovation in the online space also creates wider spillover effects in the economy.

We have identified two specific mechanisms through which investment by the BBC related to its online activities has had a particularly positive economic impact:

- technology spillovers driven by the BBC’s innovation in the market; and
- knowledge and skills spillovers arising from collaborations, partnerships and wider industry initiatives.

Both of these result in overall development and expansion of the online market and related industries.

In terms of technology spillovers, we have identified a number of examples of where the BBC has catalysed the wider market:

- It is likely that there would be less investment in Video on Demand (VoD) as a new distribution technology without the BBC innovations and investments in technologies in this area. This is because such innovations can be expensive and carry risk. If any one organisation, such as the BBC, were to invest in the area and it were to succeed as a concept, it may be possible for it to be adopted by others relatively easily, once technologies have developed and costs reduced. In economics-language, there are ‘positive externalities’ associated with these types of innovations. Although the BBC was not the first provider to launch its VoD service, it has, undoubtedly, led the market with the implementation of numerous innovative technological improvements, such as downloadable content and a “live restart” facility. Indeed, as noted by Ofcom: “…BBC iPlayer has helped build consumer interest and take-up of on-demand services, providing market opportunities for other providers to deliver new, innovative services beyond traditional TV.”12

- Building on the observation regarding ‘positive externalities’ above, in order to further accelerate market development and competition, BBC Online has also encouraged the implementation of BBC technologies by its competitors through open-sourcing and technology transfer. As acknowledged by NESTA13, through its software development activities, the BBC may create value and innovation more widely. Using data from GitHub, a collaborative software development platform, NESTA found that the BBC’s development activity on this platform has grown significantly since 2012, with the number of BBC projects reaching 380, and there are over 800 instances where others have copied BBC code to continue working on it (‘forks’).

- The BBC is a key player in the Digital Production Partnership (DPP) which establishes standards for the transfer of completed programmes between broadcasters and independent producers and postproduction houses. Its aim is to smooth and accelerate the move to end-to-end digital production, and in doing so reduce complexity and cost and increase interoperability.14

- Again, relevant to the creation and dispersion of ‘positive externalities’, the BBC has supported the development of a number of new technology concepts before they have become commercially viable, to the benefit of the wider industry. For example, through the BBC’s IP

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11 BBC, Annual Report and Accounts, 2014/15
12 Ofcom, Proposed changes to BBC Three, BBC iPlayer, BBC One and CBBC Market Impact Assessment, June 2015
13 https://www.nesta.org.uk/blog/public-service-coding-bbc-open-software-developer
14 https://www.digitalproductionpartnership.co.uk/who-we-are/
Studio project, a model is being developed for end-to-end broadcasting that will allow a live studio to run entirely on IP networks. This concept was successfully demonstrated at the 2014 Commonwealth Games and the BBC is working with technology companies to develop the approach into commercial products and services.

The second mechanism we identified through which the BBC’s online investments have had a particularly positive economic impact are via knowledge and skills transfer and via the positive effects arising directly from its collaborative activities. We have found these to be in the following areas:

- **BBC Online’s partnerships and industry collaborations** support knowledge transfer and skills development across the media and technology industries. Examples include: the BBC’s partnership to build open, internet-connected TV platforms, Freeview Play and Freesat; its partnership with the Arts Council England to create broadcast and online arts content; and its industry collaborative project BBC News Labs which works as an ‘incubator’ to take forward opportunities relating to journalism, technology and data. Evidence suggests that positive effects for the BBC and wider industry have arisen from these projects.

- **Partnerships with universities** are also a central part of BBC’s knowledge sharing and innovation policy. Currently, the BBC partners with numerous universities across the country. Examples include: BBC R&D’s 4-year strategic partnership with University College London (UCL) related to the future of digital content; the BBC’s support in helping UK universities to earn funding from major UK Research Councils such as the Engineering & Physical Sciences Research Council (EPSRC); the multi-university Audio Research Partnership set up to regenerate the BBC’s audio research capability; and the university and industry collaboration in the 5G Innovation Centre (5GIC) at the University of Surrey.

- **Through providing direct support to industry** such as through the BBC’s ‘Connected Studio’, the BBC facilitates developments in the market and spreads BBC knowledge and skills. Successful candidates to the Connected Studio initiative benefit from BBC and wider industry expertise to develop their ideas. Through this collaboration, innovation is supported and ideas taken beyond proof of concept to development and testing where feasible. To date, the Connected Studio team has run 109 events, of which 24 have been in MediaCityUK. It has worked with 458 small companies and has given contracts to 160 digital and creative SMEs.

### The economic impact of the BBC on the music industry

The BBC undertakes a wide range of music-related activities. It supports the UK music industry via each of its broadcasting channels: radio, television and online. It also engages in a range of broader music-related activities e.g. live music events, music talent initiatives and awards, and production of its own music outputs (such as albums and playlists).

The scale of the BBC’s music related activity suggests that its economic impact in this area could be significant. For example in 2014:

- **BBC music television programmes** reached around 7 million viewers, on average, each week;\(^\text{15}\)
- **a range of music related shows** achieved significant viewer figures, e.g. the TV average audience for the BBC Music Awards was 4.17 million and for Last Night of the Proms (including Proms in the Park) was 9 million\(^\text{16}\); and

\(^\text{15}\) BARB data provided by the BBC
\(^\text{16}\) Data provided by the BBC
there is wide reach of the BBC’s music radio stations. In Q2 2015, the average weekly reach of BBC Radio 1 was 10.4 million, for Radio 1Xtra was almost 1 million, for Radio 2 was 15.1 million, and for 6Music was 2.1 million.\(^{17}\)

There is GVA and employment generated in the UK economy, both directly and indirectly, through all of this activity. This contributes to the UK music industry’s overall GVA contribution of £3.8 billion to the UK economy.\(^{18}\)

Another important way in which the BBC supports the music industry is through the exposure it gives to music artists. Academic studies have found that increased media exposure of music, for example through radio play, is linked to increased sales in the music industry.\(^{19}\) The BBC’s activities in this area are significant and evidence suggest that the BBC supports a wide range of music artists:

- Over the course of a month, across Radio 1, Radio 2, Radio 1Xtra, and 6Music, there were over 9,500 unique artists played and 16,500 unique tracks played; and
- BBC analysis\(^{20}\) suggests that in 2013-14, Radio 1 played almost twice as many different new\(^{21}\) tracks as any of the five other commercial stations monitored\(^{22}\). Not only that, the BBC found that of the new tracks played during the daytime on Radio 1, a third were not played by any of the commercial stations monitored, demonstrating a limited overlap between music played on BBC Radio 1 and commercial stations.

In order to continue to generate positive contributions to the UK economy from the music industry, it is important that both existing and new UK artists become and remain well known, and that there is a continually growing pool of music talent. The BBC supports this in a number of ways through its broadcasting activities as well as a range of specific initiatives, such as:

- BBC music related awards and talent schemes – of which there are currently 17 schemes including BBC Young Musician of the year and Radio 3 New Generation Artists – which help in the discovery, as well as support, of new musical talent; and
- BBC Introducing which supports unsigned artists in the UK by providing a platform for promoting undiscovered musicians.\(^{23}\)

KPMG undertook case study analysis for a number of musicians (including interviews with their promoters, managers and record labels) that the BBC has supported to find out more. These included London Grammar, Sam Smith, and Ed Sheeran. We found that each of these artists generate considerable GVA for the UK economy\(^{24}\), and we were also told by their record labels that their success, at least in part, can be attributed to the BBC’s support:

- London Grammar’s sales increased consistently after appearances on BBC TV or radio shows (e.g. in the hour following a BBC Breakfast interview in May 2014, week on week album sales

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\(^{17}\) BBC, All Radio Report, Q2 2015.

\(^{18}\) Figures for 2013. UK Music, Measuring Music, September 2014


\(^{20}\) BBC Trust, Service Review: Radio 1, 1Xtra, Radio 2, Radio 3, 6 Music and Asian Network, March 2015

\(^{21}\) New Music is defined as either unreleased music or music released less than a month ago (physical release, not download release)

\(^{22}\) The BBC report does not include a full list of the commercial radio stations monitored. However, XFM and Absolute are named within the report

\(^{23}\) http://www.bbc.co.uk/programmes/articles/AvsS3bnfKVVmKpohPKStlPqfrequently-asked-questions

\(^{24}\) Our analysis is based on estimated direct, indirect and induced GVA from the artists’ record sales. We recognise that this is only a limited part of the GVA contribution they account for as revenues from royalties, live performances and appearances, merchandise etc. also accounting for significant contributions. Although sales figures and GVA contributions from record sales cannot be attributed to the BBC specifically (there will have been a number of other important drivers of the artists’ record sales and success (including support from other broadcasters)), these case studies consider how the BBC has helped artists realise success based on the views of their record labels.
were up 190% and the album rose from number 33 on iTunes to number 6). We estimate that the GVA contribution of their album ‘If You Wait’ up to the week beginning 6th October 2014 was £4.3 million, with a further £0.5 million of GVA from their singles.

- Sam Smith’s record label explained to KPMG the importance of the BBC’s support in his career. This included first plays of his singles on Radio 1 and his win of the BBC Sound of 2014 award which led to an increase in his album sales from 1,000th in the Amazon album chart to 6th in the 24 hours after the win. We estimate that in 2014 alone, the GVA associated with Sam Smith’s UK album and singles sales and streams was £13.2 million.

- Ed Sheeran’s record label told KPMG that: “Radio 1Xtra and Radio 1 have been an enormous part of the Ed Sheeran phenomenon…this could not have been done without the support of the BBC.” We estimate that his total UK album and single sales to date have contributed £43.2 million of GVA to the UK economy.

- According to their record label: “Clean Bandit are a prime example why Radio 1 are so important in helping break new artists”. Some of the BBC support received has included: Radio 1 playlisting two of their singles and supporting three before any other commercial radio station had played any of Clean Bandit’s music; their first radio interview and debut television appearances were both with the BBC; and they have performed live a number of times for the BBC, including at Radio 1 Big Weekends. Despite only breaking through in 2014, we estimate that their record sales alone have generated GVA of approximately £3.8 million.

- We were told by Andreya Triana’s manager that she has received: “…incredible support from the BBC especially from Chris Evans at BBC Radio 2”. After appearing on BBC Radio 2, her album moved into the top 10. The manager also stressed to us the importance of the BBC as an early adopter of Ms Triana’s music.

- Shaun Escoffery’s record label told us that: “… [the BBC] acts as a door opener, providing a crucial platform and exposure which will allow Shaun to move on significantly with bigger label partners and investors. The key thing is that [Shaun’s] profile is such that he now has a platform to continue to increase revenues at an ever increasing rate as in [the music industry] it’s all about profile.” Each of Shaun Escoffery’s singles has been ‘A Listed’ by BBC Radio 2 and the BBC has also provided the platform for a number of live performances which have had a positive impact on his music sales. For example, on the day he performed at Radio 2 Live in Hyde Park in September 2015 his album sales increased by 12,890% and during the week sales increased by 722%.

In addition to providing music related radio, TV and online services, the BBC organises a wide range of live music events which also generate contributions to the UK economy both in terms of employment and GVA. There will also be a range of spillover effects including wider business impacts in the local area through attendance, and music industry revenues generated as a result of the relationship between artist exposure (supported though the live performance at the event) and revenues.

Although quantifying these impacts was not within the scope of this study we note that an existing study suggests that Radio 1’s Big Weekend in Glasgow contributed £3.7 million to local economy, with a further £10 million in press and marketing value.
The constitutional basis for the British Broadcasting Corporation (‘BBC’) is the Royal Charter, with the existing Charter running until 31 December 2016. As the end of the current Charter period is approaching, the UK Government has begun a consultation and review of the framework under which the BBC operates. As part of this, the Department for Culture, Media and Sport (‘DCMS’) recently published the BBC Charter Review25, a public consultation seeking views. The findings of the consultation and review will inform the UK Government’s future decisions about the BBC.

One of the areas under review is the scale and scope of the BBC. The existing Charter sets out the broad public purposes of the BBC and the main activities it should engage in (providing information, education and entertainment output through TV, radio and online services). However, although this sets the framework for what the BBC should be seeking to achieve, the Charter does not specify either the volumes or types of outputs/services that the BBC should provide.

In considering the scale and scope of the BBC, DCMS is focussing on three areas:

- what the BBC does and how it does it;
- the audiences it serves; and
- the role played by the BBC within the wider media and creative sector.

One of the consultation questions DCMS has posed in relation to this is:

Where does the evidence suggest the BBC has a positive or negative wider impact on the market?

In order to provide further evidence to address this consultation question, the BBC Trust commissioned KPMG to conduct independent analysis of the economic contribution of the BBC. Although the BBC as a whole will have an economic impact across the UK, and potentially more widely through its international reach, our analysis focusses on the economic impact in particular areas of the UK and in certain markets.

Our analysis focusses on the economic impact of the BBC in the following specific areas:

- the North West of England (linked to the BBC’s move to Salford);
- the online market; and
- the UK music industry.

DCMS notes that it has been suggested that there are a range of positive effects that the BBC can have on the wider market. These include:

- the impact the BBC has on raising broadcasting standards; and
- the positive effects for the creative industries and commercial parties from the spending on its staff, training and content.

Conversely, it is also hypothesised by the DCMS that there may also be some negative effects of the BBC’s broadcasting and internet activities, for example in terms of the ability of other providers to
compete and potential “crowding out” effects that may arise from BBC activity. A second KPMG study commissioned by the BBC Trust, *An economic review of the extent to which the BBC crowds out private sector activity*,\(^\text{26}\) focusses on these potential crowding out effects.

Our analysis draws on a range of data, information and wider evidence gathered from the BBC and external sources. We assess the direct economic contributions made by the BBC in the areas listed above, in addition to indirect, induced and wider spillover effects. Our analysis is in gross terms. We have not assessed the net contribution of the BBC in each of the areas analysed. Therefore, we do take into account how UK resources used by the BBC, for example human capital and physical capital, would have been employed if they weren’t employed by the BBC.

In the next section of the report, we set out the overarching economic framework for assessing the BBC’s economic contribution before assessing in turn each area within the scope of our analysis.

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\(^{26}\) KPMG, *An economic review of the extent to which the BBC crowds out private sector activity*, October 2015
The economic framework for assessing the BBC’s market impact

The British Broadcasting Company was formed on 18 October 1922 by a group of leading wireless manufacturers, and daily radio broadcasting began just under a month later, sharing news, music drama and ‘talks’ across the nation.

In January 1927, the British Broadcasting Corporation was established by Royal Charter.

By 1929, John Logie Baird broadcast some of his first experimental television broadcasts using BBC frequencies. With continued BBC investment and development, the BBC was the first broadcaster in the world to begin a regularly scheduled TV service, in 1936.

The developments brought about by the BBC have continued to the present day.

From BBC engineers inventing the first means of recording live TV in the 1940s, to the first video tape machine to be used in transmission27, to the first teletext service in the world (CEEFAX), the provision by BBC Research and Development of much of the technology and systems to make DAB happen and more recently the development and provision of new services, such as Red Button, Connected Red Button and the BBC iPlayer, the BBC has made a significant impact in the broadcasting, media and digital markets.28

All this activity has contributed, and continues to contribute, to the UK economy, and indeed more widely, through a range of channels.

Gross Value Added (GVA)

The first measure of economic contribution we consider when conducting an economic assessment of the BBC’s contribution to the UK economy, is its Gross Value Added (GVA) contribution. This measures the contribution to the economy of an individual producer, industry or sector, net of intermediate consumption (for example goods and services that are used in the production process). It is a measure of the economic value of goods and services produced.29

Through their own activities organisations add GVA to the UK economy – the direct GVA contribution. The BBC is different to a normal company, however, in that only a part of it is a commercial trading operation, namely BBC Worldwide, BBC Global News and BBC Studios and Post Production (BBC S&PP). Through these three commercial subsidiaries, it seeks to exploit licence fee-funded content and infrastructure to supplement its income to cover its overall expenditure and reduce the financial cost to the licence fee payer. Its Public Sector Broadcast (PSB) Group is not designed to be a revenue generating entity.

However, through its activities the BBC generates wider economic activity across the UK through its supply chain. This is not only the suppliers that directly facilitate its operation, such as communication network operators and utilities providers but also content, technology and publishing

27 VERA (Vision Electronic Recording Apparatus)
28 http://www.bbc.co.uk/timelines/zsgv34j
29 GVA is a key component of gross domestic product (GDP) which is a measure of the value of production and is a key indicator of the state of the economy. GVA is used in the estimation of GDP, by aggregating GVA across all industries and sectors in the economy and adjusting for taxes and subsidies at the whole economy level.
providers where the BBC sources this externally, such as through Independents. Each of these suppliers to the BBC has its own suppliers, and so the economic activity perpetuates across the economy. This activity through the whole supply chain is the indirect GVA generated by the BBC.

Induced GVA is also generated in the economy as a result of the BBC’s activities. These contributions arise from the additional economic activity generated by the BBC’s direct and indirect employees spending a proportion of their wages in the UK economy. We assess these impacts in the context of our analysis of the BBC’s activities in the North West of England.

The BBC also generates economic activity outside of the UK, for example through international elements of the supply chain but these are ‘leakages’ from the UK economy which do not generate domestic benefits.

**Employment and skills**

GVA is not the only measure of economic contribution. Another measure is the employment generated by a company’s operations. The creation and safeguarding of workforce jobs is particularly important when there is underemployment in the economy.

The BBC employs numerous staff itself – currently just under 20,500 in total across the UK\(^{30}\). This is the direct employment impact.

And similar to the indirect GVA contributions, the additional economic activity the BBC generates in its UK supply chain, for its direct (Tier 1) suppliers and in the wider supply chains also results in additional domestic employment – the indirect employment impacts.

Induced employment is also generated by the additional economic activity resulting from the BBC’s direct and indirect employees spending of a proportion of their earnings.

The contribution of employment to the UK economy depends on the level of productivity; the intensity of labour required for one unit of output. In general, higher skilled jobs are more productive, meaning each job makes a greater contribution to the economy.

Through developing the skills and experience of its employees the BBC seeks to raise the productivity of its employees and so adds additional value to the UK economy.

Economic growth theory suggests that the accumulation of human capital can have a positive impact on an economy’s growth if higher skills development and training goes hand-in-hand with more intensive research and development (R&D) and technological progress. Human capital relates to acquired capabilities through education, training and experience. It refers to the transition and use of available knowledge but is also important in the production of new knowledge, a source of innovation that ‘propels all factors of production’.\(^{31}\)

Empirical evidence suggests that economies with the highest level of investment in scientific and technical knowledge, as well as education and training of the labour force are those that achieve sustainable positive growth rates. In Bacic’s review of the literature\(^{32}\), he quotes Dias and McDermott who state that the decision on human capital accumulation is the key to fostering

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\(^{30}\) This relates to the Public Service Broadcasting arm of the BBC only and not BBC Worldwide

\(^{31}\) Mincer, J., Human Capital and Economic Growth, NBER, November 1981

\(^{32}\) Bacic, M and Lipovina-Bozovic, M., Knowledge Accumulation and Economic Growth
technological advances. Their empirical tests show that human capital growth constitutes more than 60% of the long-run average growth rate of the economy.

**Investment and innovation**

Investment activity is an important determinant of economic contribution given that it is recognised as an important driver of growth.

In endogenous growth models, investment, particularly in innovation, drives technological progress and so impacts on growth. When individuals or firms accumulate new capital, they inadvertently contribute to the productivity of capital held by others. Growth can be sustained by continuing accumulation of the inputs that generate positive externalities.33

For example, a study by Schiantarelli, using polled data for a large panel of countries finds that an increase in investment leads to a higher growth rate of output per worker in the long run.34

Another study found that the greater the investment in 'machinery, equipment and software, in internal research and development, in acquisition of external knowledge, in marketing activities and other procedures, the greater the propensity for firms to innovate in terms of services.'35 These studies show that investment is important for continuing growth and productivity.

As highlighted above, there is evidence that the BBC has been at the forefront of technological progress throughout the decades.

Investment and innovation are also often outcomes of dynamic, competitive markets, whereby firms seek to develop their offering so as to attract and retain customers (or in the case of the broadcast market, viewers and/or listeners). Competition is a recognised driver of productivity and so economic growth. It improves productivity by raising incentives to innovate and by ensuring that resources are deployed to the most efficient firms.

Indeed, one of the pillars of the Government’s approach to raising productivity is, “promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use”36. Open and competitive markets are part of a dynamic economy.

However, competition in the UK broadcast market differs somewhat to other markets due to the existence of both public and private providers who are funded differently and tend to have different objectives. Commercial channels are funded primarily by a combination of advertising and subscription revenues, their main objective being to maximise profits. PSBs such as the BBC are generally funded by a licence fee. This public funding places an obligation on the PSB to serve the public, for example by focussing on reach and diversity rather than profit37. The BBC’s current objectives include promoting education and learning and stimulating creativity and cultural excellence.38

While the question has been raised about whether the BBC might hold an unfair advantage over its competitors due to its level of public funding, and so may ‘crowd out’ private sector activity, KPMG’s

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36 HM Treasury, Fixing the Foundations: Creating a more prosperous nation, July 2015
37 Picard, R., Sicilian, P., Is there still a place for Public Service Television?, September 2013
38 http://www.bbc.co.uk/bbctrust/governance/tools_we_use/public_purposes.html
study\textsuperscript{39} suggests that there is little evidence that BBC spending has crowded out commercial broadcasters’ spending.

**Wider spillover effects**

There are also wider spillover effects arising from the BBC’s activity. These can include the positive externalities arising from: knowledge and skills development and transfer; network and agglomeration effects; and market expansion and development (for example, through technology and innovation transfers).

By nature, these economic spillover effects are much more difficult to quantify than the direct and indirect economic contributions. Nonetheless, the scale and scope of impacts can be significant both within the industry itself, in the broader sector and related industries, and across the wider economy.

We apply this overarching economic framework for assessing the economic contribution of the BBC to the three specific areas we are considering within the scope of this study: the contribution in the North West of England; in the online market; and in the music industry.

While the various channels of economic contribution cannot be quantified in all of these areas, we draw on the available evidence to explain the potential scale and scope of impact based on both a qualitative and, where feasible, quantitative assessment.
The economic impact of the BBC in the North West of England

4.1 Introduction

The BBC has operations across the UK, reflecting its role as the national public broadcaster, with its purpose remits including representing and catering for the different nations, regions and communities of the UK.

