

Public service broadcasting

SUMMARY

The television broadcasting industry is subject to an exceptionally high level of public intervention, but one of the reasons for this, the absence of competition, is fast disappearing as households become multi-channel. This paper is concerned with whether a case for public service broadcasting remains and, if so, what form it should take. There are several other potential sources of market failure, but a lack of evidence often makes judging their practical significance difficult. To help overcome this problem and provide the basis for improved public accountability, the paper proposes several measures of public service broadcasting performance. The paper also considers when the appropriate remedy for these failures might take the form of dedicated public service broadcasters like the BBC, RAI, ARD, France 2, etc. It suggests that, in general, targeted supply side interventions of this sort only make sense when they address a supply side failure and that dedicated public service broadcasters are to be preferred to alternative types of targeted intervention, like an 'Arts Council of the Air', on contractual grounds.

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Television in a digital age: what role for public service broadcasting?*

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1. INTRODUCTION

Most people will spend more time watching television over their lives than they do in paid work. It is a salutary statistical fact that, in this sense, television is more important than the world of work. As a result, what appears on television makes a large difference to the quality of people's lives.

The television broadcasting industry is distinguished in at least two further respects. First, it is subject to a comparatively high degree of public intervention. There is a public service broadcasting (PSB) tradition in almost all countries that consists of some combination of dedicated public service broadcasters (PS broadcasters), like the BBC, RAI, France 2, ARD, etc, and a general regulatory framework that applies to all broadcasters, requiring things like home production quotas, a variety of programmes, etc.¹ Such

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¹ These PSB interventions are designed to change the character of what is produced in the television market and I focus on them in this article. There are other types of public policy interventions in this industry, like controls with respect to cross media ownership and vertical integration, which are more simply designed to promote competition and thus encourage whatever is produced to be done so efficiently (see Motta and Polo, 1997, for a recent discussion of these public policy interventions and Brown and Cave, 1992, for a general survey).

intervention is not only unusual relative to most industries; it is conspicuous when compared with other mass media like the newsprint, film and book industries, where there are no similar 'traditions'. It can seem strange as state ownership of the media is often associated with a range of 'bad' political and economic outcomes in cross-country data sets (see Djankov *et al.*, 2003). I describe this PSB tradition in more detail in the next section.

Second, major technological changes are affecting the industry. The most significant are the combination of satellite, cable and digital technologies that have created the conditions for an almost limitless number of broadcasting channels. Whereas 20 years ago, entry into television broadcasting was restricted by the scarcity of the radio spectrum and viewers in a typical European country had to choose between 3 and 6 channels, they may *all* be facing a choice of more than 100 channels in as little as 10 years. This is because most countries have plans to turn off the analogue signal within the next decade and so all households will become digital by that time.

This poses an obvious public policy question: will the multi-channel broadcasting market behave in such a way that a case remains for PSB, and if so, what form should PSB take? The paper is concerned with these questions.

I discuss the broad impact of technological change on the broadcasting market in Section 3. There is little doubt that the market is changing in ways that undermine a key argument for PSB. The absence of competition when there were only a few broadcasters has historically fuelled fears that broadcasters will, if left to themselves, concentrate on the popular genres and the mainstream part of the market to the detriment of more minority tastes. The result has been a PSB concern with promoting programme diversity. As the multi-channel world creates the conditions for the kind of competition that will naturally fill out the product space, this argument for PSB seems to be fast disappearing.

In Section 4, I argue, however, that the case for PSB will not necessarily disappear in a digital world. There are other sources of market failure in broadcasting that provide *prima facie* grounds for public intervention and which will not diminish as competition increases. Indeed, while the evidence regarding the practical significance of these other potential failures is patchy, there is some evidence to suggest that they could become increasingly important as competition becomes keener. They relate to (1) the under-provision of information, particularly via news and current affairs programmes, (2) over-production of programmes, like those that are excessively violent or pornographic, where there can be significant negative external effects, (3) the under-production of so-called 'horizon stretching' programmes and (4) a low level of innovation in programme making.

The last of these is typically not recognized in the literature (see the Davies Report, 1999) and is one of the paper's contributions to the debate over the future of PSB. The argument draws for the first time on insights from psychological experiments on decision making under uncertainty that are now enjoying currency in other areas of economics (e.g. behavioural finance). In addition, the argument is potentially important

because such a failure could apply to all programme types and so could explain why a dedicated PS broadcaster should have the scope of something like the BBC, RAI, ARD, etc.

There are also reasons for supposing that the traditional worry over the lack of competition in the broadcasting market will not entirely disappear with the arrival of the new transmission technologies. Some of these relate to imperfections that arise through vertical integration in the industry (e.g. the integration between production, scheduling and broadcasting) and cross media ownership; they have been discussed by Motta and Polo (1997). Typically the public policy interventions in these cases are designed to promote competition. Their purpose is to ensure that programmes are produced efficiently. In comparison, the PSB interventions discussed here are designed to alter the character of the programmes that are made in the first place. There are two reasons for supposing that, even with the new technologies, the market may fail in ways that require a PSB intervention of this sort.

One relates to the underprovision of programmes that have a large fixed cost of production but which are relatively highly valued by some consumers (see Dixit and Stiglitz, 1976). The other concerns the possible interaction between Sutton (1991)-type quality effects (see Motta and Polo, 1997), the existing large budgets of US programme makers and the public goods aspect of a citizen's preference for programmes that reflect on their own society. This is potentially the most significant grounds for applying home country quotas, like those of the EU, on programmes.