Historically, however, the BBC had a predominantly London focus in terms of the location of its activities. This is demonstrated in the 2008/09 economic impact study commissioned by the BBC which estimated that around 71% of the BBC’s expenditure and 69% of the BBC’s UK GVA was generated in London.\(^{40}\)

This changed in 2011 with the relocation of significant parts of its activities to Salford, in the North West of England. The BBC’s economic impact outside of the South East has grown materially.

For the purposes of this study, we have focussed on this increase in activity in the North West and the role the BBC has played in the establishment of the digital and creative hub in Salford. Specifically, our analysis focuses on quantifying the economic impact of the BBC’s activities in this region. However, we recognise that this is only part of the picture of the wider impact the BBC as a whole has across the UK.

Rebalancing the economy both across sectors and geographically remains a key priority for the Government. Indeed, the March 2015 Budget specifically states that: “This government is committed to rebalancing growth across the regions and nations of the UK and is committed to the creation of a Northern Powerhouse.”\(^{41}\)

4.2 The BBC’s North West operations and the Salford move

The North West is now home to a range of the BBC’s operations, with the Salford site being the location of BBC North’s headquarters, and other functions which were re-located from London and the previously existing BBC site in Manchester. The functions in Salford include: Sport; Radio 5 Live; Children’s; Learning; and BBC Breakfast, as well as parts of Marketing and Audiences and the BBC Academy. Other departments that also now operate out of the BBC’s site in Salford include: Religion and Ethics; Regional and Local news; the Philharmonic Orchestra; and technical operations and broadcasting staff. BBC Children in Need HQ staff also moved to Salford earlier this year, as well as a number of individuals in digital and technology roles.

In addition to the Salford site, the BBC has wider operations in the North West, including BBC Radio Merseyside and BBC Radio Lancashire.

The figure below outlines the scale and scope of activity in the region.

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\(^{40}\) Deloitte, The Economic Impact of the BBC, 2008/09, Table 6. It should be noted that the GVA and expenditure proportions are based on the data provided in Table 6 of the Deloitte report. We note that these figures do not align with the Deloitte text preceding Table 6, which suggests that London accounts for 74% of BBC GVA. We have not verified the accuracy of the data or analysis included in the Deloitte report.

\(^{41}\) HM Treasury, Budget 2015, March 2015, paragraph 1.20
The current level of activity in the North West region presents a very different picture to 5 years ago, before the Salford site opened in 2011 and before completion of the first phase of the BBC’s move in 2012.

The commitment to move significant parts of the BBC’s activities outside of London was made much earlier than the 2011 move date. The timeline below outlines the key dates associated with the BBC’s move. The BBC’s move to Salford also sparked the beginning of the re-development of Salford Quays - formerly a derelict port – and gave the impetus for the development of MediaCityUK which is now home to the BBC, ITV, the University of Salford and more than 80 commercial
The primary objectives of the move to Salford were not solely economic ones, but also centred around:

- better serving audiences in the North;
- improving the quality of content for audiences across the UK; and
- improving efficiency using new technology and new ways of working.

It was also recognised that an important objective was to provide economic and other benefits including up to 15,000 jobs within the region. It was hoped when the development was announced that it would attract new and growing businesses, regenerate the local economy and provide a media hub that was able to benefit from network and spillover effects.

We explore the economic impacts of the BBC’s operations in the North West in the remainder of this section.

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42 http://www.thequays.org.uk/about/partners/mediacityuk/

43 National Audit Office, The BBC’s move to Salford, April 2013
4.3 Contributing to the UK’s GVA

As explained in Section 3, a mechanism through which the BBC contributes to the economy is through the GVA its activity generates. Our GVA analysis for the BBC focuses on the indirect GVA contributions made through the supply chain since the BBC’s PSB Group itself is a non-commercial organisation. Our analysis is in gross terms. We have not assessed the net contribution of the BBC’s activities in the North West to the UK economy

The indirect GVA generated from the BBC’s activity in the North West relates to the GVA generated by suppliers supporting the activity in that region (i.e. the BBC’s public service broadcasting activity that originates in the North West). This activity spans a range of BBC services including TV, radio, online and wider activity such as that of the BBC Philharmonic Orchestra that is based in Salford.

Given the complexities of the BBC’s financial reporting systems expenditure data had to be collated from across these different BBC divisions. While the whole activity of some departments, such as Children’s, is located in the North West, other divisions such as TV, Radio and Digital have activity spanning the UK. Therefore, each department’s overall expenditure was assigned across the different regions to reflect the activity in each. The BBC had recently conducted this financial analysis and provided us with the relevant expenditure data for the North West for the purposes of our analysis.

The expenditure associated with the BBC’s activity in the North West is predominantly driven by activity taking place at the Salford site in MediaCityUK. We understand from the BBC that this accounts for the majority of BBC activity not only in the North West but more widely in the North. Given the financial data available from the BBC, however, it is not possible to isolate the expenditure associated specifically with the BBC site in Salford.

Overall BBC expenditure associated with its activity in the North West in FY2014/15 was approximately £369 million. The breakdown of this expenditure is shown in the Table below.

Table 1: Breakdown of BBC expenditure linked to its activities in the North West, FY2014/15

<table>
<thead>
<tr>
<th>Expenditure Categories</th>
<th>North West Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content &amp; Programming</td>
<td>£352,635,200</td>
</tr>
<tr>
<td>In-house</td>
<td>£286,669,335</td>
</tr>
<tr>
<td>Indie</td>
<td>£61,703,462</td>
</tr>
<tr>
<td>Other</td>
<td>£4,262,404</td>
</tr>
<tr>
<td>Infrastructure/support</td>
<td>£16,458,854</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£369,094,054</strong></td>
</tr>
</tbody>
</table>

Source: BBC Data

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44 The analysis, therefore, does not take into account how UK resources used by the BBC, for example human capital and physical capital, would have been employed if they weren’t employed by the BBC.

45 We understand that the BBC management and financial accounts capture activity on a functional basis, rather than geographical basis. Expenditure data relating to the use of the Licence fee is captured and reported for Television, Radio, BBC Online, Orchestras and performing groups, S4C, Development spend, and BBC World Service. While BBC North reports financially individually, this represents only a subset of the activity that takes place in Salford, with other activity in Salford spanning the different areas.
These expenditure figures include both spending with suppliers and the payroll costs associated with BBC activity in the North West. To estimate the indirect GVA impacts, payroll must be deducted to isolate the level of spending with suppliers supporting activity in the North West of England.

Based on employee remuneration data for BBC sites in the North West we estimate that payroll costs for this region were approximately £125 million in FY2014/15\textsuperscript{46}.

This suggests that the BBC spent approximately £244 million with suppliers supporting BBC activity in the North West, all of which will have generated indirect GVA contributions.

To estimate the BBC’s indirect GVA contribution associated with North West expenditure we undertook a dual approach in our analysis, using both analysis of pan-BBC supplier data and applying sector specific ‘Type I’ economic multipliers\textsuperscript{47} available from the Office of National Statistics (ONS).

The first stage of our analysis of indirect effects estimates the GVA contribution of the BBC’s Tier 1 suppliers\textsuperscript{48}.

\textbf{Tier 1 supplier GVA = Supplier contract value x sector average GVA as proportion of output}

The BBC provided us with extensive supplier data relating to its pan-BBC supplier spending in FY2013/14. These data included details of the Standard Industry Classification (SIC) code for each of the suppliers, as provided by Dun and Bradstreet. The data had been cleaned and enhanced as part of an earlier study for the BBC assessing the economic contribution it makes to the creative industries\textsuperscript{49}, for example to fill gaps in the SIC codes, remove the data for suppliers where SIC codes could not be identified and to reclassify suppliers where the SIC code identified them as in a non-creative industry as a result of the SIC code not accurately representing the types of goods/services provided to the BBC by the supplier\textsuperscript{50}.

Based on this dataset, we identified the proportions of pan-BBC supplier spending in each of the industry groupings. This is summarised in the Table below.

\textsuperscript{46} The BBC was unable to provide payroll costs associated with the BBC activity in the North West on the same basis that the expenditure data was provided. However, we were provided with payroll data for the employees based at BBC sites in the North West. Although there may be some staff costs associated with employees who undertake some activity in the North West for whom this is not their main BBC site, we consider the payroll costs for North West based employees to be a reasonable proxy for the staff costs associated with the activity in the region. Any overestimation of the North West payroll costs reduces the estimated supplier spending and so has a downward impact on the GVA estimates, making them conservative. Conversely, if the payroll costs are underestimated, this leads to an upward bias on the GVA estimates. We have no evidence of the potential direction of the effect.

\textsuperscript{47} Type I economic multipliers include indirect effects but not induced effects.

\textsuperscript{48} Tier 1 suppliers are those companies which are direct suppliers to the company that produces the finished product (in this case direct suppliers to the BBC).

\textsuperscript{49} Frontier, The contribution of the BBC to the UK creative industries: A report prepared for the BBC, April 2015.

\textsuperscript{50} Further details are provided in Annex 1 of the Frontier report.
Table 2: Pan-BBC supplier spending by industry group, FY2013/14

<table>
<thead>
<tr>
<th>Industry</th>
<th>Proportion of pan-BBC supplier spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>0.02%</td>
</tr>
<tr>
<td>Production</td>
<td>3.94%</td>
</tr>
<tr>
<td>Construction</td>
<td>0.77%</td>
</tr>
<tr>
<td>Distribution, transport, hotels and restaurants</td>
<td>3.04%</td>
</tr>
<tr>
<td>Information and communication</td>
<td>48.66%</td>
</tr>
<tr>
<td>Financial and insurance</td>
<td>2.57%</td>
</tr>
<tr>
<td>Real estate</td>
<td>0.11%</td>
</tr>
<tr>
<td>Professional and support activities</td>
<td>34.01%</td>
</tr>
<tr>
<td>Government, health &amp; education</td>
<td>0.70%</td>
</tr>
<tr>
<td>Other services</td>
<td>6.17%</td>
</tr>
</tbody>
</table>

Source: BBC Data & KPMG analysis

As the supplier data could not be linked back to the location of the BBC activity it was supporting, we were not able to analyse the proportion of supplier spending by industry for BBC activity taking place in the North West only. Given that a wide range of BBC activity is conducted in this region, similar to that conducted across the BBC as a whole, we considered the proportions of pan-BBC supplier spending by industry to serve as a reasonable proxy.

Furthermore, given that the supplier data for FY2014/15 was not available, for the purposes of the analysis we assumed that the same proportions of supplier spending by industry as in FY2013/14 applied. Based on discussions with BBC Finance and Procurement, we consider this serves as a reasonable proxy for supplier spend by industry for FY2014/15 given that we were told anecdotally that the BBC’s mix of suppliers and proportions of spending with each is unlikely to have changed materially since FY2013/14.

Applying the proportions of supplier spending by industry to the FY2014/15 BBC North West spending with suppliers, and using the sector average GVA as a proportion of output for the relevant industry, we estimate the Tier 1 supplier GVA to be £138 million.

Given that these suppliers are spread across the UK, so too will be the GVA. As noted above, we are not able to identify which specific suppliers supported BBC activity in the North West. However, the pan-BBC supplier spending data indicates that approximately 3.4% of pan-BBC supplier spending is with suppliers located in the North West. If this same proportion of supplier spending with North West firms applies to the suppliers for BBC activity in this region, the Tier 1 supplier GVA retained within the North West as a result of BBC activity there would be approximately £5 million. We note, however, that anecdotally we understand that the BBC operations in Salford frequently seek to work with local creative and digital firms. This would suggest that its procurement from North West based suppliers is proportionally higher than at the pan-BBC level and so the proportion of GVA retained within the region would be greater.

In order to estimate the value of the indirect effects which trickle down through the wider supply chain, we applied the ONS sector specific Type I GVA multipliers to the GVA estimate for each Tier 1 supplier (grouped by industry). A full list of the multipliers that are used in this analysis, in addition to further detail on the approach, are set out in the Technical Appendix.
Using this approach, we estimate that in FY2014/15 the wider supply chain GVA associated with the BBC’s expenditure associated with its activities in the North West was £80 million.

This takes the total indirect GVA contribution linked to BBC expenditure associated with its activities in the North West to £217 million.

Similar to the Tier 1 supplier GVA, although the BBC supplier expenditure is linked to BBC activity in the North West, as the wider supply chains will be spread across the UK, reaching beyond the North West region, the GVA benefits will also be spread across the UK. A proportion of the wider supply chain expenditure is likely to be retained within the region however – adding to the positive economic impact that the BBC has on the local North West economy.

The economic contributions arising from the BBC’s activity in the North West of England are particularly important in the context of the broader economic performance of the area. As shown in the Figure below the GVA per capita of the North West region and the Greater Manchester area has lagged behind the overall performance of the UK, and forecasts suggest that this will continue.

Figure 3: GVA per capita for Greater Manchester, the North West and UK, 2000-2020

![GVA per capita graph]

Source: ONS Regional Gross value added, 2013 data set

Through any increases in spending with suppliers located in the region, this has positive impacts on the overall level of GVA of the area.

BBC financial data suggests that pan-BBC expenditure relating to its activity taking place in the North West has increased 139% between FY2011/12 and FY2014/15.

4.4 Generating employment and developing skills

4.4.1 Impacts from the BBC’s direct employment in the North West

When the BBC opened its new site in Salford Quays, there were initially 2,000 job openings at the site. Approximately a third of these were filled by BBC employees moving from London, a third were moved from the BBC operations located at Oxford Road in Manchester and a third were newly hired into the BBC, making this one of the BBC’s largest recruitment drives in the corporation’s history. Half of these new posts were filled by people living in the North West.
As of March 2015, there were over 2,500 Full Time Equivalent (FTE) employees based at the BBC’s Salford site (over 2,600 employees in headcount terms). BBC employees in Salford account for approximately 80% of the BBC’s employment in the North of England and 13% of the BBC’s total employment in the UK.

These BBC employees account for approximately 2% of total employment in Salford and approximately 40% of creative industry employment in Salford.51

Additionally, there are a further 116 FTE BBC employees based at the other BBC sites in the North West.

Now over half of the BBC’s staff work outside of London.

The majority of staff employed in Salford also live within the Greater Manchester region. Approximately 59% of these employees live within Greater Manchester and 82% live in the North West region. This adds to the overall prosperity of the area.

Figure 4: Home postcode for BBC employees in Salford52
While a number of BBC employees relocated to Salford following the BBC’s move there (as noted above, approximately a third of the initial posts were filled by London staff), at the macroeconomic level this is very unlikely to have impacted materially the London economy. The corresponding improvement to the Salford and North West economy as a result of additional economic activity there following the BBC’s move is likely to have outweighed any negative economic impacts in London.

4.4.2 Indirect employment impacts through the BBC in the North West’s spending with suppliers

The BBC has wider employment effects arising from its activity in the region through its purchases from suppliers.

As noted above, the BBC spent approximately £244 million in FY2014/15 with suppliers linked to BBC activity in the North West. This expenditure itself creates additional employment – the indirect employment arising from the BBC’s purchasing.

We have estimated the indirect employment effect using a dual approach of using the Tier 1 supplier GVA estimates (as calculated above) with ONS employment data to generate GVA per employee figures, and applying sector specific ‘Type I’ employment multipliers available from the ONS.

The first stage of our analysis of indirect employment estimates the employment contribution of the Tier 1 suppliers to BBC activity in the North West.

\[
\text{Tier 1 supplier employment linked to BBC activity} = \text{Tier 1 supplier GVA} \times \text{sector average GVA per employee (FTE)}
\]

On this basis, we estimate the Tier 1 supplier BBC indirect employment to be 1,901. While these suppliers will be spread across the UK, a proportion of them are located in the North West, so the BBC’s spending with them contributes to additional employment generated within the region.

Similar to the Tier 1 supplier GVA, the indirect employment effects trickle down through the wider supply chain. We estimate these impacts by applying the ONS sector specific Type I employment multipliers to the indirect employment estimate for each Tier 1 supplier (grouped by industry). A full list of the employment multipliers that are used in this analysis, in addition to further detail on the approach, are set out in the Technical Appendix.

\[
\text{Wider supply chain indirect employment} = \text{Tier 1 supplier indirect employment} \times (1 - \text{sector specific Type I employment multiplier})
\]

Based on this approach, we estimate that in FY2014/15 the wider supply chain indirect employment associated with the BBC’s expenditure linked to its activity in the North West was 1,196. Again this employment will be spread across the UK given that supply chains are likely to span across the UK.

This takes the total indirect employment contribution linked to the BBC’s expenditure associated with its activity in the North West to 3,097.

53 Tier 1 suppliers are those companies which are direct suppliers to the company that produces the finished product (in this case direct suppliers to the BBC).
4.4.3 Induced GVA and employment impacts arising from the employment associated with the BBC’s activity in the North West

As a result of the earnings of the BBC’s employees there are induced economic impacts. These impacts arise from the additional economic activity generated throughout the economy as a result of the spending linked to these employees’ earnings. While there will be some degree of leakage of this spending outside of the region and a smaller proportion outside of the UK, a sizeable proportion of this is likely to directly impact locally, linked to spending on housing, leisure and retail, for example.

The indirect employment through the BBC’s supply chain also leads to induced economic impacts. Multiplier effects arise through the spending of indirect employees, resulting in additional economic activity and higher contributions to the UK economy.

Our approach to estimating the induced economic impacts is set out in the Technical Appendix.

We estimate that the induced GVA arising from the BBC’s employment in the North West and the employment through the supply chain linked to its activity in the region was £59 million in FY2014/15.

This takes the total GVA contribution arising from the BBC’s activities in the North West to £277 million in the last full financial year.

This total GVA contribution is equivalent to approximately 5% of the GVA of Salford, 2% of the GVA of Manchester\(^{54}\) and 6% of the GVA of the UK’s programming and broadcasting activities sector\(^{55}\).

There are also induced employment effects arising from the spending of employees of the BBC in the North West and the indirect employees in the supply chain. We estimate that this induced employment was 681 in FY2014/15.

This takes the total employment contribution arising from the BBC’s activities in the North West to 3,778.

4.4.4 Skills generation and knowledge transfer

As outlined in Section 3, it is not only employment in and of itself that generates positive economic effects, but also the skill level of those roles. In general higher skilled jobs are more productive and so generate a greater economic contribution.

Historically, skills levels in Salford have fallen behind the UK overall. In 2009, Salford had a higher proportion of 16 to 64 year olds with no qualifications than in the rest of the UK and in the North West as a whole.

As shown in the Figure below, however, this position has now changed, with the proportion of working age individuals in Salford with no qualifications now broadly in line with the average across the UK. This is not to say that there is not more to be done. There are still differentials in terms of the proportions of individuals with NVQ Level 3 qualifications and above. However, there has been marked progress in this area, which has coincided with the arrival of the BBC in the area.

\(^{54}\) GVA of Salford and of Manchester sourced from Oxford Economics, Greater Manchester Forecasting Model, 2014

\(^{55}\) GVA of the UK’s programming and broadcasting activities sector sourced from ONS (2015) Annual Business Survey, 2013 Revised Results
The BBC’s move to Salford has allowed it to create a significant number of skilled roles in the area – both within the BBC and indirectly through expenditure with local suppliers. Given the scale and scope of BBC activity in Salford and the North West region more widely, this requires individuals with a range of skills and backgrounds, from journalists, content developers, engineers and technology experts, to production staff, designers and presenters.

The breakdown of roles at the BBC in Salford by type are shown in the Figure below.

The majority of BBC staff based in Salford are employed in journalism, production management and technical and digital roles (80%). These are skilled and specialised roles.

To further enhance the skills level of its employees, the BBC invests in developing its staff, for example through formal training. Investments made in enhancing human capital, for example through
supporting skill development and knowledge building and sharing, can also have positive economic impacts.

In 2014/15, the BBC as a whole spent £41.1 million on HR and training\(^{56}\).

The BBC also has a number of specific programmes that benefit individuals more widely in the local area by providing them with opportunities to develop skills and find jobs.

In 2011, the BBC launched an apprenticeship programme for individuals from the Greater Manchester area aged 16 or over who have left formal education but not gained A-Levels or equivalent qualifications. These apprenticeships run for 12-18 months and combine full-time employment and college based learning. Since the programme started in 2011/12, there have been 69 apprenticeship places offered by the BBC\(^{57}\).

The BBC also has a Young Ambassadors scheme for 16-19 year olds from Salford and Trafford. This provides those on the scheme with paid full or part time work in service delivery areas of the BBC as well as opportunities to gain Level 1 or Level 2 NVQ qualifications in customer service. The BBC has hired 43\(^{58}\) ambassadors since the scheme was launched in 2011.

The training and skills development facilitated by the BBC for its employees not only raises the productivity of BBC staff but also increases productivity in the rest of the sector and in adjacent industries e.g. from knowledge sharing of BBC employees with individuals in other firms; and the transfer of the skills and knowledge to other firms when BBC staff change jobs.

The greater the degree of labour mobility, the greater the extent to which other firms will benefit from the BBC’s investment in training its staff given that knowledge spillovers can be embodied in labour flows. Within the creative industry there are a relatively high proportion of freelance workers and anecdotally we understand that labour mobility is relatively high. With the creation of a media and digital hub in Salford at MediaCityUK this is likely to enhance the spillover effects as individuals interact more closely with each other, engaging in knowledge and skill sharing in the process.

The economic spillover effects associated with the network and agglomeration effects arising from the geographical proximity of firms within MediaCityUK is explored below. Section 5.4.3 also highlights some examples of networks, partnerships and collaborations associated with the BBC’s online activity, all of which also contribute to the spillover effects arising from BBC training and development of its employees.

4.5 **Investing and innovating**

Investment and innovation are recognised drivers of economic growth, so through its activity in these areas the BBC contributes to the UK economy, both at the national and regional levels. Indeed, the BBC’s Executive Board must ensure that the BBC conducts research and development activity which aim to maintain its position as “a centre of excellence” for research and development in broadcasting and the electronic distribution of audio, visual and audio-visual material\(^{59}\).

As outlined in Section 3, BBC engineers have been at the forefront of developments in broadcast technology since the BBC’s founding of public service broadcasting in the UK. The BBC R&D team

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\(^{56}\) BBC, Full Financial Statements, 2014/15. Equivalent data relating only to spending for BBC employees based in the North West was unavailable for the purposes of our analysis. Therefore, pan-BBC level data is presented.

\(^{57}\) This includes apprentices for FY15/16, some of which may not yet have started their position at the BBC

\(^{58}\) This includes apprentices for FY15/16, some of which may not yet have started their position at the BBC

\(^{59}\) [http://www.bbc.co.uk/how/our-purpose](http://www.bbc.co.uk/how/our-purpose)
currently has over 100 employees working in two research labs based in the North West and South of the UK. The team looks to collaborate with others including universities, businesses and other broadcasters to help develop industry standards and develop next-generation standards.