Thus a case will, in principle, remain for some kind of PSB in the digital world. Two practical issues then become pressing. One relates to the general absence of PSB performance indicators in relation to these other areas of market failure. This poses a difficulty for policy makers: how can they know whether policy intervention is effective? The lack of indicators is especially troubling because, in their absence, there has been a natural tendency for dedicated PS broadcasters to chase audience share (see Norris *et al.*, 2003). The worry is that if the dedicated PS broadcasters behave in this way and so become indistinguishable from commercial broadcasters, then they will tend to reproduce market failures rather than offset them.²

The development of performance indicators is also important for the evaluation of the case for PSB. At the moment, while there are theoretical grounds for believing that market failure occurs in broadcasting, their actual significance is difficult to judge. Well-designed performance indicators may therefore help to generate data that will allow us to see to what extent our concerns about market failure are justified.

The paper therefore contributes to the debate by setting out in Section 5 some performance indicators for the market failures distinguished in Section 4. Two of

² This is a version of a more general point that is sometimes overlooked in public policy discussion. When public provision is designed to offset market failure, some care must be taken not to create market-like incentives within those public organizations, which encourage it to behave like a private company. The introduction of such incentives is an understandable response to the desire to make public organizations efficient but if they also have the effect of encouraging the organization to mimic rather than compensate for the market failure, then they actually undermine the original case for intervention.

these are wholly new to the literature and relate the extent of innovation in and the ‘horizon stretching’ attribute of programmes.

The second practical matter, which I address in Sections 6 and 7, concerns the form that PSB should take. The existing dual support system, combining dedicated PS broadcasters with general PSB regulations, owes as much to history as to any clear theoretical underpinning. I examine this issue in Section 6 and argue that, in general, the first selective type of intervention *only* makes sense in a multi-channel world when the source of the failure is on the supply side of the market. In other words, the remit of dedicated PS broadcasters should only ever seek to address failures that arise on the supply side in a multi-channel world. This point is typically not well recognized in the discussion of PSB (e.g. see Oliver and Ohlbaum and Associates, 2003).

The fact that television broadcasting markets may fail in ways that can be sensibly tackled through a selective or targeted intervention nevertheless does not necessarily supply an argument for a dedicated PS broadcaster. There are alternative forms of selective intervention. For instance, it has been suggested that a better solution would be an Arts Council of the Air to which any commercial broadcaster could bid for funds to make programmes that ‘stretch horizons’, or are particularly innovative, etc. The argument between these different forms of targeted intervention typically turns on the relative benefits of greater competition as compared with the uniqueness of institutions like the BBC (see Elstein *et al.*, 2004). In Section 7, I introduce a new contractual reason for preferring a dedicated PS broadcaster to an Arts Council of the Air. Section 8 concludes the paper.

2. THE OLD PUBLIC SERVICE TRADITION

There is a significant PSB tradition in most countries outside of the US and it almost always has the same set of purposes (see Barendt, 1995, and Mendel, 2000). This is reflected, for example, within the EU, by the 1994 Council of Europe Ministerial Conference (the so-called Prague Resolution) and the 1996 Resolution on PSB from the European Parliament. Both identify the following objectives for PSB within the EU.

- To aid informed citizenship through impartial and independent news, information and comment.
- To support democratic values through the encouragement of public debate that involves and respects the human rights of all groups in society.
- To offer a wide range of quality programmes in all genres.
- To promote social cohesion and the vitality of national cultures.

These objectives are also supported almost everywhere in the same ways and Table 1 provides an overview. There are dedicated PS broadcasters with individual remits (like the BBC, ARD, RAI, France 2, etc.) that enjoy large audience shares and there is a general regulatory framework that governs all/free-to-air commercial broadcasters. This dual support system has grown from similar histories.

Table 1. Dimensions of PSB

	Percentage audience share of PS broadcasters in 2003	Quantitative programme requirements	Advertising and subscription funding of PS broadcasters >20%
France	39.9	Yes	Yes
Germany	41.5	No	No
Italy	43.3	Yes	Yes
UK	45.7	Yes (except BBC)	No (BBC), Yes (C4)
Netherlands	N.a.	Yes	Yes
Spain	30.8	No	Yes

Source: IDATE, Development of Digital TV in Europe, individual country reports, 2000, www.worldscreen.com/europe.php and EPRA (2003).

Broadcasting began with dedicated PS broadcasters and then the general regulations were introduced with the advent of the commercial broadcasters. In a sense, broadcasting was perceived at first to be too important to be left to the market, then it became too important to be left to a PS broadcaster: the result is the dual support system (see Tracey, 1998).

Both the specific remits of the dedicated PS broadcasters and the general frameworks encode with varying degrees of precision and emphasis the above four objectives (see Machet *et al.*, 2002) and they are usually expressed purely qualitatively. That is, there is no indication of how performance is to be judged in a quantitative sense. There are two exceptions within the EU. All EU countries have home production quotas in order to promote ‘national cultures’ and most countries also specify the minimum (or maximum) proportions of time that can be devoted to particular programme genres. The genres are typically defined in broad terms (e.g. news, entertainment, drama, sport, religion, etc.) and the quota on programming time in each category is either designed to support the desire for informed citizenship when it refers to the news or, when it ranges more widely, to the desire for a variety of programme types. Table 1 provides an overview of the influence of this tradition.