A large number of BBC innovations relate to the digital and online market. Specific examples of these, and an explanation of how they benefit the economy, are outlined in Section 5 below. A number of these examples stem from the BBC R&D team based in Salford, thereby increasing the economic contribution made by the BBC linked to its activity in the region.

More widely, as a result of the development of the site in Salford, the BBC contributed significantly to investment in the local area. As part of the move, the BBC Trust approved a lifelong budget for moving to Salford of £942 million. This included the significant investment required for technology installation - spending of £87.9 million as of December 2012 - including:

- Information Technology for news, radio and offices: the largest part of the technology installation; and
- studio, presentation and broadcast equipment: managed in-house rather than outsourced to Peel Media Ltd as had originally been planned.

The design and fit-out of the buildings involved a further £41 million of investment.

And this is only the investment incurred by the BBC in developing its Salford site.

In developing MediaCityUK, spurred on by the BBC decision to locate there, there has been much greater investment in the area. As we go on to explain below, MediaCityUK in Salford is establishing itself as a hub for creative and digital firms. Evidence suggests that The Peel Group (part of the Joint Venture that owns MediaCityUK) has invested approximately £650 million in MediaCityUK to date. And given that a wide range of other companies and institutions, including ITV and the University of Salford, have now based themselves on the site, they too are likely to have made significant investments as part of their moves. For example, the ITV Annual Report 2013 states that it has £3 million of capital commitments at 31 December 2013 which primarily relate to the development at MediaCityUK, including the new location for Coronation Street.

### 4.6 Creating network and agglomeration spillover effects

Broader economic spillover effects can arise through the agglomeration effects of firms in the same or complementary industries locating in close proximity to each other in order to benefit from the increase in productivity this creates.

As noted by NESTA, “Many of the mechanisms for the knowledge and network spillovers... such as commercial relationships and collaborations and labour flows across sectors- are more likely to take place between firms that are located close to each other.”

MediaCityUK in Salford is establishing itself as a hub for firms with creative and digital capabilities and so is benefitting from these network and knowledge spillover effects, stemming from the BBC’s

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60 [http://www.bbc.co.uk/rd/about/our-purpose](http://www.bbc.co.uk/rd/about/our-purpose)
61 National Audit Office, The BBC’s move to Salford, April 2013
62 This is the revised budget agreed in February 2011 and represents the approved budgeted lifetime cash cost, including operating costs, up to 2030. National Audit Office, The BBC’s move to Salford, April 2013
63 National Audit Office, The BBC’s move to Salford, April 2013
64 [http://www.mediacityuk.co.uk/faqs](http://www.mediacityuk.co.uk/faqs)
65 ITV plc: Annual Report and Accounts FY13
66 NESTA, Creative clusters and innovation: Putting creativity on the map, November 2010
decision to locate there initially. The BBC was the anchor tenant for the site and indeed the
development of the site arose from the BBC choosing the Salford Quays development proposal\textsuperscript{67} over the competing bid from the Central Spine scheme in Manchester.

Following the development of the site, and the BBC’s relocation of a range of its activities there, it is
now also home to ITV, Coronation Street, SIS LIVE, the University of Salford, dock\textsuperscript{10} and over 250
innovative businesses.

Approximately 6,500 people are now employed in MediaCityUK, around 40\% of whom are BBC
employees. Their interaction with other creative and digital sector workers in the area will have
spillover impacts. And with further development of MediaCityUK these opportunities for interactions
and knowledge and skill spillovers are likely to increase. The Tomorrow building, due to open in
Summer 2016, will provide an additional 4,600 m\textsuperscript{2} of commercial office space, designed for creative
and digital businesses.\textsuperscript{68}

As shown in the Figure below, the number of jobs in the creative industries in Salford has more than
doubled between 2010 and 2013, with a step change in the level of jobs aligned to the BBC move to
Salford. Creative industry jobs are expected to continue to grow, albeit at a considerably slower
pace, with forecasts suggesting that there will be an additional 1,700 creative industry jobs in Salford
by 2034.

Figure 7: Creative industry jobs in Salford, Greater Manchester and the North West, 2000 - 2034

![Figure 7: Creative industry jobs in Salford, Greater Manchester and the North West, 2000 - 2034](source: Oxford Economics, Greater Manchester Forecasting Model)

The creative industries now account for 5\% of total employment in Salford, up from 2\% in 2010.
And the BBC contributes significantly toward this, with 40\% of the creative industry jobs in Salford
being jobs at the BBC.

The BBC’s move to Salford can be seen as what Paul Krugman\textsuperscript{69} describes as a ‘small historical
accident’ which has started a path of attracting investment in creative activities. A report by

\textsuperscript{67} The Salford Quays proposal was developed by a range of public sector bodies, including the North West Regional Development Agency, Central Salford urban
regeneration Company and Salford City Council, with the site owners and developers, Peel Group

\textsuperscript{68} http://www.mediacityuk.co.uk/vision-and-history

\textsuperscript{69} Krugman, P., The Increasing Returns Revolution in Trade and Geography, December 2008
CLUSNET\textsuperscript{70} identified creative/ digital/ new media as a strategically important accelerator cluster in the Manchester economy.

More broadly, MediaCityUK and the BBC have become an integral part of the wider Tech North strategy, launched by the government in 2010 to bring together technical industries from across the North to form an ‘internationally renowned social hub’.\textsuperscript{71} In addition to the investment in MediaCityUK, £3.5 billion has already been invested to support Manchester’s digital and technology infrastructure.\textsuperscript{72} The cluster in the region should have the economic effect of signalling to the national and international community the scale of talent and creative and digital businesses in the North West, thereby helping to attract further inward investment into Manchester and other Northern cities.

Cluster initiatives can help relieve the risk associated with the trial and error involved with innovation. Integrated parties are able to benefit from extensive networking cooperation and spillovers, and MediaCityUK is an example of greater collaboration between firms, organisations and universities. Firms involved in clusters are likely to have a clear competitive advantage due to the network and agglomeration effects that arise. Clusters such as this are an important source of specialisation and specialist knowledge.

Networks of relationships can be seen to play an essential role in the learning process of economic agents, particularly firms, in forming of inter-firm strategic alliances and the accumulation of social capital\textsuperscript{73}. They are also important in allowing for diffusion of knowledge spillovers and serve as channels for risk sharing. Their presence consequently plays an important role in the innovation process.

Similarly, agglomeration theory looks into why firms tend to cluster together in specific geographical areas. Clustering captures efficiencies generated by tight linkages between firms such as allowing new technology to be adopted and exchanged more rapidly and improving the flow of ideas\textsuperscript{74}. More recently, this literature has focussed on the importance of the clustering of human capital\textsuperscript{75}. Employers gain access to a large pool of specialised labour and are able to draw from concentrations of talented people who power innovation and capital growth. This rapid mobility of talent is a source of great competitive advantage.

There is strong empirical evidence that agglomeration and network effects do exist and are important for research, development and productivity. These ideas provide a theoretical basis for the wider economic spillover effects of the BBC’s move to Salford and its role in shaping the creative landscape of the North. As part of this study we also interviewed a number of businesses who have worked for, and collaborated with, the BBC and they were able to provide qualitative evidence of the effects based on their own experience. Additionally, the Creative Industries Federation ran a series of BBC Policy Seminars which also provided evidence to us in relation to the BBC’s role and relationship with the creative industries in the Salford area.

A number of key themes emerged from participating businesses:

- The BBC’s move to Salford has reduced the barriers to collaboration faced by smaller, independent digital agencies. Apadmi\textsuperscript{76} indicated that its work with the BBC has increased since

\textsuperscript{70} CLUSNET, Manchester City Region Workshop, June 2009
\textsuperscript{72} http://www.techcityuk.com/greater-manchester/
\textsuperscript{73} Varga, A., Pantikakis, D. and Chorafakis, G., Agglomeration and Interregional network effect on European R&D productivity, University of Pèc, May 2010
\textsuperscript{74} Ciccone, A., Agglomeration Effects in Europe and the USA, CREI, September 2001
\textsuperscript{75} Florida, R., Cities and the Creative Class, Carnegie Mellon University, March 2008
\textsuperscript{76} Apadmi is a Manchester based company specialising in mobile technology, creating apps and server solutions to a range of clients, including the BBC
its move to Salford, this includes projects which they consider that they would not have been able to do had the BBC still been based in London. For example, Apadmi has benefited from BBC engineers embedded in its engineering teams. Magnetic North\(^{77}\) indicated that the BBC’s move has given them greater opportunities with the BBC, which in turn delivers additional credibility to attract new clients.

- The geographic proximity to the BBC improves the quality of outputs, both on BBC projects and more generally. We were told that being located in close proximity to the BBC when working with them improves the quality of work given that it allows greater collaboration and supports better knowledge and skill sharing. This helps to raise standards, which also benefits the sector more widely.

- There are wider positive effects arising from the growth of MediaCityUK which has attracted more creative businesses to the area. This has increased the pool of companies which can collaborate together. Apadmi told us that they have collaborated with other digital businesses, which would not have come about without MediaCityUK. Equally, the growth in MediaCityUK has brought jobs and talent to the North West. A number of local businesses cited that the employees the BBC brought with it has created a greater flow of talent within the creative industries in the North, benefitting them in terms of recruitment.

### 4.7 Generating wider positive impacts

Better serving audiences in the North was one of the BBC’s principal objectives of moving to Salford. The BBC measures this using the approval gap between its viewers in the North of England and those elsewhere in the UK. Since the move to Salford, ‘portrayal’\(^{78}\) has improved steadily between the North and the pan-UK audiences. Specific departments of the BBC have seen more substantial shifts in approval gaps\(^{79}\). Radio 5Live’s reach in the North now exceeds reach at the pan-UK level.

Another way the BBC measures improvements in serving wider audiences is ‘general impression’\(^{80}\). The approval gap between the North and pan-UK audiences is now around 1-2%, down from a 3-4% approval gap previously\(^{81}\).

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77 Magnetic North is an independent digital design company based in Manchester. It has worked with the BBC on a number of projects.

78 Portrayal figures relate to responses in relation to the statement: “the BBC reflects my region fairly”

79 Approval gap is the difference in overall BBC approval ratings across the UK or across different BBC services, and those in the different regions

80 General impression is directly linked to audience consumption, and is a rating between 1 (extremely unfavourable impression) and 10 (extremely favourable impression)

81 BBC North, Building the BBC in the North, Autumn 2013
5 The economic impact of the BBC’s online activity

5.1 Introduction

An increasingly important element of the BBC’s offering as a Public Service Broadcaster is its online activity.

BBC Online plays an important role in meeting the BBC’s public purposes set out in its Charter and has the specific remit: “… to promote the BBC’s public purposes, by providing innovative and distinctive online content and distinctive propositions that reflect and extend the range of BBC’s broadcast services.”

As an overall share of BBC services, BBC Online represents approximately only 5% of BBC’s annual PSB Group expenditure (£201 million out of £4,222 million). Not only has BBC Online grown rapidly in its importance to the BBC’s overall activity, its impact on consumers is significant. According to the BBC Annual Report 2014/15 around 50% of the UK adult population access BBC Online each week.

The latest review of BBC Online by the BBC Trust, undertaken in 2013, confirms this and concludes that BBC Online is: “… an extremely important part of BBC’s portfolio”. The review highlighted the role of BBC News, BBC Sport and iPlayer as distinct products making a valuable contribution to the BBC’s public purposes.

In this section of the report, we outline the scale and scope of the BBC’s online activity and, using the economic framework set out in Section 3, focus our analysis on:

- the degree of external spend with suppliers to support the BBC’s online offering; and
- the economic impacts of the BBC investment and innovation in the online space and the spillover effects this creates. These spillovers include skills and knowledge development and sharing, technology spillovers and the broader market development that the BBC has contributed toward through its activity.

Given that many of the economic benefits arising from the BBC’s online activity are spillover effects, by nature these are much harder to quantify. Therefore, in this section of the report we adopt a largely qualitative approach, highlighting the economic framework and theory that underpins how the BBC’s online activity generates economic impacts. We also provide descriptive statistics, where possible, to demonstrate the scale and scope of the BBC’s activity to provide an indication of the potential order of magnitude of the impacts.

5.2 The BBC’s online activity

Having launched in the 1990s, BBC Online has evolved to provide a broad range of online products, including News, Sport, Weather, iWonder, CBBC, Cbeebies, BBC Taster, BBC iPlayer and
iPlayerRadio. They are available across a wide range of devices - on smartphone, tablet, desktop and connected TV.

The delivery of this BBC content over Internet protocol (IP) is supported by a range of infrastructure including publishing platforms, platform architecture and internet infrastructure.

Through these services and websites, users are able to read the latest news, listen to the radio, watch TV programmes live or on demand, and access informative and interactive content on numerous topics relevant to all audiences.

BBC Online is also an important complement of TV and radio services by providing users with complementary information on specific TV and radio programmes and has been successful in achieving high penetration of its services across a range of devices.

A timeline of the BBC’s online activity shows the development of BBC Online services over the last 25 years. The most important events include the launch of bbc.co.uk and BBC News online in 1997 as well as the launch of BBC iPlayer in 2007.86

**Figure 8: Timeline of the development of the BBC’s online activities**

Currently, the BBC provides 18 distinct mobile apps plus a further 5 BBC News apps in other languages. BBC Red Button+, an improved version of BBC Red Button, launched in beta version in 2013, provides the link between online and TV services in internet connected TVs, bringing iPlayer and BBC Online content straight to users’ TVs. In addition, BBC iPlayer is available across a high number of devices, such as PlayStation and on smart TVs, comparing favourably to other video-on-

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86 [http://www.bbc.co.uk/timelines/zpwy87h](http://www.bbc.co.uk/timelines/zpwy87h)
demand providers such as Sky or Virgin, which only offer their services across a limited number of platforms\textsuperscript{87}.

Around 50\% of adults now use BBC Online every week\textsuperscript{88}. The latest statistics, for August 2015, for unique visitors/viewers to BBC online sites, across multiple platforms, is shown in the Figure below.

**Figure 9: Multi-platform unique visitors/viewers on BBC sites, August 2015**

![Multi-platform unique visitors/viewers on BBC sites, August 2015](image)

Source: comScore MMX, August 2015, UK, BBC Sites, Unique Visitors.

The BBC Online sites were the highest ranking UK media brand in the comScore Top 20 Digital Media Properties in June 2015.\textsuperscript{89}

### 5.3 Economic impacts arising from BBC Online external spend with suppliers

An important way in which the BBC contributes to the UK economy is through its supply chain.

As explained in Section 3, this supplier spending generates additional economic activity at the direct (Tier 1) suppliers and this perpetuates through the economy through their supply chains. This results in indirect GVA arising from the BBC.

Given that detailed supplier spending data relating only to BBC Online was not available to us for the purposes of this study, we are able to outline the high level external BBC spending associated with BBC Online but we do not estimate the indirect GVA arising from this.

The external expenditure by BBC Online has helped to increase creative and digital activity in the economy through direct contracting and outsourcing of goods and services from suppliers. The impacts in the wider economy are, to some extent, linked to the external spending quota for BBC Online that forms part of the Service Licence. The quota purpose is to ensure that BBC Online delivers audience benefits in terms of better value for money; and /or improvements in quality by working with the wider digital market. The quota requirement is for 25\% of spend classified as

\begin{itemize}
\item \textsuperscript{87} Ofcom, Online Media Services, 2014, Annex 4
\item \textsuperscript{88} BBC Accounts 2014/15 http://downloads.bbc.co.uk/annualreport/pdf/2014-15/bbc-annualreport-201415.pdf#page=101
\item \textsuperscript{89} comScore Top 20 Digital Media Properties by Total Multi-Platform Unique Visitors, June 2015. See: https://www.comscore.com/Insights/Market-Rankings/comScore-Ranks-Top-UK-Digital-Media-Properties-for-June-2015
\end{itemize}
“eligible” to be externally supplied. Eligible activities include most audience-facing editorial experiences and the immediately underlying technologies that deliver them\textsuperscript{90,91}

According to external spending data for 2013/14, BBC Online has spent an average of £20 million per annum externally over the last five years.

Figure 10: BBC Online external spending (2015 prices)

This BBC Online external supplier spending generates economic contributions through the supply chain. And as the geographical spread of suppliers across the UK has also increased over recent years, this has contributed to a wider spread of economic benefits across the UK. External spending has gradually shifted from London to the rest of the country in terms of the number of suppliers and commissions. While in 2009/10 59% of suppliers were sourced from London, this proportion dropped to 34% in 2013/14\textsuperscript{92}.

As we go on to explain, BBC Online's spending with external suppliers also generates positive economic spillovers in the online market. By working with a wide range of organisations, BBC Online has acted as a source and channel of expertise and knowledge, both formally and informally, benefitting the wider industry and related sectors.

5.4 The economic contributions of the BBC’s investment and innovation in the online market

Through the BBC’s investment and innovation in the online space, there are not only the direct economic benefits that arise from these activities, but also the wider spillover effects this generates in the economy. These can manifest themselves in terms of skills and knowledge development and sharing, technology spillovers and the broader development of the market.

Through investments in innovation and initiatives to promote digital technologies and skills, BBC Online has achieved positive economic impacts in the online media sector at a local, national and

\textsuperscript{90} News and Sport editorial products are excluded as core BBC Journalism. The underlying technologies used to deliver these products are also excluded.

\textsuperscript{91} BBC Online outturn report 2013/14 http://downloads.bbc.co.uk/commissioning/site/bbc_online_outturn_report_2013-14.pdf

\textsuperscript{92} BBC, BBC Online outturn report, 2013/14
international level. This has been realised by promoting market expansion and through knowledge spillovers.

More specifically, we have identified two main mechanisms through which investment by the BBC has had a positive economic impact on the sector:

- technology spillovers driven by the BBC’s innovation in the market; and
- knowledge and skills spillovers arising from BBC collaborations, partnerships and wider industry initiatives.

Both of these result in overall development and expansion of the online market and related industries.

These impacts are not just realised at a national level. As exports become increasingly important to the UK’s broadcasting and media industry, with total sales of UK TV to international markets increasing by 5% in 2013/14\(^{93}\), the benefits of BBC Online’s investment have a global reach.

The mechanisms through which BBC Online investment results in economic impacts are discussed below after an overview of the scale and scope of BBC Online’s investment and innovation activity to provide context.

### 5.4.1 Scale and scope of BBC investment and innovation in the online market

The BBC considers investment and innovating in online services to be a priority. This was reflected in the BBC Director-General’s speech in 2013\(^{94}\) which emphasised the role of research and development to accomplish his vision for the BBC\(^{95}\).

Over the last decade, BBC Online has spent between £174-201 million per annum across three main areas: content, distribution and infrastructure\(^{96}\).

Spending on BBC Online and the Red Button, however, has reduced in real terms since 2010 as a result of budget cuts and the need to implement cost controls. Despite this, the level of BBC activity and its innovation in these areas has continued to grow. Innovating online is a BBC strategic priority. As noted in the BBC Annual Report, FY2014/15 activities in relation to this included innovations such as the Radio 1 iPlayer channel and new apps for CBBC and BBC News\(^{97}\).

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93 BBC, Accounts and Annual Report, 2014/2015, p.10
94 http://www.bbc.co.uk/mediacentre/speeches/2013/tony-hall-vision
95 http://www.bbc.co.uk/rd/about/vision
96 BBC, Annual Accounts Reports, 2008-2015
97 BBC, Annual Accounts Report, 2014/2015
The history of BBC has been marked by a high number of online related innovations, as shown in the timeline in Figure 8. These include the development of the BBC’s Video on Demand (VoD) offering – iPlayer – its subsequent iPlayer Radio, and other web and app offerings.

Over time, the BBC as a whole has invested heavily in technological improvements and innovation. Investing in research and development (R&D) is not only motivated by rapid changes in technology, but it is also part of activities to promote the public purposes in the BBC’s Royal Charter. According to the agreement between DCMS and the BBC, the BBC is required to invest in R&D to become a centre of excellence, promoting “open standards” where this is desirable, and collaborating with suitable partners.

Although the BBC has a dedicated R&D team of more than 100 technical staff working on developing new ways of broadcasting and distributing content electronically, its digital innovation spans its activities. As part of its transition to the digital age, BBC R&D investments have increasingly focused on technological improvements related to the internet. In its vision for the future, the BBC recognises that most content will be produced and broadcast over IP. This means that there is an increasing focus on online activity and that the BBC will increasingly contribute towards this market.

Expenditure specifically dedicated to innovation cannot be easily identified in the BBC’s financial systems given that the majority of operating expenditure includes some element of innovation and R&D spending. Therefore, we are not able to quantify this spending within this report.

5.4.2 Technology spillovers driven by the BBC’s innovation in the online market

Public funded organisations have always been important in the development of new technology. In the media industry, the BBC has historically taken risks to create and invest in innovative programmes, technologies and processes, becoming a key partner to the private sector and in many
cases enabling them to benefit from accessing and learning from the technological innovation and investment.

The BBC has been able to support online market development and innovation partly thanks to the certainty of revenue from BBC licence fees. This allows the BBC to take a longer term perspective and take on greater creative risk.

As a result of investing in developing more uncertain technologies and innovations, there are examples, such as the ongoing development of iPlayer, in which the BBC has paved the way for other providers to follow suit and implement new technologies at a reduced cost and risk. The competition that this generates has accelerated market expansion in online services, increasing economic output, given that competition serves to incentivise other providers of online media services to match the quality and breadth of services that the BBC is providing, as well as to adopt new technologies.

This has been enhanced by the fact that the BBC has promoted the use of open standards, making it easier for competitors to adopt newly developed technologies.

We set out below examples of how the BBC’s investment and innovation related to the online market has positive technology spillover benefits to firms in the wider market. These contribute toward the economic impact the BBC has on the UK’s online market.

5.4.2.1 Positive technology and innovation spillovers through the development of BBC iPlayer

The emergence of video on demand (VoD) as a new distribution technology is an example of how the BBC invested in technologies where it is likely that there would be underinvestment by the private sector given the risks involved.

In particular, the VoD market faced two potential barriers: first, consumer demand for the service was uncertain; and second, it required the simultaneous development of services in a number of linked, but distinct markets (content providers, content aggregators, transmission network providers, etc.).