The dedicated PS broadcasters are typically funded through some combination of public funds, advertising and other commercial activities (e.g. subscription, syndicating programmes, merchandising, etc.). The mix varies but the existence of public subsidy together with the relative lack of meaningful performance indicators for PSB has created tensions in many countries over whether there is ‘fair’ competition between the commercial and the dedicated PS broadcasters. In particular, commercial broadcasters often suspect that the PS broadcasters use their public funding ‘unfairly’ to gain audience share rather than pursue their PSB objectives. There have, for instance, been recent complaints to European Commission from MEDIASET over RAI, TF1 with respect to France 2 and 3, Tele 5 over RTVE and BSkyB in relation to the BBC, which have all taken this form (and see Norris *et al.*, 2003, for a discussion of a current similar complaint from Ireland’s TV3 over RTE’s possible predatory pricing of advertising).

The incentive to chase audience numbers exists when the dedicated PS broadcaster can also raise revenue through advertising and this has led to proposals, like that of the EU Competition Commissioner, Mario Monti, to put an upper limit of 20% on the extent of advertising funding. The problem, though, is deeper and arises because it is difficult to judge the extent to which any dedicated PS broadcaster is pursuing their PSB objectives. There are no measures of ‘quality’ in programming, for example, that would enable such assessments. Quantitative requirements on programming time at least permit a ‘yes/no’ verdict but they do not allow an assessment of how vigorously a broadcaster is pursuing, say, the objective of promoting diversity in programming. As a result, there is plenty of scope for dispute.

The absence of anything but the most crude performance indicators also poses a difficulty for broadcasters trying to demonstrate why they deserve public funding. In an age of accountability, this is bound to trouble PS broadcasters and it is not surprising that they cast around for ways to justify what they are doing including the pursuit of audience share as a route to legitimacy in the use of public funds.

There is little doubt that the PSB tradition that I have sketched has become increasingly controversial (see Tracey, 1998, and Norris *et al.*, 2003). The unfortunate dynamic between accountability, the lack of indicators, the pursuit of audience share and the relationship with commercial broadcasters is one source. I turn to another in the next section.

3. TECHNOLOGICAL CHANGE IN THE BROADCASTING MARKET

Satellite, cable and digital technologies are diffusing rapidly. Although the extent of diffusion varies across countries, the numbers of multi-channel households is growing everywhere (see Table 2). The most immediate consequence of these new technologies is that they create the potential for a large number of broadcasting channels and, as Table 2 also suggests, it seems that the potential is taken up. Once more channels become technologically feasible, corporations find it profitable to launch them. These

Table 2. The new technologies

	Percentage of multichannel households		Number of national channels available
	1994	2003	2000
France	2.2	30.4	76
Germany	45.7	89	58
Italy	0	11	59
UK	15.7	45	107
Netherlands	98	98	21
Spain	9.1	24	73

Source: IDATE, Development of Digital TV in Europe, individual country reports, 2000, www.worldscreen.com/europe.php, ITC website and European Audiovisual Yearbook, 2000.

new channels are usually but not exclusively specialist ones. For instance, in the US where cable technologies diffused earlier than in most European countries, there are now several 'new' general broadcasters with schedules that cover a range of programme types and which have now achieved the threshold audience numbers to appear in the A.C. Nielsen year-end summaries: Fox, UPN, WB and PAX.

The advent of these new channels has increased competition and the change in concentration ratios has been quite dramatic in some cases. For example, in the US the 'old' networks (ABC, NBC and CBS) have seen their share of the audience drop from around 90% in the 1950s and 1960s to something hovering around 50%. The increase in competition might be expected to ease the traditional Hotelling-like concern that a few broadcasters would focus on the most popular parts of the market with the result that minority programming would be underprovided. This effect of the new technologies is potentially rather important for PSB since diversity has been one of the few PSB that has been framed in a manner that is measurable. The evidence here, however, requires rather careful interpretation.

There have been several studies of diversity in programming and most use a version of the Herfindahl-Hirschman Index (HHI). Einstein (2004) is a recent example and she summarizes that literature by saying 'the overwhelming conclusion is that diversity is declining. In particular, the traditional broadcast networks (ABC, CBS and NBC) have seen steady erosion in viewer options' (p. 145). This may seem unambiguous but, from a policy perspective, the picture is less clear.

First, the evidence from HHIs is not always the same. Although van der Wurff and van Cuilenburg (2001) also find that the shift from 4 to 9 general channels reduced diversity in the Netherlands between 1988 and 2000, when the US sample is expanded to include the new US networks, diversity increases slightly with their arrival (see McDonald and Liu, 2004). Second, there is a deeper difficulty with these studies: their use of the HHI index is calculated on programme times. This version of the index takes account of audience tastes only in so far as they affect whether a broadcaster has a sufficient audience to warrant inclusion in the calculation of the HHI. This is unsatisfactory because the sense of diversity in programming that usually concerns policy makers is the diversity of programmes *in relation* to people's tastes. In effect, this use of the HHI index presumes by construction that the best state of affairs is one where all programme categories receive equal time and hence any increase/decrease in the HHI reflects an increase/decrease in diversity. While the equivalent assumption makes sense when the HHI is calculated on the basis of market shares to provide a measure of the extent of competition, there is no reason to suppose that people would ideally want to watch equal amounts of each type of programme, either individually or in the aggregate.³

³ Naturally when the extent or size of the option set is valued independently of actual choices, then a measure of diversity that ignored actual tastes could be appropriate. However, in this case it becomes important to measure the offerings of all channels and not just those that achieve a threshold level like that of the Nielsen year-end summaries.

Van der Wurff and van Cuilenburg (2001) attempt to take account of this by measuring the extent to which the proportion of time broadcast in each category deviates from the proportion of time that people spend watching that category. This measure is flawed because it only takes account of the tastes for programmes that emerge in equilibrium, but it is better than nothing and they find that their measure of 'reflective diversity' first improves and then worsens. In particular, they argue that the increase from 4 to 6 general broadcasters improved diversity, but the move to 9 had an offsetting negative effect. The changes are not very large and occur because broadcasters have tended to increase the amount of time devoted to their most popular types of programme for the understandable reason that they typically command an advertising premium.

There is a further difficulty with the HHI calculation based on broadcast time. A decrease in this measure of diversity when accompanied by an increase in the number of broadcasters would not necessarily imply that there was a reduction in the *actual* amount of time broadcast in any programme category; and yet the purpose behind a diversity requirement is to ensure that minority tastes receive adequate programming time. Thus the important feature is whether actual broadcasting time in any category has decreased as a result of increased competition and there is no evidence that it has. Indeed the reverse is the case.⁴

The proliferation of channels not only undermines the diversity argument for PSB in this way, it also casts a doubt over the coherence of maintaining the dual support system. The problem here concerns why there are two modes of support for PSB. One possible answer is that specialization helps with some programme types or some types are especially costly so that diversity may be best served by having some dedicated PS broadcasters which focus on them. Thus diversity overall in the market could best be achieved through a mixture of general regulation and relatively specialized dedicated PS broadcasters (e.g. C4 in the UK with its brief to be 'risky and innovative' and the concentration on music of France's M6). The problem is that this underpinning of the dual support system naturally disappears if variety can be adequately catered for by the free market. I return to the issue of what might be the appropriate division of responsibilities between dedicated PS broadcasters and general regulations in Section 5. For now, there is a further point of pressure on the PSB tradition that comes from the increase in channels.

Typically the general PSB regulations apply to the old free-to-air commercial broadcasters but not to the new channels. This places the old commercial broadcasters at a competitive disadvantage. Not unsurprisingly, they often lobby in these circumstances for a reduction of their public service obligations.

The growth in the number of channels is also having an effect on the nature of the competition between broadcasters because there has been a general fragmentation of

⁴ I set aside the obvious difficulty that the measure of broadcast time ignores possible changes in the quality of what is broadcast. Some attempt to gauge what has happened to quality would be possible if there were measures of total expenditure on each programme type.

audiences which puts pressure on the advertising base for commercial broadcasters. This is because advertisers pay premium rates for slots in programmes that attract large audiences. These types of programme events occur less frequently when audiences become more fragmented. There is some evidence that this effect has been partially offset by an increase in the premium as a result of the reduction in the supply of large audience programmes (see Oliver, 2002), so by itself it may not prove very significant. But there are two further technological changes that are reinforcing the pressure on funding through advertising.

One is the personal VCR, which can offer viewers an advertising-free recording of their favourite programmes. This is bound to make advertising on television seem less attractive than it once did. The other relates to the encryption of programmes that makes Pay TV possible. Sky TV subscription revenue, for instance, dwarfs its advertising revenue and subscription revenues in the UK now exceed those from advertising. Thus it is likely that technological change will shift the dynamic of competition in the industry away from advertising to something that more closely resembles price competition as Pay TV becomes more common. How quickly this will occur is, however, uncertain.

It is not so surprising in these circumstances that policy makers everywhere are looking afresh at what to do with PSB (e.g. see Norris *et al.*, 2003). The general case for PSB intervention in a multi-channel world needs re-examining. If reasons for intervention remain, there has to be a clearer understanding of what is the appropriate form. The difficulty, however, with any such reappraisal is the uncertainty that the various forms of technological change are bringing to the competitive process.

4. MARKET FAILURE IN BROADCASTING

The case for intervention in any market turns primarily on the existence of market failure, and the broadcasting industry is no exception (e.g. see Davies, 1999).⁵ However, with the uncertain effects of the significant technological changes on the dynamics of competition in the industry, it would be unwise to rest a case for PSB intervention on an analysis of market failure that depended on assuming a particular form of competition. For this reason I consider first those market failures that may arise *independently* of the precise form that competition takes in the broadcasting market. They are rooted in the peculiarities of individual decision making in relation to certain aspects of television programmes and so would arise even if there was

⁵ In the discussion of PSB, a distinction is often made between our needs as 'consumers' and those that we have as 'citizens' and while the analysis of market failure is deemed appropriate for the role of PSB in relation to our needs as 'consumers', the case for PSB in relation to our needs as 'citizens' is different. Citizens need to live in a well-informed society that has the cultural resources to reflect critically and collectively on its own practices and institution (e.g. see Ofcom, 2004, for a recent statement and Tracey, 1998, for a general survey of the part played by this distinction in policy discussions). That people should have these citizenly concerns and that television matters in relation to these concerns is not implausible. The case for some kind of public intervention to further these objectives does not, however, follow automatically. To make such a connection it is necessary to show how individual action based on these concerns fails to deliver the appropriate citizenly outcomes. In other words, there has to be an analysis of why individual choice fails (i.e. an analysis of market failure).

perfect competition in the industry. There are four of these. Two turn on the existence of externalities and the others depend on what might be regarded as ‘faults’ that are internal to the individual’s process of decision making.

In practice the new technologies will not create a perfectly competitive market. The presence of economies of scale means that some form of monopolistic competition is most likely to emerge in the industry despite the absence of other constraints on entry. The precise form of monopolistic competition may be unclear but in the final two subsections, I consider two possible failures which might arise under both advertising and PAY TV funding.