By continuously investing in VoD technology and enhancing its offering, it can be argued that BBC Online has accelerated the development of this market, which now offers high quality VoD services. It is likely that there would be less investment in VoD as a new distribution technology without the BBC innovations and investments in technologies in this area. Such innovations can be expensive and carry risk. Not only that, if any one organisation were to invest in the area and it were to succeed as a concept, it may be possible for it to be adopted relatively easily by others, once technologies have developed and costs reduced. In economics-language, there are ‘positive externalities’ associated with these types of innovations.
Since the development and launch of the first VoD services in the mid-2000s, demand for online TV services has significantly increased. As Ofcom notes\(^\text{101}\), there has been a considerable uptake in VoD devices, along with an increase in the variety of VoD services and apps available. Rollout has accelerated in recent years, particularly since 2010. It is likely that through its investments in iPlayer the BBC has helped to stimulate demand for on-demand TV.

The Figure below shows the number of VoD programme requests annually since 2008, shortly after iPlayer was launched.

**Figure 13: BBC iPlayer, ITV Player, 4oD and Demand 5 programme requests: 2008-2013**


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\(^{101}\) Ofcom, Communications Market Report, August 2014.
In 2014, 61% of adults over 16 years old reported watching television programmes or films online through an on-demand service\textsuperscript{102}. In recent years, the online TV subscription model has become more and more popular showing steep growth in revenue, achieving over ten times the revenue obtained in 2010 (£23 million), reaching £317 million in 2014\textsuperscript{103}.

Although the BBC was not the first provider to launch its VoD service, it has led the market with the implementation of numerous innovative technological improvements.

In the words of Netflix’s CEO: “\textit{The iPlayer really blazed the trail}”\textsuperscript{104}.

Innovations in iPlayer include continuous improvements to make it a fast service, downloadable content, and High Definition (HD) amongst others\textsuperscript{105}. The BBC also led the VoD market in terms of enabling downloads and its development of live restart/watch over capabilities also led the market.

Such developments have created incentives for competitors to improve their online offerings, as well as possibly spurring demand for online VoD services. Indeed, Ofcom notes that, “\textit{the BBC has the potential to act as a catalyst for market development}”, citing the example of iPlayer that it states, “\textit{has helped build consumer interest and take-up of on-demand services, providing market opportunities for other providers to deliver new, innovative services beyond traditional TV.”}\textsuperscript{106}

The introduction of HD streaming technology is another example illustrating BBC Online’s role in the development of the VoD market. While iPlayer introduced the option to watch videos in this format in 2009, offering HD services was not cost effective for other commercial providers, as recognised by Channel 4 Head of Online Products at the time\textsuperscript{107}. Channel 4 and ITV VoD services have still not introduced HD format for online services but other online VoD providers like Netflix, which entered the UK market in 2012\textsuperscript{108}, do offer some of their programmes in HD. BBC iPlayer is now trialling Ultra HD\textsuperscript{109}. As a result, BBC iPlayer has developed technologies and set high quality standards that rival companies gradually adopt to be able to compete, once the technologies have developed and costs have sufficiently reduced.

These technological innovations and investments in BBC online TV services are likely to have had strong positive innovation and technology spillover impacts. As a result they will, therefore, have contributed to the overall market development and expansion. As shown in Figure 13 above, the overall market has grown significantly in recent years. Within this, BBC iPlayer attracts more users each year and has achieved the number one position as an online TV provider in the UK, with 35% of adults watching programmes on iPlayer at least once a month, double the proportion of adults watching the second most successful provider (ITV at 17%) in 2014, based on Ofcom survey data\textsuperscript{110}.

Continuous innovations in BBC iPlayer services are reflected in the demand for this service, which has steadily grown since its launch in 2007. The latest iPlayer demand data up to July 2015 shows

\textsuperscript{102} Ofcom, Online Media Services, 2014
\textsuperscript{103} Ofcom, Communications Market Report, 2015
\textsuperscript{104} http://www.telegraph.co.uk/finance/newsbysector/mediatechnologyandtelecoms/media/1141894/Netflix-chief-Reed-Hastings-takes-on-telcos-cinemas-and-global-expansion.html
\textsuperscript{105} http://www.bbc.co.uk/blogs/bbcinternet/2009/04/bbc_iplayer_goes_hd_adds_high.html
\textsuperscript{106} Ofcom, Proposed changes to BBC Three, BBC iPlayer, BBC One and CBBC Market Impact Assessment, June 2015
\textsuperscript{107} http://www.digitalspy.co.uk/tech/news/a161400/high-def-4od-difficult-to-justify.html#poy1y1z2gb4UK8
\textsuperscript{108} https://pr.netflix.com/WebClient/loginPageSalesNetWorksAction.do?contentGroupId=10477
\textsuperscript{109} http://iplayerhelp.external.bbc.co.uk/tv/UHD
\textsuperscript{110} Ofcom, Online Media Services, 2015
an average monthly demand in 2015 of 222 million viewer TV programme requests, with 7% of programme requests being for simulcast\(^{111}\) services.

**Figure 14: BBC iPlayer monthly TV programmes requests (2009-2015)**

Trends in demand also show how iPlayer has successfully attracted demand through various devices. Currently, iPlayer is watched mostly on computers, tablets and mobile devices, almost in equal proportions. This may change in the future as internet TVs become more widely used.

**Figure 15: Requests for BBC TV iPlayer programmes by device type (July 2015)**

111 Simulcast relates to simultaneous broadcasting – the broadcasting of programmes over more than one medium, or more than one programme over the same medium, at exactly the same time
The number of requests for iPlayer is considerably higher compared to direct competitors – while BBC has an average number of monthly requests of 200 million, ITV Player receives 66 million requests\textsuperscript{112} and Channel 4 VoD services receives 45 million views\textsuperscript{113}.

5.4.2.2 Positive technology and innovation spillovers through wider BBC initiatives

The BBC has supported the development of a number of other new technology concepts (in addition to its development of iPlayer) before they have become commercially viable, to the benefit of the wider industry.

For example, through the BBC’s IP Studio project, a model is being developed for end-to-end broadcasting that will allow a live studio to run entirely on IP networks. Since 2012, the IP Studio project has investigated new approaches to capturing, producing and delivering content. The feasibility of these approaches has been tested through prototypes and trials, including its application to the 2014 Commonwealth Games in Glasgow where the software was used extensively in the first major live event to be produced and delivered entirely over the internet.

According to the BBC, IP networks can provide more cost effective alternatives to traditional interconnects. IP-based production can also lead to greater agility and capability to carry new types of services and assist in the provision of high quality coverage of live and recorded events, supporting content personally customised for audiences.

The BBC is now working with technology companies from around the world to develop this approach into commercial products and services for the benefit of the wider broadcast community.

This is a further example of how BBC Online is contributing to technological progress and generating positive spillover effects to the benefit of the wider broadcast industry.

5.4.2.3 Positive spillovers from BBC open source technology

In order to further accelerate market development and competition, BBC Online has encouraged the implementation of BBC technologies by its competitors through open-sourcing and technology transfer. Open source software development is at the core of BBC’s policy to innovate and to share the benefits of new developments with the wider industry. It allows other individuals and organisations to download BBC software, free of charge, and to adapt and develop this and share the results.

As acknowledged by NESTA\textsuperscript{114}, through its software development activities the BBC may create value and innovation more widely. Given that the software developed by the BBC is likely to be of value to the wider media and digital sectors, these positive spillovers are encouraged by the BBC’s use of open source licensing.

Using data from GitHub – a collaborative software development platform – NESTA\textsuperscript{115} found that the BBC’s development activity on this platform has grown significantly in recent years. The number of BBC projects in GitHub have multiplied 10 times since 2012, reaching 380. And instances where others have copied BBC code to continue working on it (‘forks’) have multiplied by 25 over the same period, to reach over 800. Data also shows that these forks span across the UK and internationally, covering 53 different countries. However, as a third of them are in the UK, there is evidence to

\textsuperscript{112} PSB data from Enders Analysis
\textsuperscript{113} Channel 4, Digital Media Pack, 2015
\textsuperscript{114} https://www.nesta.org.uk/blog/public-service-coding-bbc-open-software-developer
\textsuperscript{115} Ibid
suggest that beneficial impacts of the BBC’s open sourcing approach are accruing to the UK economy.

There are a range of current BBC open sourcing initiatives helping the overall industry compete and make the most of the knowledge developed by the BBC. These projects, all actively maintained by software teams in the BBC and used internally, include:

- Hive Ci: a continuous integration platform for on-device testing;
- DeviceAPI: a collection of ruby gems that make working with physical devices easy and consistent. It provides common utilities such as device detection and identification, and useful helpers for installing applications and identifying problems with devices;
- Wraith: a responsive webpage screenshot comparison tool designed for visual regression testing;
- Image Session Analyser (ISA): a ruby gem for comparing screenshots over a testing session. It is used in combination with the DeviceAPI gem to capture screenshots during video playback tests and confirm that video is actually being played.

The TV Application Layer (TAL) is also an example of a BBC project made available through open source licences. This technology was developed to make it easier and more efficient to implement iPlayer, News and Sport services for connected TVs across multiple devices. The platform was then made open-sourced allowing other parties to contribute, benefiting app developers, content providers and manufacturers.

We understand from the BBC that TAL is now being used by Arqiva, a communications infrastructure and media services company operating in the broadcast, satellite and mobile communications markets. This provides a clear example of how other players in the market are benefitting from the innovations of the BBC and the technology spillovers facilitated by the BBC’s open source initiatives.

Not only does BBC Online increase competition and accelerate market development through its innovation and investment, but also by making it easier for other companies to compete, e.g. through open-sourcing technology and making knowledge available to industry. Technology and innovation spillovers are important contributions to the economy.

5.4.2.4 Positive spillovers from the BBC’s role in developing standards underpinning online media

Through its role in developing standards underpinning online media, the BBC generates further positive spillover effects. This helps in overall market development and benefits other players in the industry.

The Digital Production Partnership (DPP), which the BBC is a key player in, is one example of this.

The DPP establishes standards for the transfer of completed programmes between broadcasters and independent producers and postproduction houses. Its aim is to smooth and accelerate the move to end-to-end digital, and in doing so reduce complexity and cost and increase interoperability.

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116 http://www.bbc.co.uk/opensource/projects/
117 RubyGems is a package manager for the Ruby programming language that provides a standard format for distributing Ruby programs and libraries (in a self-contained format called a ‘gem’).
118 http://www.bbc.co.uk/blogs/internet/entries/f4318816-475c-3ee9-bf3c-e69ed9cd580c
119 https://www.digitalproductionpartnership.co.uk/who-we-are/
We were told by the BBC that Sony stated: “The DPP is a very valuable forum with considerable potential to stimulate this sector to adopt collaborative solutions in the UK and beyond. Without doubt the BBC was and continues to be the prime mover in the DPP as it alone has the scale, vision and deep technical competence to promote the dialog across the fullest range of topics.”

5.4.3 Knowledge and skills spillovers arising from BBC collaborations, partnerships and wider industry initiatives in the online market

The BBC as a whole also generates positive spillover economic impacts through knowledge and skills transfer. These spillovers arise as firms gain access to knowledge and innovation produced by the BBC without incurring any costs and can explain why knowledge intensive businesses tend to co-locate. Through these knowledge and skills spillovers the economic contributions arising from the BBC’s investments and innovations are enhanced.

As we set out below, there are a number of mechanisms through which BBC Online specifically generates these spillover effects, to the benefit of creative and technology intensive industries in particular. This includes its partnerships and industry collaborations, collaborations with academic institutions, and direct support it provides to industry through opportunities created by a range of projects and initiatives. These examples only provide a snapshot of the range of online related activities undertaken by the BBC that have positive economic impacts.

5.4.3.1 BBC Online partnerships and industry collaborations

One way in which BBC Online supports knowledge transfer and skills development across the media and technology industries is through partnerships. Some important partnerships that BBC Online currently maintains are:

- Radioplayer - a partnership with commercial radio that allows audiences to access hundreds of radio stations online via a single console. It was launched in 2011 and now offers access to over 400 stations;
- Free-to-air platform partnerships: YouView - a partnership with ITV, Channel 4, Five, BT, TalkTalk and the communications infrastructure company Arqiva to build an open, Internet-connected TV platform; Freeview Play; and Freesat; and
- Online partnership with the Arts Council England – a public value partnership to create the best possible broadcast and online arts content.

As part of the partnership with the Arts Council England starting in 2009, “the Space” was created - an experimental digital arts platform which has led to the sharing of technology and improved digital production skills in the cultural sector. The BBC contributed £2 million to support this project, including technology solutions, training and mentoring.

We understand that the BBC’s contribution in terms of technology was critical to the success of the project and the delivery of the online platform. In addition to knowledge sharing, the Space supports the creative and technology industries by commissioning work through open calls and the Creative Fellowship. Overall, the Space aims to commission 50 new works every year and spends on average £5 million on this, including part-funding from partners and co-commissioners.

120 NESTA, Creative clusters and innovation, 2008
121 http://www.bbc.co.uk/aboutthebbc/insidethebbc/howwework/partnerships/media_industry.html
122 BBC, The economic value of the BBC, 2011/12
123 Data and information provided by the BBC
124 http://www.thespace.org/faqs
By 2011/12, the Space had attracted over 1 million visits and, according to an evaluation by the Arts Council, it has succeeded in developing digital capacity and stimulating innovation\textsuperscript{125}. Based on this evaluation, the majority of arts organisations that had been commissioned through the original pilot scheme stated that their involvement in the Space had had a major impact on their digital capabilities. Thus, through its contributions to support artists both from the creative and technological worlds as well as spreading innovation in the technology field, the Space has generated positive economic impacts.

BBC News Labs is another example of an industry collaborative project aiming to drive innovation in news. It works as an ‘incubator’ to take forward opportunities relating to journalism, technology and data, working closely with BBC News and R&D and collaborating with news organisations, and academic and research institutions. Goals of the initiative, include both supporting innovation transfer into production and driving open standards through news industry collaboration\textsuperscript{126}. The fulfilment of each of these leads to an economic contribution through spillover effects.

As part of BBC News Labs, the BBC has put on 8 newsHACK events to date, to bring together developers and journalists to devise new ideas around the delivery of online news.

Over 120 organisations have participated in these, including news organisations, broadcasters and universities. And as a result a number of projects have been taken forward, benefitting from funding and/or support to turn the ideas generated at the events in to pilots.

While the wider economic impacts arising from the ideas and projects generated at BBC News Labs in many cases have not yet materialised to their full potential and are not quantifiable, there are some examples of the positive effects that have arisen for the BBC and wider industry:

- The News Storyline Ontology\textsuperscript{127} – a generic model for describing and organising the stories news organisations tell - was developed in collaboration with industry partners. It is now used in BBC News online and is being rolled out more widely, impacting on industry standards.

- An EU Horizon 2020 funded Big Data project - SUMMA (Scalable Understanding of Multilingual MediA) - submitted in April 2015 by BBC News Labs and partners aims to significantly improve media monitoring through the development of a scalable and extensible platform, with multilingual and cross-lingual capabilities, to support the journalism industry. This also arose from project collaborations started at a newsHACK event.\textsuperscript{128}

There are also further examples of where outputs from R&D partnerships and industry collaborations have already been commercialised and are now being adopted across the industry. For example, Piero - a system for producing 3D graphics to help analyse and explain sports events – is based on technology originally developed by BBC R&D as a part of its work in an EC-funded project, and is now in use in various BBC Sports programmes\textsuperscript{129}.

\textsuperscript{125} Arts Council, Summary evaluation of The Space, May 2013
\textsuperscript{126} http://bbcnewslabs.co.uk/about.html
\textsuperscript{127} http://www.bbc.co.uk/ontologies/storyline
\textsuperscript{128} http://bbcnewslabs.co.uk/projects/summa/
\textsuperscript{129} Following development of the technology, BBC R&D negotiated a licencing agreement for this technology with RedBee Media, who productised the technology and licenced it back to the BBC
Collaborations with universities and industry

Partnerships with universities are also a central part of the BBC’s knowledge sharing and innovation policy.

Currently, the BBC partners with numerous universities across the country where there are mutual interests. These partnerships vary in their length and form, ranging from short-term collaborations with individual universities to long-term multi-university research partnerships, often involving the co-location of staff to maximise collaborative working and the cross-fertilisation of ideas. These partnerships with universities also often involve companies and the research outcomes can be shared with the wider industry. The research questions addressed in these partnerships are aimed at solving industry problems and by doing so deliver economic impacts.

The BBC has a strong track record in working closely with universities and industry in collaborative R&D projects that are facilitated and part funded by bodies such as InnovateUK and the European Commission. Recent success in the competitive Horizon 2020 ICT programme of research will enable the BBC to collaborate with experts across Europe in research areas that will deliver impact through the creation of new products and services and new jobs and skills.

Examples of research areas include:

- new multi-screen and personalised content experiences;
- joint creation of Ultra-HD media;
- building an end-to-end object based media chain for audio; and
- the creation of a platform to improve online media monitoring for news.

One example of BBC collaboration with academia to take forward research is BBC R&D’s 4-year strategic partnership with University College London (UCL) related to the future of digital content. This partnership involves the co-location of 40 BBC staff plus 40 UCL staff working together to investigate communication technologies, internet research, content production, and user experience and access services. We understand that there have already been a number of positive outcomes from projects within this partnership including novel machine learning-based algorithms for tracking, segmentation and 3D reconstruction of generic videos downloaded from YouTube, and the creation of tools for audio clipping/zooming/sharing in the browser for improved search, discovery and edit, to name a handful. Each of these outcomes will generate economic benefits across the industry as they become more widely adopted.

There are also examples of where the BBC has helped UK universities to earn funding from major UK Research Councils. This BBC support and collaboration generates benefits directly to the universities as well as to the wider research community through the spillover effects from the projects themselves. Research grants from the Engineering & Physical Sciences Research Council (EPSRC) to UK universities for projects supported by the BBC among other organisations, total £121 million for 34 current projects across 16 UK universities. The outcomes from this critical mass of research activity will generate impact by reaching end users in ways that make a difference to the UK’s digital economy.

And of this £121 million pot of research, funding of over £40 million over 5 years was allocated by EPSRC to four Digital Economy Hubs in FY2014/15 at R&D partner universities (Newcastle, Nottingham, York and Swansea) within the BBC User Experience (UX) Research Partnership. BBC R&D played an important role in helping to secure this funding by committing to provide support to these hubs through in-kind contributions, for example: BBC R&D staff time to undertake UX research work and input to Advisory Boards and Technical Reviews; and access to equipment or resources to support the wide-ranging projects in these hubs. These are clear examples of where this type of support by the BBC achieves spillover benefits, including developing the knowledge and skills of the UX and Human Computer Interaction researchers, improving the employability prospects of the
students who work on the projects, and the resulting products and services that could be commercialised for further economic impact.

Additionally, in some cases, the BBC contributes to university research together with other businesses. An example is the 5G Innovation Centre (5GIC) at the University of Surrey which is conducting research into the development of advanced technologies for a 5G network of the future, with the aim of establishing a world-leading position in mobile broadband communications and internet innovation. The BBC is one of 13 founder members of the 5GIC along with mobile network operators, infrastructure and tools providers, media and communications organisations and the UK’s communications regulator.

By investing in the UK’s research into 5G, the BBC is playing a role in the development of the technology, supporting the UK to exploit this emerging technology from an early stage and helping the UK to realise the economic benefits linked to the commercialisation of supporting technologies, and early adoption of 5G technology itself. The 5GIC is also working closely with SMEs from across a range of the UK’s industries to help encourage participation in understanding the technology. Through this process, the BBC is therefore helping make a contribution to the development of commercial activity in the UK in this emerging area of technology.

5.4.3.3 Direct support to the industry

“Connected Studio” is another example of BBC knowledge spreading and of direct support to the industry.

The Connected Studio is the BBC’s initiative to deliver innovation across the BBC’s online activity. It was launched in May 2012 and has worked with industry across the UK with a split team in London, Salford, Cardiff and Glasgow. It provides an opportunity for external digital agencies, technology start-ups, designers and developers to submit and develop ideas for innovative new features and formats for BBC Online to invest in. There is an annual £1 million fund available to invest in external parties early-stage concepts and public-facing pilots.

To date, the Connected Studio team has run 109 events (of which 24 have been in MediaCityUK) has worked with 458 small companies and has given contracts to 160 digital and creative SMEs. Ideas are selected on a competitive basis and short-listed ideas obtain funding throughout the process to be developed further and tested.

Through the Connected Studio, the BBC provides direct support to the industry; through the knowledge and skills spillovers both external parties and the BBC benefit from the opportunities created. Successful candidates to the initiative benefit from BBC and wider industry expertise to develop their ideas. The BBC works closely alongside the firms and also draws in the expertise of Independents to provide additional input where appropriate. Through this collaboration, innovation is supported and ideas taken beyond proof of concept to development and testing where feasible.

One example of a business benefiting from the Connected Studio is the Edinburgh based company Peekabu. It attended the BBC Connected Studio CBBC event in September 2012 and pitched an idea for ‘Eezl’ which was a response to a challenge around ways for children to sign-in for personalised BBC content. From approximately 30 ideas pitched at this event, they were one of ten that were asked back to a ‘Build Studio’ to build a prototype and further develop their idea. This was then one of four ideas that made it through for piloting and testing within a six month period. Following this, Eezl went in for further production with the CBBC Interactive team. During this
process, Peekabu was picked up by BBC Worldwide Labs to join their community incubator programme for up to a year.

Firms in the creative and digital industries also benefit directly from the Connected Studio initiative through BBC spending. Through the initiative around £650,000 a year is spent on contracts with these small companies, with the average cost of each contract ranging from £20,000 to £50,000. This investment is for a specific idea only and not an investment into the company. Through this spending the BBC generates economic activity in the UK creative industries to the benefit of the wider economy.

Some of the ideas developed in the Connected Studio are now being developed and tested through BBC Taster, a public-facing platform launched in January 2015 aimed at engaging audiences with the testing of early stage ideas to develop the BBC’s future plans. BBC Taster was built and is run through Connected Studio and is a website that invites audiences to try, rate and share the latest digital pilots from across the BBC, showcasing a range of digital innovation tools, techniques and content.

Since its launch, BBC Taster has had 5 million webpage views, with 5% of audiences participating to provide the BBC with views on the ideas being tested.

Through this initiative the BBC’s team collaborates with a range of independent creative industries companies, in addition to technology providers.

All these examples of collaboration and the provision of direct support to the industry facilitate knowledge and skills transfer. They demonstrate how the development of future online services may be influenced by BBC’s investment and collaborative working, and how the spillover effects benefit wider media and technology related industries.