4.1. Information externalities in consumption and production

People may plausibly value living in a well-informed society because the political and the other institutions that make up civil society work better when people are well informed (e.g. see Besley *et al.*, 2002, and Besley and Burgess, 2002). This is a citizenly concern that individual choice is not well placed to meet because an individual’s choice over whether to be better informed through their choice of television programmes (newspapers, books, etc.) has no perceptible effect on whether society as a whole is well informed. The individual’s contribution is simply too small. Thus even though citizens value living in a well-informed society, the individual citizen’s choice between programmes is not affected by this concern as his or her choice has no material effect on this aspect of society. However, when these individually negligible contributions are aggregated across a large number of individuals, they make a difference to how well informed the society is, and this does affect the welfare of all individuals. In short, this small externality drives a wedge between private and social benefit of acquiring information with the result that information is sub-optimally produced.

This effect is likely to be reinforced on the supply side by the absence of clear property rights in information. Suppose we distinguish programmes crudely by their content along only two dimensions: their levels of information and entertainment. Property rights in those factors contributing to entertainment in programmes are probably better protected than those that generate information. For instance, a piece of information once broadcast is free to other users, whereas a successful entertainment formula can still be imperfectly owned by a broadcaster through, for example, the continuing contractual commitments of the lead actors. The gap between private and social benefit is therefore less severe with the entertainment aspect of programmes and this is liable to lead broadcasters to transmit programmes that are sub-optimally skewed towards entertainment and away from information. The same logic applies to the editorial content of programmes and the bias in this direction will be reinforced when consumers seek out self-serving beliefs (see Mullainathan and Shleifer, 2004) and/or when television companies are owned and operated in part to peddle influence (see Djankov *et al.*, 2003).

Table 3. The profitability of news and current affairs

	BBC1	BBC2	C3	C4	C5
Average 'profits'/hour	0	0	194k	25k	9k
'Profits'/hour of news	-17k	-17k	129k	-16k	-9k
'Profits'/hour of current affairs	-59k	-71k	13k	13k	6k

Source: David Graham and Associates (2000). 'Profits' = the contribution to overhead costs for non-BBC broadcasters.

I present three kinds of evidence here to suggest that these are not simply theoretical concerns but are supported by what we know happens in practice in one market, the UK (see Prat and Stromberg, 2004, for some evidence on the effect of competition in Sweden on information provision). The first, given in Table 3, comes from a study by David Graham and Associates (2000) on the relative profitability of different programme genres. They correctly acknowledge that there are enormous difficulties with the calculation of these figures. Nevertheless, they provide some indication. In particular, they suggest that 'news' and current affairs programmes yield *below* average profits in Channels 3, 4 and 5 (C3, C4 and C5) and in the case of the BBC, the share of news programmes costs in total costs exceeds their share in the BBC audience figures (both in the aggregate and for each channel separately). Thus, one might expect that the pursuit of a simple commercial objective would lead to a reduction in news and current affairs programmes. In fact, this has already happened with current affairs programmes. They are not covered by the same kind of specific PSB requirement as the news and it seems broadcasters have simply responded to the facts on profitability by cutting the amount of time devoted to such programmes.

Of course this does not mean that an unregulated market would produce sub-optimally low levels of information. It suggests only that less information would be produced than is the case now, but we do not know that the 'right' level is being produced at the moment. It may be difficult to believe that having virtually no current affairs programmes in prime time is optimal, as is the case now; but what about the 'news'? Is there any evidence that the dismantling of the specific PSB requirement in relation to the news would make matters worse?

There is survey evidence which, while not precisely addressing this question, suggests that the existing PSB regulation of the broadcasting market has created a significant and uniquely trusted form of news provision on television. This is the second type of evidence.

Surveys suggests that 65% of the population use television as their main source for the news in the UK, whereas only 15% regard newspapers as their main source (see Hargreaves and Thomas, 2002). So any information failure in broadcast news is especially worrying. Moreover, as Table 4 suggests, the BBC and ITN are 'trusted to tell the truth' by an extraordinarily high proportion of people, compared both with the level of trust in newspapers and with other news broadcasters, like Sky, who are not covered by a PSB remit in relation to the news. (C5 is an intermediate case both

Table 4. Trust in the news

Percentage who trust . . . to tell the truth							
BBC	ITV	C4	C5	Skynews	Guardian	Sun	Internet
91	89	80	59	37	28	10	22

Source: Hargreaves and Thomas (2002).

Table 5. The content of news programmes

Year	1975	1980	1985	1990	1995	1999
Average % time on 'tabloid'	16.2	19.4	23.3	9.2	18.1	28.9
Difference from average of . . .						
BBC 6pm	-2.2	-0.6	+2.6	-2.7	-1.1	0
ITV Early	-0.8	+3.2	+8.9	+9.5	+11.4	+4.1
BBC 9 p.m.	0	-2.3	-0.7	-4.3	-4.9	-15.6
ITV 10 p.m.	-1.4	-0.5	+1.6	+1.7	+8.0	+13.2
C4			-12.2	-4.1	-13.3	-18.3
C5						+16.7

Source: Barnett *et al.* (2000).

in terms of trust and PSB regulation as, unlike C3 which uses ITN for its news programmes, C5 is not required to have an independent producer of its news programmes.) So the television news in the UK is considerably more important than newsprint, and the fully PSB regulated news programmes enjoy trust levels that are of a different order of magnitude from those found in the unregulated part of the news market. The comparison with the US is also instructive because the PSB influence over network news has been steadily declining over the last 15 years. This period has seen those who 'regularly watch' the television news drop from 60% to 30%, and the 'credibility rating' of television network news is now the same as that of newspapers (see Pew Centre, 2000).