131 Information provided by BBC R&D
132 http://www.bbc.co.uk/taster/about
133 Data provided by the BBC
6 The economic impact of the BBC on the music industry

6.1 Introduction

Music related activity – including via radio, television, online channels and live events – contributes toward a number of the BBC’s public purposes:

- to stimulate creativity and cultural excellence;
- to represent the UK, its nations, regions and communities; and
- to bring the UK to the world and the world to the UK.

The music industry makes a significant contribution to the UK economy. Estimates are that the total UK music industry’s GVA reached £3.8 billion in 2013, with 60% of this (£2.2 billion) coming from exports.

The economic contributions are associated with recorded music, live music, music publishing, music representatives, music producers and those performing or writing music, with the latter contributing the most significantly (£1.74 billion in 2013).

The industry also contributes to UK employment with approximately 111,000 employed in the industry overall in 2013, 67,900 of whom worked in performing or music writing134.

And this contribution is growing. Between 2012 and 2013, overall GVA of the industry rose by 9% 135.

The BBC both directly and indirectly plays a role in helping to generate these economic contributions.

In this section, we examine the scale and scope of the BBC’s music related activity and, using the economic framework set out in Section 3, focus our analysis on: the economic impacts arising from the increased exposure it provides to music artists more generally, and specific case studies relating to its support for music artists; and the economic impacts relating to its live music events.

Given the scope of this study and due to timeframes and data readily available, we do not seek to capture the full extent of the BBC’s potential contributions or to quantify the economic impacts relating to the BBC music activity in all cases. We adopt a largely qualitative approach, highlighting the economic framework and theory that underpins how the BBC’s music related activity generates economic impacts and providing descriptive statistics, where possible, to demonstrate the scale and scope of the BBC’s activity to provide an indication of the potential order of magnitude of the impacts.

134 UK Music, Measuring Music, 2014
135 Ibid
6.2 The scope of BBC support for the music industry

The BBC has a wide range of activity relating to music, with activity via each of its broadcasting channels – radio, television and online – as well through its broader activities e.g. live music events, music talent initiatives and awards, and production of its own music outputs (such as playlists).

An overview of the scope of the BBC’s music activity is provided in the figure below, with supporting statistics demonstrating the scale of activity and reach of its offering.

Through this wide-ranging activity, the BBC supports a broad range of music artists, music genres, and companies and individuals in the wider industry, such as producers, technicians, event organisers and agents.

136 This includes music related activity of both the commercial and non-commercial arms of the BBC.
And the scale of BBC activity suggests that the impacts could be significant. Data for 2014\textsuperscript{137} shows, for example, that:

- BBC music television programmes reached around 7 million viewers, on average, each week;
- BBC coverage of music events were also watched by large audiences – the TV average audience for the BBC Music Awards was 4.17 million and for Last Night of the Proms (including Proms in the Park) was 9 million; and
- there is wide reach of the BBC’s radio stations that predominantly play music. For example, in Q2 2015, the average weekly reach of BBC Radio 1 was 10.4 million, for Radio 1Xtra was almost 1 million, for Radio 2 was 15.1 million, and for 6Music was 2.1 million\textsuperscript{138}.

There is GVA and employment generated in the UK economy, both directly and indirectly, through all of this activity.

For example, in producing and broadcasting a music dedicated TV programme such as ‘Later… with Jools Holland’, the BBC engages a range of suppliers. Through payments to these suppliers, GVA is generated in the economy. And employment linked to the show arises directly at the BBC, as well as indirectly through the supply chain.

There is also evidence to suggest that there will also be wider positive economic impacts e.g. arising as a result of the BBC helping to increase music artists’ exposure.

6.3 The impact of the BBC’s role in increasing artists’ exposure

An important way in which the BBC supports the music industry is through the exposure it gives to music artists. This is through, for example, radio play, TV appearances, dedicated music shows and coverage, live event performances and award programmes which bring focus to select artists.

The increased exposure this generates for artists creates additional revenues for them and their producers, record labels, songwriters etc. In doing so, it directly generates GVA for the UK economy (where the revenues are generated and retained in the UK). There are also indirect positive economic impacts through the supply chain, linked for example, to the physical production of records, merchandise, event supplies etc.

To understand the potential economic impact the BBC has on the music industry through the exposure it gives to artists, we first consider the economic literature around the effect of music broadcasting on sales revenues. While the literature available primarily relates to radio play, we consider that, in principle, the same relationship should apply to other forms of music broadcasting, such as online and live appearances.

We then go on to examine data around the BBC’s broadcasting of music, particularly via the radio, to assess how this may impact on artists’ exposure.

6.3.1 Economic literature on the relationship between music broadcasting and record sales

A range of empirical studies have been undertaken to attempt to understand the relationship between music broadcasting – primarily radio play – and music record sales.

\textsuperscript{137} Data provided by the BBC based on the BARB genre of music programmes only
\textsuperscript{138} BBC, All Radio Report, Q2 2015
In general, there is consensus that an interdependency exists between radio broadcasters and the music industry. Radio plays increase record sales and playing records attracts listeners to radio stations.

This was recognised by Edward Fritts\textsuperscript{139}, the president and CEO of the National Association of Broadcasters in the US who said that: “… the record industry reaps huge benefits from the public performance of their recordings by radio stations.”

Airplay may be perceived as a form of advertising of the musician and the repeated playing of an album may also positively impact the public’s perception of what type of music is enjoyable\textsuperscript{140}. This ‘learning’ element associated with broadcast music may encourage the future purchase of music. However, it may also be the case that listening to music on the radio or through other free mediums acts as a substitute for the purchase of music (be that albums, singles or attendance at live performances). The balance between these two factors to a large extent determines the impact of the BBC’s music broadcasting on the wider music industry.

In general, recent empirical studies have concluded that the relationship between radio plays and record sales is a significant, positive one.

A study by Dertouzos\textsuperscript{141} looks at the relationship between radio airplay of music and sales of albums and digital tracks from 2004 to 2006 in 99 designated market areas. Five econometric models are tested which control for a variety of market factors such as audience demographics and economic characteristics. Each of these models indicate that radio plays have a significant and positive impact on record sales\textsuperscript{142}. The results of this study suggest that radio plays account for between 14\% and 23\% of sales of albums and digital tracks. Consumer surveys referred to within the study also highlight the importance of radio plays with approximately half of respondents indicating that they were influenced by the radio in their music purchase choices.

As part of the study, Dertouzos also conducted a number of simulations to estimate the effect of one standard deviation increases (equivalent to around ten additional tracks per day) in exposure, where exposure is measured by the number of listeners multiplied by the plays of a track. Overall, album sales were found to increase by 2\% and digital tracks by 2.4\%. However, there were some notable differences in the impacts across music genres\textsuperscript{143}.

This paper stressed that these results “… were especially noteworthy because of their magnitude, their high statistical significance and because they are remarkably insensitive to a variety of econometric methods, assumptions and measurement techniques.”

It was concluded that radio plays a significant role in music industry sales and radio plays complemented, rather than substituted, album sales.

Consistent with the findings of Dertouzos, a 2013 study by Nielsen\textsuperscript{144} investigating how music exposure relates to music consumption found a significant relationship between radio airplay and digital song sales.

\textsuperscript{140} A. Montgomery, a. and Moe, M., Should Music Labels Pay for Radio Airplay? Investigating the Relationship Between Album Sales and Radio Airplay, 2002
\textsuperscript{141} Dertouzos, J., Radio Airplay and the Record Industry: An Economic Analysis, 2008
\textsuperscript{142} The coefficient estimates across all categories are significant at the 99 percent level
\textsuperscript{143} Country music appeared to be the most responsive with an estimated increase of 3.4\% while R&B and rap showed minimal increases around only 1\%
\textsuperscript{144} Nielsen, Study: Radio airplay and music sales, 2013
Results of the study suggested that radio airplay drives both music sales and on-demand streaming, with the effects spanning across the first week of a song’s consistent radio airplay continuing through the peak sales week.

The results of the Nielsen Music 360 Consumer Survey\textsuperscript{145} also suggest that broadcast radio is the predominant source of music discovery (61\% of respondents reported this)\textsuperscript{146}.

A further study, by Montgomery and Roe, 2002\textsuperscript{21}, also finds a general positive relationship between radio airplay and album sales in the US. Their analysis is based on weekly US sales data collected across 14,000 record stores and weekly radio airplay data for 13 different albums released by Capital Records between 1993 and 1995\textsuperscript{147}. While the study finds that there is generally a positive relationship between airplay and sales, this varies depending on the exact album. For all but two airplay had a significant effect on subsequent sales.

The consensus from the literature we have surveyed is that increased media exposure of music, for example through radio play, is linked to increased sales in the music industry.

There are studies that suggest the converse relationship, such as the 2004 paper by Liebowitz\textsuperscript{148}, but the reference period for this study is the 1920s and 1930s. We are inclined to place higher weight on the findings of the more contemporaneous analyses.

6.3.2 The BBC’s impact on artists’ exposure through radio broadcasting

As set out in Section 6.2 above, the scope and scale of the BBC’s activity in relation to the music industry is wide.

And as the economic literature suggests, there is a positive relationship between increased artists’ exposure via broadcasting and record sales which indicates that the economic impact of the BBC on the wider music industry may be large.

As the UK’s largest radio provider, with 31.9 million listeners per week\textsuperscript{149}, the evidence would suggest that the BBC is likely to play a significant role in supporting artists’ sales. Through Service Licence commitments, the BBC’s music radio stations also ensure that they support both new and UK music. For example, Radio 1’s commitment is for 40\% of music played during the daytime to be from the UK, and 45\% of music to be new\textsuperscript{150}.

To examine this further, we analysed BBC data relating to four BBC radio stations for a month in 2015 (March) in order to quantify the scale of BBC music coverage on the radio and reach it provides to artists\textsuperscript{151}. We understand from the BBC that while there may be fluctuations in the coverage of certain music and artists at certain times of year – for example around Christmas or in the summer when the majority of music festivals are held – the data for March should provide a generally representative picture.

\textsuperscript{145} Results referred to in Nielsen, Study: Radio airplay and music sales, 2013
\textsuperscript{146} We note that this survey relates to the US but we consider it reasonable to assume that this finding may also apply to the UK
\textsuperscript{147} We note that a limitation to the study is that while the sales data accounts for approximately 85\% of all over the counter album sales in the United States, small stores are underrepresented which may have an impact on the results of the analysis
\textsuperscript{149} https://media.info/radio/data/the-most-popular-radio-stations-in-the-uk
\textsuperscript{151} Further details of the analysis and the cleaning of the BBC dataset are set out in the Technical Appendix to this report
We focused on four of the BBC’s key music playing stations: BBC Radio 1; Radio 1Xtra; Radio 2 and BBC Radio 6Music and found that through these stations the BBC provides exposure for a high number of artists and individual songs.

The total number of hours of music played on average per day for the month were:

- 19.8 hours for Radio 1;
- 16.1 hours for Radio 2;
- 21.4 hours for Radio 1Xtra; and
- 18.1 hours for 6Music.

Importantly, however, the BBC also supported a high number of individual artists and songs each day and week, as shown in the Tables below.

**Table 3: BBC radio average daily unique artist and track plays, March 2015**

<table>
<thead>
<tr>
<th></th>
<th>Radio 1</th>
<th>Radio 2</th>
<th>Radio 1Xtra</th>
<th>6Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average unique artists per day</td>
<td>293</td>
<td>272</td>
<td>334</td>
<td>278</td>
</tr>
<tr>
<td>Average unique tracks per day</td>
<td>325</td>
<td>310</td>
<td>374</td>
<td>330</td>
</tr>
<tr>
<td>Average unique track hours per day</td>
<td>14.5</td>
<td>14.4</td>
<td>15.7</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Source: KPMG analysis of BBC radio play data

**Table 4: BBC radio average weekly unique artist and track plays, March 2015**

<table>
<thead>
<tr>
<th></th>
<th>Radio 1</th>
<th>Radio 2</th>
<th>Radio 1Xtra</th>
<th>6Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average unique artists per week</td>
<td>1236</td>
<td>1234</td>
<td>1476</td>
<td>1240</td>
</tr>
<tr>
<td>Average unique tracks per week</td>
<td>1533</td>
<td>1701</td>
<td>1823</td>
<td>1808</td>
</tr>
<tr>
<td>Average unique track hours per week</td>
<td>69.4</td>
<td>84.7</td>
<td>77.3</td>
<td>96.6</td>
</tr>
</tbody>
</table>

Source: KPMG analysis of BBC radio play data

Furthermore, given that each of the BBC radio stations caters for a range of different audiences and tend to focus on different genres of music, there was limited overlap in the number of unique artists and tracks played across the four stations.

Our analysis of the data suggests that for the month, across the four stations combined, there were over:

- 9,500 unique artists played;
- 16,500 unique tracks played; and
- 800 hours of unique tracks played.

Through supporting a wide range of artists by providing radio airtime to them, this helps to promote their music to UK consumers.

And although the study is somewhat dated, evidence from the PRS based on 2010 data suggests that the BBC consistently plays more tracks per station than other commercial radio stations. For
example, 6Music played over 3,000 unique songs between mid-April and mid-May 2010 compared to just over 2,000 on NME Radio and around 750 on XFM\textsuperscript{152}.

More recent BBC analysis also suggests that this is the case. BBC analysis\textsuperscript{153} suggests that in 2013-14, Radio 1 played a wide range of music, including new\textsuperscript{154} and UK music. It played almost twice as many different new tracks than any of the five other commercial stations monitored\textsuperscript{155}. Not only that, the BBC found that of the new tracks played during the daytime on Radio 1, a third were not played by any of the commercial stations monitored, demonstrating a limited overlap between music played on BBC Radio 1 and commercial stations.

The evidence, therefore, suggests that not only does the BBC provide exposure to a wide range of artists through its radio broadcasting alone, this may be greater than that provided by other radio broadcasters. This is likely to be particularly the case for certain genres of music which tend to be underrepresented on the larger commercial radio stations but are picked up across the BBC stations.

In the next section of the report, we provide particular examples of the BBC's support for a select number of individual music artists, and examine how the BBC contributed toward their careers, and hence contributed to their success and the economic returns they now deliver for the UK economy.

6.3.3 BBC support for music talent: music artist case studies

In order to continue to generate positive contributions to the UK economy from the music industry, it is important that both existing and new UK artists become and remain well known, and that there is a continually growing pool of music talent.

The core music industry is formed of:

- musicians and singers, composers, songwriters and lyricists;
- music publishers;
- music representatives; and
- music producers, recording studios and staff.

Together, they generate both recorded and live music.

It is key that there is an environment that gives song writers, producers and artists a ‘shop window’ – without that exposure, it is hard for them to become known and to monetise their product. Without this the economic contributions would be constrained.

As noted by UK Music\textsuperscript{156}, the music industry is an ecosystem with success in one area propelling success in others. This is both in terms of the key players in the market as well as the commercial assets produced; musical composition can turn in to a recording, and lead to live performances, and these activities can evolve in to the artist developing a brand that is capable of generating value in its own right.

\begin{itemize}
\item Page, W., A Songwriter’s perspective on 6 Music, Economic Insight, Issue 18, 20th May 2010
\item BBC Trust, Service Review: Radio 1, 1Xtra, Radio 2, Radio 3, 6 Music and Asian Network, March 2015
\item New Music is defined as either unreleased music or music released less than a month ago (physical release, not download release)
\item The BBC report does not include a full list of the commercial radio stations monitored. However, XFM and Absolute are named within the report
\item UK Music, Measuring Music, September 2014
\end{itemize}
The first important step in generating economic impacts from this cycle is activity to raise the profile of the artists’ music to support their breakthrough into the industry.

The BBC supports this in a number of ways through a range of specific initiatives as well as its broadcasting activities.

The most obvious way the BBC offers support for new (and existing) talent is through exposure via airplay on its radio stations and appearances on a range of BBC shows such as Chris Evans on Radio 2, appearances and performances on television programs such as ‘Later…with Jools Holland’ and performances at live events such as Radio 1’s Big Weekend.

Special awards such as ‘BBC Music Sound of…’, which Sam Smith won in 2014 also recognise new artists and generate media attention\(^\text{157}\) as well as acting as a signalling tool for both the general population and to the music industry about up and coming artists.

Other BBC awards and talent schemes – of which there are currently 17 schemes including BBC Young Musician of the year and Radio 3 New Generation Artists – help in the discovery, as well as support, of new musical talent.

Through BBC Introducing, BBC Music also supports unsigned artists in the UK by providing a platform for promoting undiscovered musicians\(^\text{158}\). Artists are able to upload their own music to the BBC and the vast majority of these are then listened to by BBC producers at BBC Local Radio in order to identify talent and select artists to feature on the website, perform on the BBC Introducing stage at festivals and play on BBC Introducing slots on BBC Local Radio and on national BBC radio, for example on the BBC Introducing slot on the Radio 1 playlist.

BBC data suggests that:

- BBC Introducing has discovered 27 artists that have subsequently signed to major or significant independent record labels in the past 12 months;
- on average around 1,500 - 3,000 tracks are uploaded each month, of which over 80% are listened to by BBC producers; and
- over 130,000 artists are included within the BBC Introducing database, with around 500,000 tracks.

There is a range of highly successful artists, generating significant revenues, GVA and exports for the UK economy, that have been discovered through BBC Introducing. They include Florence and the Machine, George Ezra, Catfish and the Bottlemen and Jake Bugg.

Although it is not possible to fully estimate the economic impact the BBC has on the music industry through its support for music artists, it is possible to analyse to a certain extent their effect on specific individuals or songs.

To do so, we look at a number of case studies for select well-known and upcoming artists who have benefitted from BBC support in their careers. These artists were selected by the BBC as good examples of where they had supported artists and been influential in their careers.

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\(^{158}\) [http://www.bbc.co.uk/programmes/articles/4wS2bmPnVYMkpHqPmkCj/frequently-asked-questions](http://www.bbc.co.uk/programmes/articles/4wS2bmPnVYMkpHqPmkCj/frequently-asked-questions)
Based on information provided by the BBC and by the artists’ record labels and promoters, we examine the role of the BBC in their careers and look at the gross GVA generated by the artists, where possible, linked to their UK record sales (which we recognise only reflect a very limited part of the revenues generated by artists and the music industry). Although sales figures and GVA contribution from record sales cannot be attributed to the BBC specifically, and there will have been a number of other important drivers of the artists’ record sales and success (including support from other broadcasters), these case studies consider how the BBC has helped artists realise success based on the views of their record labels.

**London Grammar**

London Grammar are a British trio who were signed by the Ministry of Sound record label in 2012.

The BBC provided early support for the group through specialist evening shows broadcast on Radio 1, Radio 2 and The BBC’s In New Music We Trust (INMWT)\(^{159}\).

Their record label have told us that BBC radio was the first to provide airtime for the majority of London Grammar’s tracks:

- out of 17 songs which have received airplay time in the UK, 15 were played first on the BBC; and
- the song ‘Hey Now’ was added to the BBC INMWT playlist on Radio 1 in March 2013, which the label saw as a ‘stamp of endorsement’.

A timeline of London Grammar’s career to date, which includes key events associated with the BBC is shown below.

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159 Information provided by London Grammar’s record label to KPMG.
As shown in the timeline, the BBC has featured the band over recent years. Using sales data for London Grammar’s debut album, ‘If You Wait’ (released in September 2013), this figure shows a positive correlation between album sales and appearances/performances on BBC shows.
Weekly album sales increased after each of the BBC appearances. We cannot, with these data alone, establish a causal link between the two. In a number of cases, sales were on a steady upward trajectory prior to the band’s BBC appearance. And there were some upward spikes in sales that did not coincide with a London Grammar BBC television appearance. Nevertheless, it is notable from the chart that every time the band appeared on BBC TV, there was an uptick in its album sales. This is consistent with the wider empirical evidence outlined in Section 6.3.1 that increased artist media exposure tends to be positively related to record sales.

Further evidence from London Grammar chart positions and single sales\(^\text{160}\), generally also supports this:

- after London Grammar appeared on the Graham Norton Show on 7 February 2014, the album re-entered the Official Charts Company (OCC) Top 5 (at number 4), the iTunes Album Chart Top 5 and was the number 1 Amazon best seller;
- following this appearance, sales of singles from the album rose. Download sales of ‘Wasting my Young Years’ rose by approximately 30% the week after the show was broadcast and there was a 60% rise in sales for the single ‘Strong’. The uplift in sales continued in to the week following the appearance, with physical sales up by 10% and overall sales up 40% week on week;
- in the hour following the BBC Breakfast interview in May 2014, the album rose from number 33 on iTunes to number 6; week on week sales were up 190%; and physical retail stock requests rose by 1,186% following this and the band’s Ivor Novello Award win; and
- after the Later with Jools Holland appearance, the album climbed 2 places to number 7 in the OCC Album Chart. Sales also rose 20% on the previous week.

While record sales account for only a limited proportion of the overall revenues generated by artists (there are also revenue streams associated with royalties, performances, merchandising etc.), it is

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\(^{160}\) KPMG analysis of sales and chart position data and wider information provided by London Grammar’s record label to KPMG
possible to estimate the GVA associated with London Grammar album and singles sales based on the data provided to us as part of this study. We estimate\(^{161}\) that:

- the approximate GVA contribution to the UK economy from UK sales of London Grammar’s album ‘If You Wait’ up to 6 October 2014 was £4.3 million;
- additional GVA generated by sales of singles up to mid-October 2014 was approximately £0.5 million; and
- further benefits will have accrued to the UK as a result of international sales of London Grammar’s album and singles, although data on these sales was not available to us to include in the analysis.

While this GVA cannot be attributed directly to the BBC, it is likely to have played a role in this given the support the BBC has provided to raise the profile of the band and its music, both in the early stages of their career by providing a platform and recognition, and on an ongoing basis through, for example, radio play and TV appearances. We recognise, however, that there will also be a correlation between non-BBC events and the success of London Grammar, including their own tours and live performances at commercial festivals and events and commercial TV appearances.

**Sam Smith**

Sam Smith is currently one of the UK’s most successful artists.

He had the 2\(^{nd}\) highest album sales in 2014, the 8\(^{th}\) highest selling single, and was the 3\(^{rd}\) most streamed artist in the UK (with 16 tracks streamed a total of 105.4 million times).

He has also had considerable international success with the top selling album by a British artist in both the USA and Canada in 2014. \(^{162}\)

A timeline of Sam Smith’s career to date, which includes key events associated with the BBC, is shown below.