Lastly, there is evidence from the content analysis of news programmes that the bias against information has grown worse as competition has increased. The point here is that the PSB regulation requiring news programmes to be transmitted still leaves broadcasters a choice over what news items to include within their programmes. Thus, when there is a potential bias of demand towards entertainment and competition intensifies, one might expect that a commercial broadcaster will shift stories, in so far as this is possible, in the entertainment direction; and this seems to be what has happened.

Table 5 sets out the content analysis of news stories undertaken by Barnett *et al.* (2000) for a sample of bulletins at 5-yearly intervals between 1975 and 1999. They distinguished news stories in a variety of ways. The one presented here turns on a three way classification between 'broadsheet', 'tabloid' and 'foreign' stories where 'broadsheet' covers politics, economics, health, education, environment, transport and

culture, and 'tabloid' has crime, consumer, sport, royalty, weather, showbiz, animal and expeditions. Ordinarily the implications of any putative 'tabloidization' would be controversial. But in this context, where the concern of citizens is with living in a well-informed society, it is rather more clear cut since few would doubt that, for instance, political institutions run better when the electorate is familiar with what is going on in the economy, with social policy, etc., rather than with the fact that, say, some dog has managed to climb Mount Everest with a bone in its mouth.

There is a problem with interpreting the absolute amount of time devoted to each type of story because this depends in part on whether there are important stories in each category and this is bound to vary across time periods. For this reason, I present their data in a slightly different way. I show the average percentage time devoted to 'tabloid' stories in all bulletins and then, for the purposes of cross broadcaster comparisons, I detail how each particular news programme differs from that average.

Given the dip in the proportion of time devoted to 'tabloid' stories in 1990 (and to a lesser extent 1995), it would be difficult on the basis of a simple scan of this data to claim that there is an unambiguous tendency towards greater entertainment in these figures. Nevertheless between 1975 and 1999 the proportion of time devoted to 'tabloid' stories nearly doubled and there seem to be good reasons for treating 1990, and to a lesser extent 1995, as blips. The supply of 'broadsheet' and 'foreign' news stories was quite exceptional in 1990. For instance, there was the collapse of the USSR, the poll tax, the release of Nelson Mandela, the reunification of East and West Germany and the Iraqi invasion of Kuwait. And to a lesser extent the same applies to 1995 as there was the conflict in Bosnia, the siege of Sarajevo and the Dayton peace accord, the assassination of Rabin, the challenge to John Major's leadership and the Oklahoma bombing.⁶

4.2. Behaviour externalities in consumption

One does not have to be a follower of Mary Whitehouse to believe that people's behaviour may be affected by watching some kinds of programmes (e.g. see Sancho and Wilson, 2001, on the influence of stereotyping in advertisements). This is another kind of consumption externality and it can occur in two ways. First, watching programmes that are excessively violent or pornographic may help legitimize the use of violence in social relationships or the treatment of women as sexual objects, because the anticipated social disapproval of such behaviour is reduced when it is made to appear normal in television broadcasts. Second, such programmes may contribute to

⁶ What is also revealing in these figures is the way that the market for news has become segmented. The advent of more news broadcasters has led, just as might be expected on theoretical grounds, to product differentiation. In the early evening news slot, there was very little difference in this respect in 1975 and 1980 between the BBC and ITV and likewise in the late evening one. All offered a similar mix of news stories. But by the 1990s the early and late evening ITV news and C5 had become noticeably more 'tabloid' than the average, BBC remained close to or moved away from tabloid while C4 was markedly less 'tabloid' than the average. In short, diversity developed in the 1990s.

a change in the underlying preferences for such actions, with similar effect. Whichever is the case, violent and boorish actions impose a cost on the objects of these actions which is not taken into account by those who produce and consume programmes in the first place. The existence of such effects is not implausible, particularly in relation to children's programming. What is more controversial is the magnitude of such external effects in broadcasting, and hence the extent to which standards of 'public decency' should be enforced through some form of regulation. There is some evidence, however, that violence, for instance, has been increasing on television as the market has become more competitive (see BBC/BSC/ITC, 2002).

4.3. 'Merit' goods and the underproduction of horizon stretching programmes

'Merit or de-merit' goods are those which, once consumed, change one's preferences beneficially or adversely in a manner that is not recognized at the time. The sense here in which this is beneficial/adverse is entirely personal, and so contrasts with the argument regarding the external effects of preference change in Section 4.2. The claim here is that there are some transforming experiences which enable one to lead a richer and fuller life, or the reverse. The problem arises with individual choice over both types of goods when the individual does *not* realize their transforming potential so does not take this into account when choosing what to do. Consequently they tend to underconsume the 'merit' goods and overconsume the 'de-merit' ones.

If such endogenous preference formation does occur unnoticed, then the under/over consumption of these merit/demerit goods provides a *prima facie* argument for public intervention. There is, however, a tricky practical issue concerning how the authority conducting such intervention could know what these merit goods are. It is a premise in most liberal societies that no one can know what might be best for another individual; only the individual can know this. So if individuals don't know what is best, as in the case of merit/demerit goods, then it is not obvious that anyone else is in any better position.

Children are a probable exception to this suspicion over paternalism in liberal societies. There is an argument in the PSB literature, however, that 'horizon stretching' programmes are an example of a merit good which could be promoted without attracting the opprobrium of paternalism.

The advantage of claiming that 'horizon stretching' programmes are merit goods is that few people would probably disagree that 'horizon stretching' is a good thing. The disadvantage is that, precisely because this attribute is not in dispute, it is not obvious that this will go unrecognized by individuals and so turn these types of programmes into merit goods. It is not obvious, for instance, that we are not aware of this process of preference formation and so develop a taste for novelty to which markets are perfectly capable of responding. There is some evidence, however, of a general 'projection bias' whereby we exaggerate the degree to which future tastes will resemble current ones (see Loewenstein *et al.*, 2003). There is also a reason for

supposing that this might arise especially in relation to television viewing rather than other activities: a significant proportion of television viewing occurs when we are tired and this is not when our critical faculties are usually at their keenest. So even if, in general, we do value challenging, 'horizon stretching' experiences, we might be prone to overlook their value when we watch television for reasons of tiredness which incline us to the familiar.

It is possible to argue differently in favour of PSB intervention to support 'horizon stretching' programmes. Instead of claiming that such programmes are merit goods, it might be thought that their consumption generates positive external effects for others. Thus while people recognize that watching such programmes changes their preferences beneficially, something they take into account when deciding whether to watch them, they do not take account of the way that these changes affect their behaviour in ways that are positively experienced by those with whom they interact. I benefit, in other words, when I interact with someone who, in some sense, has a 'broader mind' as a result of watching 'horizon stretching' programmes. In this way, 'horizon stretching' programmes fall under the externalities argument in Section 4.2 for PSB intervention.

Whichever argument is used, the absence of any measure of the extent to which programmes are 'horizon stretching' means that it is not possible to judge the significance of this potential failure to underproduce these programmes nor whether the degree of failure has been influenced by the recent increase in competition.

4.4. Poorly defined property rights and the 'biases' of decision making under uncertainty: innovation and risk taking in programmes

Making television programmes is a risky business because nobody knows how a programme will be received. 'All hits are flukes' is the way that the Head of Entertainment at CBS put it when discussing TV drama series in the US (see Bielby and Bielby, 1994); and it means that the industry is characterized by extreme uncertainty. Of course, other industries also suffer from risk. Research and development activities in most industries are also very risky, for example. Indeed, fewer R&D ideas probably turn into successful products than do programme ideas. The difference, though, that makes any potential failure in relation to such uncertainty particularly noteworthy in broadcasting is that almost every programme is a new good. So whereas for most industries there is a bedrock of existing products that help offset in the aggregate the risks associated with new product development, in broadcasting relatively little income/audience comes from showing or selling old programmes. Broadcasting is for this reason exceptionally risky, so if there are problems in relation to risk taking they are liable to be particularly pressing in broadcasting.

There are ways of managing this risk. Single dramas are more risky than an episode in a soap because people get locked into watching a soap. Dramas in well-known formats, such as the crime/detective story or the hospital saga, have a more

predictable audience than, say, plays about minor members of the royal family. This is for the understandable reason that once a format becomes well known, the writers can focus on the drama of the story; whereas when the format is less well known, writers have to spend more time on the staging of the action rather than its dramatic content. The same point applies to light entertainment programmes: sitcoms set around the family are more familiar and safer than those set around, say, a book club. Thus the format and thematic content of programmes are aspects that affect risk and which can be managed by broadcasters. The choice of actors, writers and directors also impacts on the risk of the programme. A drama or a sitcom by writers with established reputations and with well-known actors is less risky than those with new writers and unknown actors.

This scope for managing risks in a market where there is uncertainty raises a question which is particularly salient in this instance because of the extreme nature of the uncertainty which comes from almost all programmes being new products: would a broadcasting market left to itself take sufficient risks? Would it innovate enough?

There are three potential causes for concern here. One is straightforward and arises because property rights in new ideas are imperfectly protected by the copyright system, so the full social benefits of coming up with a completely new programme idea are not enjoyed by that programme originator. The others, that I discuss now, stem from the growing body of experimental evidence on how people make decisions in such uncertain settings (see Sutherland, 1992, for a survey).

First, there is evidence of excessive sensitivity in the assessment of someone or something to its most recent performance or behaviour – excessive that is, relative to what would be indicated by a Bayesian updating of belief (see Rabin, 2002). This tendency has been notably used in the behavioural finance literature to help explain some of the well-known anomalies in financial markets (see Shleifer, 2000) and it could create an analogous innovation ‘anomaly’ in the television market. In particular, it could cause less innovation in programme making than would otherwise be the case.

The point here is that a more innovative programme is by definition less familiar and so is likely to require more time to build an audience than a less innovative one. The British television comedy series *Blackadder* is a good example of this. It was plainly innovative and its first series was a disaster in terms of audience. Nevertheless, the audience grew in later series and it became one of the classic British comedies. In this context, if broadcasters are excessively sensitive to the most recent audience figures of a new series, then they will have a bias against more innovative programmes simply because these programmes take longer to build an audience. In other words, the worry is that a broadcaster in a market left to itself might never have commissioned the second series of *Blackadder*.

Second, ‘conformism’ is a response to uncertainty. We tend to seek safety in numbers by doing what others do when there is uncertainty; and programme makers are no exception. It is an old adage among hacks that ‘you can sack one journalist but you cannot sack them all’. The implication is that you are safe if you’re doing what

everyone else is doing, and it helps explain why journalists famously hunt in packs. Although there is a practical reason why the editor cannot fire all journalists (and still get the newspaper out), it also speaks to a fundamental problem: how to judge actions taken when there is considerable uncertainty. Was a bad programme due to bad luck or bad judgment? In such cases, it is not surprising to find that an individual finds their actions compared with that of others. The others become a benchmark for what might 'reasonably' be expected in uncertain conditions and this will encourage any risk-averse individual not to stray too far from what the others are doing.