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\(^{161}\) KPMG analysis based on estimated revenues for record sales and the GVA to revenue ratios for the ‘sound recording and music publishing’ sector, sourced from the Annual Business Survey, June 2015

\(^{162}\) BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis, 2015
Figure 19: Sam Smith timeline

- **October 2012**: Featured in Disclosure’s breakthrough single ‘Latch’ which reached number 11 in the UK charts.
- **April 2013**: BBC first listed ‘La La Life’, Sam Smith’s track with Naughty Boy. It sold 4 million copies internationally.
- **July 2013**: First song on 6th June ‘Safe With Me’ premiered on BBC Radio 1.
- **October 2013**: BBC played ‘Money On My Mind’ before it was released.
- **November 2013**: Released the track ‘Together’ with Nile Rodgers, Disclosure and Jimmy Napes.
- **January 2014**: ‘La La Life’ reached number 1 in the UK charts.
- **February 2014**: Won BBC Sound of 2014.
- **February 2014**: ‘Money On My Mind’ is a single from this album becomes his second Number 1 single.
- **May 2014**: Released debut studio album ‘In The Lonely Hour’.
- **February 2015**: Won BHT Awards for Best British Breakthrough Act and Global Success.
- **February 2015**: ‘Wilds Of The Wolf’ released on the 24th James Bond film ‘Spectre’.
- **September 2015**: Performed live at ‘Radio 2 in Concert’.
- **March 2015**: Released new version of ‘Stay With Me’ featuring John Lennon for Comic Relief which reached Number 1 in the UK.
- **November 2014**: Performed at the BBC Future Festival in Macca Vale.
- **February 2015**: Grammy Awards.
- **March 2015**: Performed Stay With Me on ‘Later... with Jools Holland’.
- **October 2014**: Won Q Award for Best Artist.
- **June 2014**: Appeared on the cover of Face in its 92nd issue.
- **August 2014**: Stay With Me named Verity Magoon’s song of the summer.
- **January 2015**: In The Lonely Hour’ ranked as second bestselling album of 2014 in the UK.
- **October 2014**: Won Q Award for Best Artist.
- **January 2014**: ‘Money On My Mind’ hit number 1 in the UK.
- **February 2014**: Won Brit Awards choice award.
- **March 2015**: Released single ‘Stay With Me’.
- **February 2014**: Performed at the 2014 TV Music Video Awards.
- **August 2014**: Performed Stay With Me live at the 2014 TV Music Video Awards.
- **September 2015**: ‘Wilds Of The Wolf’ received and will be the theme tune for the 24th James Bond film ‘Spectre’.
- **May 2015**: Received 3 Billboard Awards: Top Male Artist, Top New Artist and Top Radio Songs Artist.
- **March 2015**: Released single ‘Stay With Me’.
- **February 2014**: Won Brit Awards choice award.
- **August 2014**: Stay With Me named Verity Magoon’s song of the summer.
- **January 2015**: In The Lonely Hour’ ranked as second bestselling album of 2014 in the UK.
- **October 2014**: Won Q Award for Best Artist.
- **February 2015**: Grammy Awards.
- **March 2015**: Released new version of ‘Stay With Me’ featuring John Lennon for Comic Relief which reached Number 1 in the UK.
- **September 2015**: ‘Wilds Of The Wolf’ released on the 24th James Bond film ‘Spectre’.
- **May 2015**: Received 3 Billboard Awards: Top Male Artist, Top New Artist and Top Radio Songs Artist.
Sam Smith’s record label explained to KPMG the importance of the BBC in his career, including for example:

- In October 2012 Annie Mac was the first to play and support his single ‘Latch’ (a collaboration with Disclosure). Sam Smith’s record label told us that this provided the artist with: “…the platform and exposure to build on and the BBC was unbelievably important for this”.
- We were told that Sam Smith’s first plays were always with Radio 1. For example, in January 2013, Sam Smith’s single ‘Lay Me Down’ was first played by Annie Mac and Zane Lowe at the BBC on Radio 1. Radio 1 was also the first station to play the single ‘La La La’ in April 2013.
- Sam Smith being named as BBC Music Sound of 2014 was: “…very significant in his career, propelling him to UK and international success…” according to his record label. In the 24 hours following the award, the artist’s sales increased from 1,000th on the Amazon album chart to 6th.
- ‘I’m Not The Only One’ being named as Track of the Day on Radio 1 also represented significant support provided by the BBC to the artist, according to his record label.

Sam Smith’s record label told KPMG that they: “…can’t advocate the BBC enough” regarding the importance of the support they have given the artist and the importance of that support to his emerging career.

Given Sam Smith’s UK and international success, his contribution to the revenues of the UK music industry is substantial:

- in 2014, Sam Smith sold 1,247,703 albums in the UK (with an estimated GVA of approximately £10.2 million); and
- in 2014, his UK single sales and streams were 2,935,108 (with an estimated GVA of approximately £2.9 million being generated as a result).

As well as the revenues associated with record sales, Sam Smith contributes additional revenues and GVA to the UK economy through live performances, global royalties and merchandising. Given the data available for our study, information on these revenue and GVA streams have not been available to us.

However, a 2013 study found that only 12% of the average musician’s income was from song writing and sound recordings. A larger proportion of top artists’ income was from song writing and sound recordings, but even this reached only around a third of the artist’s total income. For rock and pop artists, the study found revenues from song writing and sound recordings represented less than 20% of the artist’s total income, with live performances accounting for a larger share of income (other important categories being session work, merchandise and salary).

Insofar as Sam Smith, as one of the world’s biggest pop stars in 2015, has a similar income profile, it seems likely that the revenues and GVA coming into the UK from his live performances and merchandising are likely to be substantial in addition to the record sales described above.

163 KPMG analysis based on estimated revenues for record sales and the GVA to revenue ratios for the ‘sound recording and music publishing’ sector, sourced from the Annual Business Survey, June 2015. Sales figures sourced from BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis.
164 DiCola, P.C., Money from Music: Survey Evidence on Musicians’ Revenue and Lessons About Copyright Incentives, Northwestern University School of Law, January 2013
Ed Sheeran

Ed Sheeran moved to London in 2008 to pursue his career in the music industry.

By 2014, he had become the biggest selling artist in both the UK albums and singles markets. He also had the top selling album by a UK artist worldwide in 2014.\textsuperscript{165}

A timeline of Ed Sheeran’s career to date, which includes key events associated with the BBC, is shown below.

\textsuperscript{165} BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis, 2015
Figure 20 Ed Sheeran timeline

- **2005**: Released first independent EP, "The Change Room"
- **2008**: Moved to London to pursue a career in the music industry at Access to Music
- **2009**: Released EP, "Love Songs I Wrote With Amy" featuring later debut single "The A Team"
- **2010**: Signed to Asylum/Native Records
- **2010**: Released EP, "Live at the Bedford"
- **2011**: Released debut album "+" which peaked at Number 1 in the UK album charts
- **2011**: Performed "Drunk in the BBC Live Lounge"
- **2011**: Released "I See Fire" which features in the end credits of "The Hobbit"
- **2013**: Played at Grammys Awards with Elton John
- **2014**: Played as opening act for The Rolling Stones
- **2014**: Won Best Male Video for "Sing" at MTV Music Awards
- **2015**: Played at BBC Radio 2 in Concert performing several songs including "Lego House", "The A Team" and "Sing"
- **2015**: Won 3 awards at the Teen Choice Awards in Los Angeles
Ed Sheeran’s record label told KPMG about the importance of the BBC from the start of his career:

- Ed Sheeran had his first ever play on Radio 1Xtra. KPMG was told by his record label that: “...without the right airplay and exposure, his success story would not have been possible”.
- His record label told us that Ed himself had said that: “...airplay is everything”.
- In April 2011, Zane Lowe made Ed Sheeran’s record ‘The A team’ the ‘Hottest Record’. His label said that: “… one of the turning points was when Zane Lowe... embraced Ed which helped his already growing credibility”.
- Throughout his career, Ed Sheeran has been involved with a wide range of BBC music shows and events, including almost every show on Radio 1 (such as Zane Lowe, the Breakfast Show, Live Lounges, and Radio 1 Big Weekends).

Ed Sheeran’s UK and international success generates significant contributions to the UK.

Based on his total UK singles and album sales, we estimate that this has generated GVA in the UK economy of approximately £43million to date.

As noted in the case studies for other music artists, this only presents a very partial picture of his contribution to the UK economy. There will also be UK revenues, exports and employment generated, for example, through live performances, royalties, merchandising and linked to his brand. These are likely to be significant given that Ed Sheeran was ranked 3rd in the IFPI’s list of top global recording artists in 2014, selling approximately 4.4 million albums worldwide in 2014 and as he has undertaken two world tours in support of his second album ‘x’.

Ed Sheeran’s record label told KPMG that: “Radio 1Xtra and Radio 1 have been an enormous part of the Ed Sheeran phenomenon, it’s hard to put it into words but seeing him go from playing a gig at the Barfly to 3 Wembley stadiums in 3 years is as good as it gets and this could not have been done without the support of the BBC.”

Clean Bandit

According to their record label: “… Clean Bandit are a prime example why Radio 1 are so important in helping break new artists”.

Their single ‘Rather Be’, featuring Jess Glynne, was the most streamed track and the second highest selling single in the UK in 2014. They were also one of the UK’s breakthrough artists of 2014.

A timeline of their career to date, which includes key events associated with the BBC, is shown below.

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166 http://www.bbc.co.uk/blogs/zanelowe/2011/04/hottest_record_-ed_sheeran-.html
167 KPMG analysis based on estimated revenues for record sales and the GVA to revenue ratios for the ‘sound recording and music publishing’ sector, sourced from the Annual Business Survey, June 2015. Record sales data provided by the record label and average prices sourced from BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis.
168 BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis, 2015
Clean Bandit’s record label highlighted to KPMG the importance of the BBC to the band’s career:

- Radio 1 play-listed two singles and supported three before any other commercial radio station had played any of Clean Bandit’s music. The band’s record label told KPMG that before the release of the single ‘Rather Be’, “…[the] foundations that Radio 1 helped [Clean Bandit] secure were so important…”
- Their first ever radio interview was with Huw Stephens and they have performed on a number of Live Lounges, at two Radio 1 Big Weekends, on ‘An evening with Zane Lowe’ and with the BBC Philharmonic Orchestra live from Manchester.
- Clean Bandit made their debut television appearance on ‘Later… with Jools Holland’.
- Annie Mac played a Radio 1 exclusive of their ‘Real Love’ release with Jess Glynne.
- Radio 1’s support of Clean Bandit also helped the record label to introduce Jess Glynne who has gone from being a featured artist into the biggest selling new female of 2015.

Despite only breaking through in 2014, Clean Bandit’s significant single and album sales mean they have made important contributions to the UK music industry and wider economy. Based on sales
data provided by their record label we estimate that their record sales alone generated GVA of approximately £3.8 million\textsuperscript{169} to date.

**Andreya Triana**

Andreya Triana released her first album in 2010\textsuperscript{170}.

Further details of her career to date are outlined in the timeline below.

**Figure 22: Andreya Triana timeline**

\textsuperscript{169} KPMG analysis based on estimated revenues for record sales and the GVA to revenue ratios for the ‘sound recording and music publishing’ sector, sourced from the Annual Business Survey, June 2015. Record sales data provided by the record label and average prices sourced from BPI, Music Market 2015: Recorded music in the UK: facts, figures and analysis

\textsuperscript{170} https://en.wikipedia.org/wiki/Andreya_Triana
As part of this study, KPMG spoke to both Andrey Triana’s record label and manager to understand the timing and nature of support she has received from the BBC and how, if at all, this has impacted on her career.

We were told by her manager that Andrey Triana has received “…incredible support from the BBC especially from Chris Evans at BBC Radio 2”. After appearing on BBC Radio 2, her album moved into the top 10. He also stressed to us the importance of the BBC as an early adopter of her music.

After releasing her second album ‘Giants’ on a small independent label, her manager told us that the BBC helped propel her from a well-respected artist in a niche area into the main stream.

He also told us that Andrey Triana’s regular appearances on the radio, including interviews with Jo Whiley, Dermot O’Leary and Terry Wogan have raised her profile and given her important exposure.

And, although her career is still building and developing, her manager told us that the BBC has opened up a wide number of opportunities to her which: “…would not have been available without the BBC’s initial support”. This has included performing with Take That at the O2 for the Rugby World Cup send off for the England Rugby team.

Given the early stages of her career Andrey Triana’s UK sales to date for her album ‘Giants’ are approximately 11,000 and for her single ‘Gold’ are around 13,000. The estimated revenues associated with these sales equates to a GVA of around £102,000. Again, this is only a partial picture of the artist’s total economic contribution which also includes any royalties and GVA associated with live performances or appearances.

Shaun Escoffery

Shaun Escoffery is a British soul artist whose first major release was the single ‘Space Rider’, released in March 2001. It was played regularly by the BBC Radio 1 DJ Trevor Nelson and The Dreem Teem and peaked at number 52 in the UK Singles Chart, followed by the UK number 53 hit ‘Days Like This’ in 2002.

Following a career in musicals, Shaun Escoffery has recently begun to release music again and his record label highlighted to us the importance of the support he has received from the BBC in raising his profile and giving him more mainstream exposure.

Further details of his career to date are outlined in the timeline below.
His record label told KPMG that BBC Radio 2 provided substantial support for his new singles and his album, for example:

- His single ‘Natures Call’ was ‘A Listed’ in July/August 2014, which led to more than 40 local radio stations and a large number of regional commercial stations adding the single to their playlists. Following this the album also entered the Top 20 Independent Albums chart in the first week of release;
• His single ‘People’ was ‘A Listed’ in October/November 2014;
• His single ‘Nobody Knows’ was ‘A Listed’ in February 2015. In the 2 weeks following the
playlisting of this single sales increased by 166%;
• His single ‘Perfect Love Affair’ was ‘A Listed’ in June/July 2015; and
• His album ‘In the Red Room’ was made Album of the Week in January 2015. In this week sales
of album increased by 101%.

The BBC has also provided the platform for live performances across the network which have had
a positive impact on Shaun Escoffery’s music sales.

For example, in November 2014 he performed live on Chris Evans’ show on Radio 2 and in the
following 24 hours Shaun rose to Number 1 in Amazon’s Movers and Shakers Chart, with a sales
increase of 913%. During the week the album’s overall sales through Amazon, HMV and digital
stores increased by 342%.

Shaun Escoffery has also taken part in other events and shows across the BBC network.

In May 2015, he performed on Jools Holland’s show, and has also performed on many of the main
shows on BBC Radio 2 e.g. on the BBC Breakfast show, Ken Bruce, Drivetime and Good Morning
Sunday. Additionally, he performed at Radio 2 Live in Hyde Park in September 2015. On this same
day his album sales increased by 12,890% and during the week sales increased by 722%. Also, his
album re-entered the Amazon Top 100 and the Independent Albums chart.

Since the re-launch of his musical career, Shaun Escoffery has sold nearly 12,000 physical copies of
his album and had in excess of 20,000 downloads, which we estimate equate to a GVA of
approximately £0.3 million\textsuperscript{171} since he re-launched his career in 2014.

While these figures may be relatively modest at present, Shaun Escoffery’s record label told KPMG
that these sales and contribution are: “…an 100% increase from when Radio 2 started supporting
and they were definitely the main driving force”.

The label indicated that, for an artist on an independent label and with limited investment, the sales
figures to date are good and provide a strong platform for his next album. KPMG was told that, “This
would not have been possible without the strong commitment of Radio 2 from day one of the
campaign.”

Shaun’s record label also told us that: “…[the BBC] acts as a door opener, providing a crucial
platform and exposure which will allow Shaun to move on significantly with bigger label partners and
investors. The key thing is that [Shaun’s] profile is such that he now has a platform to continue to
increase revenues at an ever increasing rate as in [the music industry] it’s all about profile.”

6.4 The impact of BBC live music events

In addition to providing radio, TV and online services, the BBC organises a wide range of different live
music events.

\textsuperscript{171} KPMG analysis based on estimated revenues for record sales and GVA to revenue ratios for the ‘sound recording and music publishing’ sector, sourced from the
Annual Business Survey, June 2015. Sales figures sourced from Nurture Music, and where a range of sales have been used, the average has been taken to
calculate the GVA
As per the economic framework outlined in Section 3, these events generate GVA contributions (directly where the BBC generates revenues from the events, and indirectly through the economic activity generated through the supply chain). There will also be employment impacts, again both directly linked to the event and indirectly, as well as a range of wider spillover effects including wider business impacts in the local area through attendance, and music industry revenues generated linked to the relationship between artist exposure (supported though the live performance at the event) and revenues.

In this section, we provide an overview of some of the BBC’s live music events to demonstrate the scale of its activity through a range of descriptive statistics. We then consider the different channels through which the BBC’s hosting of live music events contributes to the UK economy.

Although it would be possible to quantify the economic impacts of the BBC events, provided sufficient data availability, this was not within the scope of our work. Therefore, we comment on the impacts from a qualitative perspective and refer to the results of existing economic impact reports where available.

Additionally, we do not analyse the potential displacement effects arising from BBC live performances which may arise, for example, from any decreased demand for attendance at alternative commercial live music events from the public.

### 6.4.1 Overview of BBC hosting and coverage of live music events

The BBC hosts a wide range of live music events each year including BBC Proms, BBC Radio 6 Music Festival and Radio 1’s Big Weekend. These are some of the BBC’s flagship events, and are wholly owned by the BBC.

Smaller events are also run by the BBC, including, Radio 2 in Concert, Radio 1 in Ibiza and BBC Radio 6Music Live at Maida Vale.

The BBC also covers various events as a broadcast partner, including Glastonbury, T in the Park, the Reading Festival and the Leeds Festival.

In order to assess the scale of the BBC’s hosting and TV/radio coverage of live music events and the scope of potential impacts, we have produced descriptive statistics relating to a subset of all BBC live music related activity over the last year. This analysis is not exhaustive and focusses only a number of the major events. Statistics relating to attendance, TV, radio and online reach of coverage and the number of artists performing are set out in the Table below.
Table 5: Key statistics relating to a subset of BBC live music events, May 2014- February 2015

<table>
<thead>
<tr>
<th>Event</th>
<th>Number of artists performing</th>
<th>Number of attendees</th>
<th>TV Reach (TV +3mins; Red Button +1min)</th>
<th>Radio Reach</th>
<th>Online reach including iPlayer (by average number of requests)</th>
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</thead>
<tbody>
<tr>
<td>Radio 1 Big Weekend</td>
<td>55</td>
<td>50,000</td>
<td>TV average audience= 3.7 million</td>
<td>9.2 million</td>
<td>5.8 million</td>
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<tr>
<td>Glasgow</td>
<td></td>
<td></td>
<td>Red Button= 0.76 million</td>
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<td></td>
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<tr>
<td>May 2014</td>
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<tr>
<td>Last Night of the Proms (including Proms in the Park)</td>
<td>-</td>
<td>38,000</td>
<td>TV average audience= 9.0 million</td>
<td>1.8 million</td>
<td>0.2 million</td>
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<tr>
<td>September 2014</td>
<td></td>
<td></td>
<td>Red button= 0.72 million</td>
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<td></td>
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<tr>
<td>Radio 2 in Hyde Park</td>
<td>27</td>
<td>48,400</td>
<td>Red Button= 1.65 million</td>
<td>4.5 million</td>
<td>0.7 million</td>
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<td>September 2014</td>
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<td>Radio 1 Teen Awards</td>
<td>6</td>
<td>10,000</td>
<td>Red Button= 0.1 million</td>
<td>1.8 million</td>
<td>0.9 million</td>
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<tr>
<td>October 2014</td>
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<tr>
<td>Radio 1Xtra Live</td>
<td>11</td>
<td>11,000</td>
<td>Red Button= 0.12 million</td>
<td>0.13 million</td>
<td>0.5 million</td>
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<td>November 2014</td>
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<tr>
<td>BBC Music Awards</td>
<td>17172</td>
<td>15,000</td>
<td>TV average audience= 4.17 million</td>
<td>5.6 million</td>
<td>2.0 million</td>
</tr>
<tr>
<td>December 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6Music Festival</td>
<td>18</td>
<td>11,400</td>
<td>Red Button= 0.81 million</td>
<td>1.43 million</td>
<td>0.6 million</td>
</tr>
<tr>
<td>February 2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These seven events alone attracted over 180,000 attendees and achieved significantly greater reach through BBC TV, radio and online broadcasting of them.

This attendance and coverage, as well as activity directly related to the events’ hosting, generates economic impacts, including in the local area in which they are held.

### 6.4.2 Economic contributions of BBC live music events

As noted above, within the scope of this study we have not sought to quantify the economic impacts arising at the UK or local levels of BBC live music events. We also have not examined the potential displacement effects that may arise, particularly linked to a number of the events being free ticketed live music events. However, based on the economic framework developed we are able to assess the channels through which the BBC live music events impact on the UK music industry, and more widely the economy.
The first channel through which they contribute to the economy is in terms of GVA. According to a report by UK Music published in 2015, live music events generated £789 million in GVA in 2013, more than record sales, which generated £618 million.\footnote{UK Music, Measuring Music, 2014}

While a number of BBC live music events are free - BBC Radio 1’s Big Weekend is the biggest free ticketed event in Europe – and so do not focus on direct revenue generation, through the large range of suppliers to the event, indirect GVA and employment is generated.

Hosting a live music event involves the input of a host of suppliers, from stages, utilities, security, and caterers, to the artists performing, their promoters and agents and technical production companies. The revenues and GVA they generate, and employment they create, as a result of the BBC’s hosting of the event contribute indirectly to the economy.

Supplier spending for BBC Radio 1’s Big Weekend in 2014 totalled £2.1 million. This is revenue for suppliers on which GVA is generated as a result of the event both in the direct suppliers’ businesses but also through their wider supply chains.

Many of these economic impacts are localised given the BBC’s aim to use local suppliers for its live music events where possible. For example, 13 of the key suppliers to the 2015 6Music Festival held in Newcastle were based in Newcastle and the North. All of the stage crew, lighting, PA equipment and security were from local suppliers.

There are also a range of economic spillover effects associated with the BBC live events.

Through performing at the event, artists seek to increase public awareness and interest in their music in order to generate additional revenues, for example through increased record sales, ticket sales for subsequent performances and merchandise. Similar to the way in which radio play of records has a positive benefit for the music industry through the increased sale of the records, live events also act as a promotional tool for musicians and it would be expected that economic impacts arise from this through increased revenues for the artist and across the broader music industry ecosystem linked to this.

Furthermore, through attendance at the event there are wider impacts through the economy linked to spending on other activities or services related to attendance. This can include spending on hotels, transport, restaurants and in local retailers. As BBC events are hosted across the UK, these impacts will be spread across the country. While we do not have evidence of the extent of these impacts for BBC live music events, we note that a report by UK Music\footnote{UK Music, Wish you were here: Music tourism’s contribution to the UK economy, 2015} suggests that across the UK music industry 45% of live music events attendees are tourists, spending £3.1 billion every year, including direct and indirect spending.

Given the scale and scope of BBC live music events each year, and the various channels through which economic impacts related to them arise, the contributions to the economy are likely to be significant. Although we have not sought to quantify these impacts within this study we note that an existing study suggests that Radio 1’s Big Weekend in Glasgow contributed £3.7 million to local economy, with a further £10 million in press and marketing value. This is only one live event in a BBC schedule of numerous live music events each year and does not capture the extent of spillover effects, particularly relating to supporting music artists’ careers and assisting in their revenue generating potential. The overall economic impacts are likely to be substantial.
The analysis in this report draws on a range of data, information and wider evidence gathered from the BBC and external sources, including publicly available information and interviews KPMG conducted with a number of third parties.

In this appendix, we set out a more detailed description on the approach taken to the analysis included within our report. It is structured in the order in which the analysis appears in the report.

The economic impact of the BBC in the North West of England

Contributing to the UK’s GVA

In order to estimate the indirect GVA contribution associated with the BBC’s activity in the North West of England, we first estimated the GVA associated with the Tier 1 suppliers supporting the BBC’s activity in the North West. This was done using the following formula:

\[
\text{Tier 1 supplier GVA} = \text{Supplier contract value} \times \text{sector average GVA as proportion of output}
\]

In order to estimate the supplier contract value, we used an extensive supplier dataset provided by the BBC for FY2013/14 which included details of the Standard Industry Classification (SIC) code of each supplier. Using this, we identified the proportions of pan-BBC supplier spending by SIC code. These proportions are given in Table 6. As explained in the main report, based on information provided by the BBC, we considered that the pan-BBC supplier spending proportions by SIC code would serve as a reasonable proxy for the BBC’s supply spending associated with its activity in the North West for FY2014/15.

The supplier spending proportions by SIC code are included in Table 6 below.

The sector averages for GVA as a proportion of output required for our calculations are also included in Table 6 below.

We then estimated the GVA associated with the wider supply chain supporting the BBC’s activity in the North West. This was done using the following formula:

\[
\text{Wider supply chain GVA} = \text{Tier 1 supplier GVA} \times (1 - \text{sector specific Type 1 GVA multiplier})
\]

The Tier 1 supplier GVA was estimated using the approach outlined above.

The sector specific ONS Type 1 GVA multipliers for each of the SIC codes are included in Table 6.

---

175 As explained in the main report this dataset had been augmented by Frontier for an earlier study for the BBC (Frontier, The contribution of the BBC to the UK creative industries: A report prepared for the BBC, April 2015)
Table 6: Proportion of BBC supplier spending, GVA to output ratios, ONS Type I GVA multipliers and employment multipliers, by SIC code

<table>
<thead>
<tr>
<th>SIC Code</th>
<th>Industry description</th>
<th>Percentage of total BBC spend</th>
<th>GVA/Output Ratio</th>
<th>GVA Multiplier</th>
<th>Employment Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Products of agriculture, hunting and related services</td>
<td>0.02%</td>
<td>39%</td>
<td>1.883800099</td>
<td>2.758900441</td>
</tr>
<tr>
<td>2</td>
<td>Products of forestry, logging and related services</td>
<td>0.00%</td>
<td>39%</td>
<td>2.407689456</td>
<td>1.491249976</td>
</tr>
<tr>
<td>3</td>
<td>Fish and other fishing products; aquaculture products; support services to fishing</td>
<td>0.00%</td>
<td>39%</td>
<td>1.542397793</td>
<td>1.219242879</td>
</tr>
<tr>
<td>6</td>
<td>Crude petroleum and natural gas &amp; Metal ores</td>
<td>0.16%</td>
<td>33%</td>
<td>1.32031739</td>
<td>10.09037821</td>
</tr>
<tr>
<td>7</td>
<td>Crude petroleum and natural gas &amp; Metal ores</td>
<td>0.00%</td>
<td>33%</td>
<td>1.32031739</td>
<td>10.09037821</td>
</tr>
<tr>
<td>8</td>
<td>Other mining and quarrying products</td>
<td>0.00%</td>
<td>33%</td>
<td>1.468153121</td>
<td>1.866088034</td>
</tr>
<tr>
<td>9</td>
<td>Mining support services</td>
<td>0.01%</td>
<td>33%</td>
<td>1.467933201</td>
<td>1.94813437</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.1</td>
<td>Preserved meat and meat products</td>
<td>0.00%</td>
<td>33%</td>
<td>3.142932359</td>
<td>2.43581661</td>
</tr>
<tr>
<td>10.3</td>
<td>Processed and preserved fish, crustaceans, molluscs, fruit and vegetables</td>
<td>0.00%</td>
<td>33%</td>
<td>2.162741038</td>
<td>2.025783339</td>
</tr>
<tr>
<td>10.5</td>
<td>Dairy products</td>
<td>0.00%</td>
<td>33%</td>
<td>5.137068468</td>
<td>3.227109167</td>
</tr>
<tr>
<td>10.6</td>
<td>Grain mill products, starches and starch products</td>
<td>0.00%</td>
<td>33%</td>
<td>3.250931299</td>
<td>4.47169328</td>
</tr>
<tr>
<td>10.7</td>
<td>Bakery and farinaceous products</td>
<td>0.00%</td>
<td>33%</td>
<td>1.762330597</td>
<td>1.455904346</td>
</tr>
<tr>
<td>10.8</td>
<td>Other food products</td>
<td>0.00%</td>
<td>33%</td>
<td>2.093194147</td>
<td>2.094625464</td>
</tr>
<tr>
<td>10.9</td>
<td>Prepared animal feeds</td>
<td>0.00%</td>
<td>33%</td>
<td>3.361347777</td>
<td>2.94397988</td>
</tr>
<tr>
<td>11.05</td>
<td>Alcoholic beverages</td>
<td>0.00%</td>
<td>33%</td>
<td>2.13942027</td>
<td>3.246533095</td>
</tr>
<tr>
<td>11.07</td>
<td>Soft drinks</td>
<td>0.00%</td>
<td>33%</td>
<td>2.743683355</td>
<td>4.602077051</td>
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<tr>
<td>13</td>
<td>Textiles</td>
<td>0.03%</td>
<td>33%</td>
<td>1.504538543</td>
<td>1.351511561</td>
</tr>
<tr>
<td>14</td>
<td>Wearing apparel</td>
<td>0.00%</td>
<td>33%</td>
<td>1.60121317</td>
<td>1.451335897</td>
</tr>
<tr>
<td>15</td>
<td>Leather and related products</td>
<td>0.00%</td>
<td>33%</td>
<td>1.512306219</td>
<td>1.584240942</td>
</tr>
<tr>
<td>16</td>
<td>Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials</td>
<td>0.02%</td>
<td>33%</td>
<td>1.836138889</td>
<td>1.527123816</td>
</tr>
<tr>
<td>17</td>
<td>Paper and paper products</td>
<td>0.00%</td>
<td>33%</td>
<td>1.814380431</td>
<td>1.893178176</td>
</tr>
<tr>
<td>18</td>
<td>Printing and recording services</td>
<td>0.10%</td>
<td>33%</td>
<td>1.570629309</td>
<td>1.427418272</td>
</tr>
<tr>
<td>20.11</td>
<td>Industrial gases, inorganics and fertilisers (all inorganic chemicals) - 20.11/13/15</td>
<td>0.00%</td>
<td>33%</td>
<td>2.196244724</td>
<td>2.677763049</td>
</tr>
<tr>
<td>SIC Code</td>
<td>Industry description</td>
<td>Percentage of total BBC spend</td>
<td>GVA/Output Ratio</td>
<td>GVA Multiplier</td>
<td>Employment Multiplier</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>20.15</td>
<td>Industrial gases, inorganics and fertilisers (all inorganic chemicals) - 20.11/13/15</td>
<td>0.00%</td>
<td>33%</td>
<td>2.196244724</td>
<td>2.67763049</td>
</tr>
<tr>
<td>20.16</td>
<td>Petrochemicals - 20.14/16/17/60</td>
<td>0.00%</td>
<td>33%</td>
<td>2.353612036</td>
<td>3.781396713</td>
</tr>
<tr>
<td>20.17</td>
<td>Petrochemicals - 20.14/16/17/60</td>
<td>0.00%</td>
<td>33%</td>
<td>2.353612036</td>
<td>3.781396713</td>
</tr>
<tr>
<td>20.3</td>
<td>Paints, varnishes and similar coatings, printing ink and mastics</td>
<td>0.00%</td>
<td>33%</td>
<td>1.7204595</td>
<td>1.912802122</td>
</tr>
<tr>
<td>20.4</td>
<td>Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations</td>
<td>0.00%</td>
<td>33%</td>
<td>2.076314956</td>
<td>2.511093712</td>
</tr>
<tr>
<td>20.5</td>
<td>Other chemical products</td>
<td>0.00%</td>
<td>33%</td>
<td>2.236314748</td>
<td>2.297929705</td>
</tr>
<tr>
<td>21</td>
<td>Basic pharmaceutical products and pharmaceutical preparations</td>
<td>0.00%</td>
<td>33%</td>
<td>1.39167997</td>
<td>3.095401503</td>
</tr>
<tr>
<td>22</td>
<td>Rubber and plastic products</td>
<td>0.00%</td>
<td>33%</td>
<td>1.558866437</td>
<td>1.437734572</td>
</tr>
<tr>
<td>23.1</td>
<td>Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.832058395</td>
<td>1.493891444</td>
</tr>
<tr>
<td>23.4</td>
<td>Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.832058395</td>
<td>1.493891444</td>
</tr>
<tr>
<td>23.7</td>
<td>Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.832058395</td>
<td>1.493891444</td>
</tr>
<tr>
<td>23.9</td>
<td>Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.832058395</td>
<td>1.493891444</td>
</tr>
<tr>
<td>24.1</td>
<td>Basic iron and steel</td>
<td>0.00%</td>
<td>33%</td>
<td>2.565321612</td>
<td>2.654946918</td>
</tr>
<tr>
<td>24.2</td>
<td>Basic iron and steel</td>
<td>0.00%</td>
<td>33%</td>
<td>2.565321612</td>
<td>2.654946918</td>
</tr>
<tr>
<td>24.4</td>
<td>Other basic metals and casting</td>
<td>0.00%</td>
<td>33%</td>
<td>2.260064431</td>
<td>1.956288943</td>
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<tr>
<td>25</td>
<td>Weapons and ammunition</td>
<td>0.00%</td>
<td>33%</td>
<td>1.9461515</td>
<td>#N/A</td>
</tr>
<tr>
<td>25.1</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.02%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>25.2</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>25.5</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>25.6</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.02%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>SIC Code</td>
<td>Industry description</td>
<td>Percentage of total BBC spend</td>
<td>GVA/Output Ratio</td>
<td>GVA Multiplier</td>
<td>Employment Multiplier</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>25.7</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>25.9</td>
<td>Fabricated metal products, excl. machinery and equipment and weapons &amp; ammunition - 25.1-3/25.5-9</td>
<td>0.00%</td>
<td>33%</td>
<td>1.576978682</td>
<td>1.408072446</td>
</tr>
<tr>
<td>26</td>
<td>Computer, electronic and optical products</td>
<td>0.69%</td>
<td>33%</td>
<td>1.751707433</td>
<td>1.903703004</td>
</tr>
<tr>
<td>27</td>
<td>Electrical equipment</td>
<td>0.16%</td>
<td>33%</td>
<td>1.731393063</td>
<td>1.68014652</td>
</tr>
<tr>
<td>28</td>
<td>Machinery and equipment n.e.c.</td>
<td>0.05%</td>
<td>33%</td>
<td>1.746585473</td>
<td>1.774887011</td>
</tr>
<tr>
<td>29</td>
<td>Motor vehicles, trailers and semi-trailers</td>
<td>0.01%</td>
<td>33%</td>
<td>2.546937759</td>
<td>3.046129659</td>
</tr>
<tr>
<td>30.1</td>
<td>Ships and boats</td>
<td>0.00%</td>
<td>33%</td>
<td>1.717786931</td>
<td>1.440167539</td>
</tr>
<tr>
<td>30.3</td>
<td>Air and spacecraft and related machinery</td>
<td>0.00%</td>
<td>33%</td>
<td>2.107322567</td>
<td>1.983286408</td>
</tr>
<tr>
<td>30.9</td>
<td>Other transport equipment - 30.2/4/9</td>
<td>0.00%</td>
<td>33%</td>
<td>2.502445313</td>
<td>3.33681574</td>
</tr>
<tr>
<td>31</td>
<td>Furniture</td>
<td>0.09%</td>
<td>33%</td>
<td>1.8805688</td>
<td>1.684809246</td>
</tr>
<tr>
<td>32</td>
<td>Other manufactured goods</td>
<td>1.23%</td>
<td>33%</td>
<td>1.749493524</td>
<td>1.549035675</td>
</tr>
<tr>
<td>35.1</td>
<td>Electricity, transmission and distribution</td>
<td>1.11%</td>
<td>33%</td>
<td>3.756297107</td>
<td>5.27166598</td>
</tr>
<tr>
<td>35.2</td>
<td>Gas; distribution of gaseous fuels through mains; steam and air conditioning supply</td>
<td>0.01%</td>
<td>33%</td>
<td>3.090762482</td>
<td>2.593567976</td>
</tr>
<tr>
<td>35.3</td>
<td>Gas; distribution of gaseous fuels through mains; steam and air conditioning supply</td>
<td>0.03%</td>
<td>33%</td>
<td>3.090762482</td>
<td>2.593567976</td>
</tr>
<tr>
<td>36</td>
<td>Natural water; water treatment and supply services</td>
<td>0.03%</td>
<td>33%</td>
<td>1.329451114</td>
<td>1.854189761</td>
</tr>
<tr>
<td>37</td>
<td>Sewerage services; sewage sludge</td>
<td>0.00%</td>
<td>33%</td>
<td>1.364204861</td>
<td>2.084936666</td>
</tr>
<tr>
<td>38</td>
<td>Waste collection, treatment and disposal services; materials recovery services</td>
<td>0.15%</td>
<td>33%</td>
<td>1.933128326</td>
<td>1.820392932</td>
</tr>
<tr>
<td>39</td>
<td>Remediation services and other waste management services</td>
<td>0.00%</td>
<td>33%</td>
<td>1.789459937</td>
<td>1.627446922</td>
</tr>
<tr>
<td>41</td>
<td>Construction</td>
<td>0.36%</td>
<td>43%</td>
<td>1.889433117</td>
<td>1.87739604</td>
</tr>
<tr>
<td>42</td>
<td>Construction</td>
<td>0.02%</td>
<td>43%</td>
<td>1.889433117</td>
<td>1.87739604</td>
</tr>
<tr>
<td>43</td>
<td>Construction</td>
<td>0.40%</td>
<td>43%</td>
<td>1.889433117</td>
<td>1.87739604</td>
</tr>
<tr>
<td>45</td>
<td>Wholesale and retail trade and repair services of motor vehicles and motorcycles</td>
<td>0.02%</td>
<td>50%</td>
<td>1.477932401</td>
<td>1.408955258</td>
</tr>
<tr>
<td>46</td>
<td>Wholesale trade services, except of motor vehicles and motorcycles</td>
<td>0.33%</td>
<td>50%</td>
<td>1.816086175</td>
<td>1.664239503</td>
</tr>
<tr>
<td>47</td>
<td>Retail trade services, except of motor vehicles and motorcycles</td>
<td>0.37%</td>
<td>50%</td>
<td>1.508481814</td>
<td>1.319307694</td>
</tr>
<tr>
<td>SIC Code</td>
<td>Industry description</td>
<td>Percentage of total BBC spend</td>
<td>GVA/Output Ratio</td>
<td>GVA Multiplier</td>
<td>Employment Multiplier</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>49.1</td>
<td>Rail transport services</td>
<td>0.00%</td>
<td>50%</td>
<td>2.201835523</td>
<td>2.759946039</td>
</tr>
<tr>
<td>49.2</td>
<td>Rail transport services</td>
<td>0.00%</td>
<td>50%</td>
<td>2.201835523</td>
<td>2.759946039</td>
</tr>
<tr>
<td>49.3</td>
<td>Land transport services and transport services via pipelines, excluding rail transport</td>
<td>0.72%</td>
<td>50%</td>
<td>1.65328384</td>
<td>1.445835649</td>
</tr>
<tr>
<td>49.4</td>
<td>Land transport services and transport services via pipelines, excluding rail transport</td>
<td>0.54%</td>
<td>50%</td>
<td>1.65328384</td>
<td>1.445835649</td>
</tr>
<tr>
<td>50</td>
<td>Water transport services</td>
<td>0.01%</td>
<td>50%</td>
<td>2.58268893</td>
<td>7.628527472</td>
</tr>
<tr>
<td>51</td>
<td>Air transport services</td>
<td>0.01%</td>
<td>50%</td>
<td>1.86974989</td>
<td>2.322768253</td>
</tr>
<tr>
<td>52</td>
<td>Warehousing and support services for transportation</td>
<td>0.74%</td>
<td>50%</td>
<td>2.054926232</td>
<td>1.91294306</td>
</tr>
<tr>
<td>53</td>
<td>Postal and courier services</td>
<td>0.00%</td>
<td>50%</td>
<td>1.438890396</td>
<td>1.653601921</td>
</tr>
<tr>
<td>55</td>
<td>Accommodation services</td>
<td>0.04%</td>
<td>50%</td>
<td>1.629590426</td>
<td>1.318568362</td>
</tr>
<tr>
<td>56</td>
<td>Food and beverage serving services</td>
<td>0.25%</td>
<td>50%</td>
<td>1.566404394</td>
<td>1.248449507</td>
</tr>
<tr>
<td>58</td>
<td>Publishing services</td>
<td>0.30%</td>
<td>57%</td>
<td>1.638223866</td>
<td>2.057155555</td>
</tr>
<tr>
<td>59</td>
<td>Motion picture, video and TV programme production services, sound recording &amp; music publishing &amp; programming and broadcasting services</td>
<td>31.98%</td>
<td>57%</td>
<td>1.616467335</td>
<td>2.145464322</td>
</tr>
<tr>
<td>60</td>
<td>Motion picture, video and TV programme production services, sound recording &amp; music publishing &amp; programming and broadcasting services</td>
<td>0.65%</td>
<td>57%</td>
<td>1.616467335</td>
<td>2.145464322</td>
</tr>
<tr>
<td>61</td>
<td>Telecommunications services</td>
<td>6.90%</td>
<td>57%</td>
<td>1.452219323</td>
<td>1.888083423</td>
</tr>
<tr>
<td>62</td>
<td>Computer programming, consultancy and related services</td>
<td>8.10%</td>
<td>57%</td>
<td>1.398840845</td>
<td>1.523011471</td>
</tr>
<tr>
<td>63</td>
<td>Information services</td>
<td>0.72%</td>
<td>57%</td>
<td>1.405550182</td>
<td>1.677998087</td>
</tr>
<tr>
<td>64</td>
<td>Financial services, except insurance and pension funding</td>
<td>2.32%</td>
<td>49%</td>
<td>1.454199445</td>
<td>3.347636297</td>
</tr>
<tr>
<td>65.1</td>
<td>Insurance, reinsurance and pension funding services, except compulsory social security &amp; Pensions</td>
<td>0.08%</td>
<td>49%</td>
<td>2.184759299</td>
<td>5.13881793</td>
</tr>
<tr>
<td>66</td>
<td>Services auxiliary to financial services and insurance services</td>
<td>0.16%</td>
<td>49%</td>
<td>1.474760136</td>
<td>1.415409902</td>
</tr>
<tr>
<td>68.1</td>
<td>Real estate services, excluding on a fee or contract basis and imputed rent</td>
<td>0.01%</td>
<td>74%</td>
<td>1.607346145</td>
<td>2.671942089</td>
</tr>
<tr>
<td>68.2</td>
<td>Real estate services, excluding on a fee or contract basis and imputed rent</td>
<td>0.02%</td>
<td>74%</td>
<td>1.607346145</td>
<td>2.671942089</td>
</tr>
<tr>
<td>68.3</td>
<td>Real estate services on a fee or contract basis</td>
<td>0.08%</td>
<td>74%</td>
<td>1.436902168</td>
<td>1.165905007</td>
</tr>
<tr>
<td>69.1</td>
<td>Legal services</td>
<td>3.20%</td>
<td>58%</td>
<td>1.32899183</td>
<td>1.335676625</td>
</tr>
<tr>
<td>SIC Code</td>
<td>Industry description</td>
<td>Percentage of total BBC spend</td>
<td>GVA/Output Ratio</td>
<td>GVA Multiplier</td>
<td>Employment Multiplier</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>69.2</td>
<td>Accounting, bookkeeping and auditing services; tax consulting services</td>
<td>0.75%</td>
<td>58%</td>
<td>1.22419793</td>
<td>1.19420757</td>
</tr>
<tr>
<td>70</td>
<td>Services of head offices; management consulting services</td>
<td>13.29%</td>
<td>58%</td>
<td>1.555829681</td>
<td>1.455832628</td>
</tr>
<tr>
<td>71</td>
<td>Architectural and engineering services; technical testing and analysis services</td>
<td>0.45%</td>
<td>58%</td>
<td>1.719639857</td>
<td>1.588992708</td>
</tr>
<tr>
<td>72</td>
<td>Scientific research and development services</td>
<td>0.07%</td>
<td>58%</td>
<td>1.801016127</td>
<td>1.567721481</td>
</tr>
<tr>
<td>73</td>
<td>Advertising and market research services</td>
<td>2.20%</td>
<td>58%</td>
<td>1.785299697</td>
<td>1.837550145</td>
</tr>
<tr>
<td>74</td>
<td>Other professional, scientific and technical services</td>
<td>0.53%</td>
<td>58%</td>
<td>1.569727651</td>
<td>1.727760614</td>
</tr>
<tr>
<td>75</td>
<td>Veterinary services</td>
<td>0.00%</td>
<td>58%</td>
<td>1.321947038</td>
<td>1.413974741</td>
</tr>
<tr>
<td>77</td>
<td>Rental and leasing services</td>
<td>1.19%</td>
<td>58%</td>
<td>1.396020497</td>
<td>1.658914009</td>
</tr>
<tr>
<td>78</td>
<td>Employment services</td>
<td>2.65%</td>
<td>58%</td>
<td>1.521464684</td>
<td>1.286498648</td>
</tr>
<tr>
<td>79</td>
<td>Travel agency, tour operator and other reservation services and related services</td>
<td>0.31%</td>
<td>58%</td>
<td>1.776401125</td>
<td>1.998145701</td>
</tr>
<tr>
<td>80</td>
<td>Security and investigation services</td>
<td>0.09%</td>
<td>58%</td>
<td>1.447569326</td>
<td>1.16157947</td>
</tr>
<tr>
<td>81</td>
<td>Services to buildings and landscape</td>
<td>0.04%</td>
<td>58%</td>
<td>1.722654652</td>
<td>1.32684621</td>
</tr>
<tr>
<td>82</td>
<td>Office administrative, office support and other business support services</td>
<td>9.26%</td>
<td>58%</td>
<td>1.49378505</td>
<td>1.454028597</td>
</tr>
<tr>
<td>84</td>
<td>Public administration and defence services; compulsory social security services</td>
<td>0.17%</td>
<td>58%</td>
<td>1.475669625</td>
<td>4.923518497</td>
</tr>
<tr>
<td>85</td>
<td>Education services</td>
<td>0.18%</td>
<td>58%</td>
<td>1.116793452</td>
<td>1.129538754</td>
</tr>
<tr>
<td>86</td>
<td>Human health services</td>
<td>0.06%</td>
<td>58%</td>
<td>1.175495786</td>
<td>1.12554486</td>
</tr>
<tr>
<td>87</td>
<td>Social care services</td>
<td>0.00%</td>
<td>58%</td>
<td>1.590786317</td>
<td>1.341751406</td>
</tr>
<tr>
<td>88</td>
<td>Social care services</td>
<td>0.29%</td>
<td>58%</td>
<td>1.590786317</td>
<td>1.341751406</td>
</tr>
<tr>
<td>90</td>
<td>Creative, arts and entertainment services</td>
<td>3.05%</td>
<td>65%</td>
<td>1.738609398</td>
<td>1.383030015</td>
</tr>
<tr>
<td>91</td>
<td>Libraries, archives, museums and other cultural services</td>
<td>0.04%</td>
<td>65%</td>
<td>1.700587953</td>
<td>1.662480998</td>
</tr>
<tr>
<td>92</td>
<td>Gambling and betting services</td>
<td>0.01%</td>
<td>65%</td>
<td>1.312723549</td>
<td>1.593392054</td>
</tr>
<tr>
<td>93</td>
<td>Sports services and amusement and recreation services</td>
<td>1.24%</td>
<td>65%</td>
<td>2.222058647</td>
<td>1.367141866</td>
</tr>
<tr>
<td>94</td>
<td>Services furnished by membership organisations</td>
<td>0.34%</td>
<td>65%</td>
<td>1.110695472</td>
<td>1.12135801</td>
</tr>
<tr>
<td>95</td>
<td>Repair services of computers and personal and household goods</td>
<td>0.00%</td>
<td>65%</td>
<td>1.421773702</td>
<td>1.306116866</td>
</tr>
<tr>
<td>96</td>
<td>Other personal services</td>
<td>1.49%</td>
<td>65%</td>
<td>1.447309168</td>
<td>1.20397128</td>
</tr>
</tbody>
</table>
We estimated the induced GVA associated with the BBC’s activity in the North West using the following formula:

\[
\text{Induced GVA effects} = (\text{Tier 1 supplier GVA} \times \text{Type II GVA multiplier}) - (\text{Tier 1 supplier GVA} \times \text{Type I GVA multiplier})
\]

The Tier 1 supplier GVA was estimated using the approach outlined above.

The sector specific Type I and Type II GVA multipliers for each of the SIC codes were sourced from the Scottish Government\(^{176}\), given that the ONS does not produce Type II multipliers. The multipliers used to estimate the induced GVA effects are included in Table 7.

**Table 7: Type I and Type II multipliers used to estimate the induced economic impacts\(^{177}\)**

<table>
<thead>
<tr>
<th>SIC Code</th>
<th>Industry description</th>
<th>Percentage of total BBC spend</th>
<th>GVA/Output Ratio</th>
<th>GVA Multiplier</th>
<th>Employment Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>Services of households as employers of domestic personnel</td>
<td>0.00%</td>
<td>65%</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^{176}\) Scottish Government, Scottish Supply Use and Analytical Input-Output Tables, 1998-2012, Type I Leontief Table, Multipliers and Effects, all years, published July 2015.

\(^{177}\) Ibid
<table>
<thead>
<tr>
<th>Category</th>
<th>Type I GVA multiplier</th>
<th>Type I employment multiplier</th>
<th>Type II GVA multiplier</th>
<th>Type II Employment multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spirits &amp; wines</td>
<td>1.23</td>
<td>2.04</td>
<td>1.40</td>
<td>2.69</td>
</tr>
<tr>
<td>Beer &amp; malt</td>
<td>1.26</td>
<td>1.46</td>
<td>1.45</td>
<td>1.75</td>
</tr>
<tr>
<td>Soft Drinks</td>
<td>1.55</td>
<td>1.86</td>
<td>1.91</td>
<td>2.30</td>
</tr>
<tr>
<td>Tobacco</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Textiles</td>
<td>1.47</td>
<td>1.56</td>
<td>1.82</td>
<td>1.96</td>
</tr>
<tr>
<td>Wearing apparel</td>
<td>1.37</td>
<td>1.44</td>
<td>1.70</td>
<td>1.81</td>
</tr>
<tr>
<td>Leather goods</td>
<td>1.60</td>
<td>1.36</td>
<td>1.96</td>
<td>1.53</td>
</tr>
<tr>
<td>Wood and wood products</td>
<td>1.76</td>
<td>1.71</td>
<td>2.14</td>
<td>1.97</td>
</tr>
<tr>
<td>Paper &amp; paper products</td>
<td>1.67</td>
<td>1.72</td>
<td>2.02</td>
<td>2.10</td>
</tr>
<tr>
<td>Printing and recording</td>
<td>1.30</td>
<td>1.27</td>
<td>1.60</td>
<td>1.51</td>
</tr>
<tr>
<td>Coke, petroleum &amp; petrochemicals</td>
<td>1.68</td>
<td>2.86</td>
<td>1.95</td>
<td>3.54</td>
</tr>
<tr>
<td>Paints, varnishes and inks etc</td>
<td>1.35</td>
<td>1.33</td>
<td>1.59</td>
<td>1.55</td>
</tr>
<tr>
<td>Cleaning &amp; toilet preparations</td>
<td>1.40</td>
<td>1.51</td>
<td>1.66</td>
<td>1.78</td>
</tr>
<tr>
<td>Other chemicals</td>
<td>1.16</td>
<td>1.32</td>
<td>1.46</td>
<td>1.86</td>
</tr>
<tr>
<td>Inorganic chemicals, dyestuffs &amp; agrochemicals</td>
<td>1.34</td>
<td>1.53</td>
<td>1.56</td>
<td>1.88</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>1.08</td>
<td>1.40</td>
<td>1.24</td>
<td>2.18</td>
</tr>
<tr>
<td>Rubber &amp; Plastic</td>
<td>1.51</td>
<td>1.55</td>
<td>1.86</td>
<td>1.87</td>
</tr>
<tr>
<td>Cement lime &amp; plaster</td>
<td>1.79</td>
<td>1.65</td>
<td>2.21</td>
<td>1.96</td>
</tr>
<tr>
<td>Glass, clay &amp; stone etc</td>
<td>1.43</td>
<td>1.28</td>
<td>1.80</td>
<td>1.52</td>
</tr>
<tr>
<td>Iron &amp; Steel</td>
<td>1.59</td>
<td>1.39</td>
<td>2.02</td>
<td>1.66</td>
</tr>
<tr>
<td>Other metals &amp; casting</td>
<td>1.48</td>
<td>1.25</td>
<td>1.85</td>
<td>1.44</td>
</tr>
<tr>
<td>Fabricated metal</td>
<td>1.31</td>
<td>1.31</td>
<td>1.64</td>
<td>1.62</td>
</tr>
<tr>
<td>Computers, electronics &amp; opticals</td>
<td>1.27</td>
<td>1.43</td>
<td>1.54</td>
<td>1.79</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>1.44</td>
<td>1.46</td>
<td>1.81</td>
<td>1.81</td>
</tr>
<tr>
<td>Machinery &amp; equipment</td>
<td>1.49</td>
<td>1.58</td>
<td>1.86</td>
<td>1.99</td>
</tr>
<tr>
<td>Motor Vehicles</td>
<td>1.49</td>
<td>1.67</td>
<td>1.85</td>
<td>2.09</td>
</tr>
<tr>
<td>Other transport equipment</td>
<td>1.93</td>
<td>2.18</td>
<td>2.39</td>
<td>2.75</td>
</tr>
<tr>
<td>Furniture</td>
<td>1.51</td>
<td>1.28</td>
<td>1.87</td>
<td>1.45</td>
</tr>
<tr>
<td>Other manufacturing</td>
<td>1.22</td>
<td>1.33</td>
<td>1.49</td>
<td>1.69</td>
</tr>
<tr>
<td>Repair &amp; maintenance</td>
<td>1.40</td>
<td>1.74</td>
<td>1.69</td>
<td>2.09</td>
</tr>
<tr>
<td>Electricity</td>
<td>1.86</td>
<td>3.50</td>
<td>2.05</td>
<td>4.51</td>
</tr>
<tr>
<td>Gas etc</td>
<td>1.48</td>
<td>1.42</td>
<td>1.73</td>
<td>1.71</td>
</tr>
<tr>
<td>Water and sewerage</td>
<td>1.17</td>
<td>1.43</td>
<td>1.27</td>
<td>1.75</td>
</tr>
<tr>
<td>Waste, remediation &amp; management</td>
<td>1.49</td>
<td>1.88</td>
<td>1.79</td>
<td>2.39</td>
</tr>
<tr>
<td>Construction</td>
<td>1.68</td>
<td>1.68</td>
<td>2.01</td>
<td>1.96</td>
</tr>
<tr>
<td>Wholesale &amp; Retail - vehicles</td>
<td>1.24</td>
<td>1.21</td>
<td>1.51</td>
<td>1.40</td>
</tr>
<tr>
<td>Activity</td>
<td>Type I GVA multiplier</td>
<td>Type I employment multiplier</td>
<td>Type II GVA multiplier</td>
<td>Type II Employment multiplier</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------</td>
<td>------------------------------</td>
<td>------------------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Wholesale - excl vehicles</td>
<td>1.57</td>
<td>1.64</td>
<td>1.88</td>
<td>1.92</td>
</tr>
<tr>
<td>Retail - excl vehicles</td>
<td>1.26</td>
<td>1.19</td>
<td>1.51</td>
<td>1.33</td>
</tr>
<tr>
<td>Rail transport</td>
<td>2.09</td>
<td>1.89</td>
<td>2.64</td>
<td>2.27</td>
</tr>
<tr>
<td>Other land transport</td>
<td>1.37</td>
<td>1.33</td>
<td>1.66</td>
<td>1.53</td>
</tr>
<tr>
<td>Water transport</td>
<td>1.65</td>
<td>2.53</td>
<td>1.93</td>
<td>3.09</td>
</tr>
<tr>
<td>Air transport</td>
<td>1.61</td>
<td>2.08</td>
<td>1.93</td>
<td>2.55</td>
</tr>
<tr>
<td>Support services for transport</td>
<td>1.62</td>
<td>1.66</td>
<td>1.97</td>
<td>1.95</td>
</tr>
<tr>
<td>Post &amp; courier</td>
<td>1.23</td>
<td>1.19</td>
<td>1.56</td>
<td>1.38</td>
</tr>
<tr>
<td>Accommodation</td>
<td>1.26</td>
<td>1.16</td>
<td>1.51</td>
<td>1.27</td>
</tr>
<tr>
<td>Food &amp; beverage services</td>
<td>1.27</td>
<td>1.16</td>
<td>1.51</td>
<td>1.27</td>
</tr>
<tr>
<td>Publishing services</td>
<td>1.25</td>
<td>1.28</td>
<td>1.57</td>
<td>1.51</td>
</tr>
<tr>
<td>Film video &amp; TV etc; broadcasting</td>
<td>1.36</td>
<td>1.35</td>
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<td>Type I GVA multiplier</td>
<td>Type I employment multiplier</td>
<td>Type II GVA multiplier</td>
<td>Type II Employment multiplier</td>
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<td>----------------------</td>
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<td>-----------------------------</td>
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<td>Education</td>
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<td>1.45</td>
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<td>1.73</td>
<td>1.36</td>
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<td>Membership organisations</td>
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<tr>
<td>Repairs - personal and household</td>
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<td>1.12</td>
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<td>1.19</td>
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<tr>
<td>Other personal services</td>
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<td>Households as employers</td>
<td>1.00</td>
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</table>

**Generating employment and developing skills**

*Impact from the BBC’s direct employment in the North West*

The BBC’s direct employment in the North West of England is the Full Time Equivalent (FTE) employment figure for this region supplied by the BBC.

*Indirect employment impact through the BBC’s spending with suppliers in the North West*

In order to estimate the indirect employment contribution associated with the BBC’s activity in the North West of England, we first estimated the indirect associated with the Tier 1 suppliers supporting the BBC’s activity in the North West. This was done using the following formula:

\[
\text{Tier 1 supplier employment linked to BBC activity} = \text{Tier 1 supplier GVA} \times \text{sector average GVA per employee (FTE)}
\]

The Tier 1 supplier GVA was estimated as outlined above.

In order to estimate the sector average GVA per employee in GVA terms, we had to first estimate the FTEs for each SIC code.

As the ONS does not publish FTE breakdowns by industry, we estimated these using the total employment figures (in headcount terms) available in the ONS Business Register and Employment survey.\(^{178}\) 2013. This provided both full-time and part-time employment figures. The headcount number of part-time employees was converted in to FTE terms using the average number of hours worked by those in part-time employ employment, which for 2015 was 15.97 hours. This was divided by the minimum hours worked to be classified as full-time (30 hours is used by the ONS) to estimate that each part-time employees is equivalent to 0.53 of an FTE.

Having derived the FTEs for each SIC code, the GVA for each corresponding SIC code was divided by this to give the average GVA per FTE. The analysis was conducted at the most granular level of SIC code possible (in the majority of cases the 4 digit SIC codes\(^\text{179}\)).

We then estimated the indirect employment associated with the wider supply chain supporting the BBC’s activity in the North West using the following formula:

\[
\text{Wider supply chain indirect employment} = \text{Tier 1 supplier employment linked to BBC activity} \times (1 - \text{sector specific Type I employment multiplier})
\]

The Tier 1 supplier employment linked to BBC employment in the North West was estimated using the approach outlined above.

The sector specific ONS Type I employment multipliers for each of the SIC codes are included in Table 6 above.

We also estimated the induced employment associated with the BBC’s activity in the North West. This was done using the following formula:

\[
\text{Induced employment effects} = (\text{Tier 1 supplier employment} \times \text{Type II employment multiplier}) - (\text{Tier 1 supplier employment} \times \text{Type I employment multiplier})
\]

The Tier 1 supplier GVA was estimated using the approach outlined above.

The sector specific Type I and Type II employment multipliers for each of the SIC codes were sourced from the Scottish Government\(^\text{180}\), given that the ONS does not produce Type II multipliers. The multipliers used to estimate the induced GVA effects are included in Table 7 above.

### The economic impact of the BBC’s online activity

Given that many of the economic benefits arising from the BBC’s online activity are spillover effects, by nature these are much harder to quantify. Therefore, to assess the economic impacts arising from the BBC’s online activity we adopted a largely qualitative approach.

Where BBC Online expenditure data over time was available from the BBC we converted this into real terms using RPI data sourced from the ONS\(^\text{181}\) and the latest Bank of England Inflation Report\(^\text{182}\). This applies to Figures 10, 11 and 12 in our report.

The RPI indices used are set out in the table below.

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\(^{179}\) For 18 SIC codes FTE figures were not available at the 4 digit level. For 6 of these the 3 digit SIC code was used, for 8 the 3 digit SIC codes were used and for the remaining 4 SIC codes the 2 digit SIC codes had to be used.


\(^{182}\) Inflation for 2015 was assumed to be zero based on the inflation data included in the August 2015 Inflation report: Bank of England, Inflation Report, August 2015.
### Table 8: RPI data

<table>
<thead>
<tr>
<th>Year</th>
<th>RPI (1987 = 100) (December values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>212.9</td>
</tr>
<tr>
<td>2009</td>
<td>218.0</td>
</tr>
<tr>
<td>2010</td>
<td>228.4</td>
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<tr>
<td>2011</td>
<td>239.4</td>
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<td>2012</td>
<td>246.8</td>
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<tr>
<td>2013</td>
<td>253.4</td>
</tr>
<tr>
<td>2014</td>
<td>257.5</td>
</tr>
<tr>
<td>2015</td>
<td>257.5</td>
</tr>
</tbody>
</table>

#### The economic impact of the BBC on the music industry

**The BBC’s impact on artists’ exposure through radio broadcasting**

One way in which we assessed the BBC’s impact on the UK music industry was to analyse the number of unique artists and tracks played on four of its major music playing radio stations.

In order to do this, we were provided with BBC detailed radio play data for each of the four BBC radio stations for each day in March 2015.

The dataset contained information on the name of each song played, the artist, the date and approximate time of play, and the length of time the song was played. The data were further segmented by programme (e.g. The Chris Evans Breakfast Show, Steve Wright in the Afternoon, The Radio 1 Breakfast Show with Nick Grimshaw etc.) and music category (e.g. commercial, library music and studio recording etc.).

However, the dataset contained duplicate entries for tracks where there was more than one artist performing the song. For example, the track ‘Uptown Funk’ by Mark Ronson and Bruno Mars, was listed twice in the dataset each time it was played – once with the artist listed as Mark Ronson and once with the artist listed as Bruno Mars.

There were also instances in the dataset where there were misspellings of artist names which meant that they appeared as unique artists when in fact they were not.

Therefore, in order to address these issues to identify unique tracks and artists (and so avoid overestimating in our results) the data was cleaned. The data was prepared for analysis by performing the following cleaning steps:

- Dropping duplicate entries so that each row in the dataset represented a unique combination of the variables. This was necessary to avoid double-counting songs that were entered more than once in the dataset yet had identical names, artists, and date, time and length of play, and were played in the same programme on the same station.
- Removing all song that contained “jingles” in the title and similar entries that were not music tracks.
- Correcting common inconsistencies in the spelling of artists’ names.
Although we were able to correct common inconsistencies in spelling, completely removing these from the dataset would have to be performed manually which was not possible in the time available for our study. Having reviewed a sample of data, after the data cleaning process we identified that this issue affected only around 1% of remaining entries. Therefore, we consider that it does not materially affect the results that we present, although acknowledge that it leads to a marginal overestimation in the number of unique artists played by each radio station over the month.

**BBC support for music talent: artist case studies**

As part of the case study analysis of a number of musicians supported by the BBC we estimated the GVA of the record sales of each artist.

To do so, we first estimated the revenues associated with their record sales. In the majority of cases, these data were not provided by the artists’ record labels for confidentiality reasons. Therefore, we had to estimate it based on the number of records (singles and/or albums, either digital or physical) sold and the average prices for each of the types of records sourced from BPI Music Market reports\(^{183}\). These reports provided price data over time, split by type of record.

The price data used in our analysis are set out in Table 9 below.

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2013</th>
<th>2012 (^{185})</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average price of album</td>
<td>£ 7.64</td>
<td>£ 7.38</td>
<td>£ 7.14</td>
<td>£ 7.07</td>
<td>£ 7.35</td>
</tr>
<tr>
<td>Average price of digital album</td>
<td>£ 7.30</td>
<td>£ 7.16</td>
<td>£ 6.75</td>
<td>£ 6.43</td>
<td>£ 6.11</td>
</tr>
<tr>
<td>Average price of single</td>
<td>£ 0.94</td>
<td>£ 0.93</td>
<td>£ 0.92</td>
<td>£ 0.91</td>
<td>£ 0.90</td>
</tr>
<tr>
<td>Average price of digital single</td>
<td>£ 0.94</td>
<td>£ 0.93</td>
<td>£ 0.88</td>
<td>£ 0.84</td>
<td>£ 0.80</td>
</tr>
</tbody>
</table>

While some of the record labels provided us with annual record sales (singles and/or albums), in some cases we were only provided with total figures for each single/album. Therefore, we had to apportion the sales to a relevant year. We attributed all sales to the year the record was released where this was the case. As prices have generally increased over time, as a result of this our revenue estimates are conservative.

In some cases, we were not provided with record sales split by each type of format (digital or physical). Where this was the case, we applied to these sales the average proportions of digital and physical sales for either singles or albums for the relevant year sourced from BPI Music Market reports\(^{186}\).

Having estimated revenues from record sales, we then estimated the associated GVA.

To estimate the direct GVA we applied the ratio of GVA to output for the ‘sound recording and music publishing’ sector, sourced from the ONS Annual Business Survey, June 2015 to the revenue figures.

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\(^{183}\) BPI Yearbook 2014, BPI Yearbook 2012

\(^{184}\) BPI Yearbook 2014, BPI Yearbook 2012

\(^{185}\) This was calculated using the Constant Annual Growth rate of the price data between 2011 and 2014.

\(^{186}\) BPI Yearbook 2014, BPI Yearbook 2012
The indirect GVA effects were then estimated by applying the ONS Type I multiplier for the ‘Motion picture, video and TV programme production services, sound recording & music publishing & programming and broadcasting services’ sector. This multiplier is 1.62 as shown in Table 6 above.

We also estimated the induced GVA by applying the Scottish Government Type I and Type II multipliers for the ‘Motion picture, video and TV programme production services, sound recording & music publishing & programming and broadcasting services’ and taking the difference between the two.

We note that in UK Music’s\textsuperscript{187} assessment of the economic contribution of the UK music industry it is highlighted that official statistics for the music industry are imperfect due to the way that music maps poorly onto SIC codes. Therefore, for UK Music’s study a bespoke methodology was used based on accessing granular data from the Virtual Microdata Lab (VML) maintained by the ONS. It was not possible for KPMG to adopt this approach for the purposes of our analysis. Therefore, we had to rely on the imperfect SIC code data. We note that this may lead to underestimates in our assessment of the music artists’ GVA contributions from their record sales.

\textsuperscript{187} http://www.ukmusic.org/assets/general/UK_MUSIC_Methodology.pdf