'Conformism' also operates on the demand side of the market and it can reinforce the earlier argument over the difficulties that arise from the better early success of familiar as opposed to innovative programmes. This kind of 'conformism' exists because programmes are watched not only for their immediate entertainment, enjoyment, education, etc., but also for the material they supply in later conversations (see Boardman and Hargreaves Heap, 1999). Indeed this is exactly the way that the BBC markets *Eastenders* under the banner of 'Everyone's talking about it . . .' and it is known as the 'water cooler' effect in the US. This conversational use of programmes nudges people who belong to the same social circle towards watching the same ones for the simple reason that discussions of this sort are only really possible when the parties have seen the same programmes.

Such network effects are not unusual in the economy and are well known to create possible inefficiencies. In this context they are worrying because the bandwagon process whereby demand is concentrated on a few programmes seems likely to favour the least innovative. This is because a bandwagon is more likely to roll in favour of a programme that gains a high initial audience than one that does not, and the highly innovative programmes are the least likely ones to do well at first (see Hargreaves Heap, 2002, and Caves, 2000).

Against these theoretical arguments, there is one suggesting an opposite tendency towards creativity in television broadcasting. This is what Caves (2000) refers to as the 'art for art's sake' phenomenon. People are attracted to this industry precisely because it offers exceptional scope for the exercise of creative talent; and as a result they tend to be among the most creative in the economy. Thus whatever the anti-innovative distortion at the level of individual decision making, they may be offset in some degree by a selection bias whereby it is the more creative and innovative who work in the industry in the first place.

Evidence on the play between these theoretical arguments is difficult to come by. The difficulty is that one can pick almost any two critics at random and they are likely to come up with opposing views on this question. There is, however, one systematic study of the way that drama programming has changed over the last 20 years in the UK that does throw some light on the issue (see Hujanen, 2002, for a study of scheduling strategies in Finland that draws similar conclusions). It is by Barnett and Seymour (1999) and comes in two parts. First they interviewed a variety of producers and executives on the state of British television drama and current

Table 6. The changing content of drama

	All TV			BBC			ITV			C4		C5
% drama	77/8 23	87/8 10.5	97/8 17	77/8 19.5	87/8 12	97/8 15	77/8 31	87/8 18	97/8 26	87/8 14	97/8 12	97/8 15
Format												
Single	22.9	10.9	10.9	27.9	9.1	12.3	16.6	8.7	10.4	16.7	11.5	8.8
Series	47.4	51.8	63.8	34.3	48	62.4	64	70.4	60.8	35	50.7	82.5
Serial	29.7	31.2	21.4	37.8	28.6	18.9	19.5	21	28.8	48.3	37.8	—
Continuing (Soap)	— (10)	6.1 (20.4)	3.9 (29)	—	14.4 (10.6)	6.4 (12.7)	— (19.9)	— (32.7)	— (34.3)	— (16.6)	— (41.8)	8.8 (32.3)
Theme												
Police/Crime	27.4	25.5	31.6	18.9	16.2	12	38.2	44.4	44.9	17.3	33.5	45.9
Medical	—	6.8	5.7	—	5	4	—	—	4.1	18.3	20.1	—
Legal	—	2.5	4.6	—	—	—	—	8	4.1	—	10.5	9.5
Animal	1.8	2.1	0.9	3.1	5	—	—	—	2.8	—	—	—
Historical	14.2	18	12.2	20.8	6.7	11.6	5.8	13	13.3	43.3	26.3	—
War	10.4	4.5	—	12.1	10.5	—	8.1	—	—	—	—	—
Political	3.4	1.3	—	6.1	—	—	—	4	—	—	—	—
SciFi	4	4.6	14.5	5.1	10.7	38.3	2.6	—	2.8	—	—	—
Comedy	4.3	6.3	1.4	7.7	13.9	3.9	—	—	—	1.3	—	—
Adventure	6	0.6	4.5	—	—	—	13.6	2	—	—	—	24.7
Thriller	2.9	5	6	1.5	3.7	6.6	4.7	10.7	11.7	—	—	—
Relationship	11.6	9.5	9.4	4.8	16	13.4	20	2	—	7.9	9.6	17.5
Other	14.2	13.4	8.8	19.8	12.4	10.2	7	16	16.5	11.9	—	—

Source: Barnett and Seymour (1999).

affairs and how it had changed over the decade since 1977 and summarized their views through a series of illustrative comments. This is the period where competition in broadcasting has grown with the advent of C4, C5 and the satellite and cable channels and the results support the concern over an emerging lack of innovation.

Second, they conducted a quantitative analysis of the content of drama programmes and I reproduce part of their work in Table 6. It distinguishes between the format and theme of drama programmes in a sample period of peak time viewing in three separate years spanning the period from 1977/78 to 1997/98. The drama figures exclude soaps, but the study did separately compute the volume of soaps as a proportion of the drama plus soaps output; these figures are given in parentheses in the last row of the format section.

With respect to formats, there is a shift from single plays to series and soaps. Since I have argued that soaps (and series) involve fewer risks than single dramas, this suggests there has been reduced risk taking. With respect to themes, the proportion of output accounted for by Police/Crime, Legal and Medical has risen from 27.4% to 41.9% and this may seem to point to an increasing concentration on the themes that are most familiar, but the data needs careful handling. Other formats that are also probably familiar, like adventure and comedy, have actually been in decline.

Thus there is some evidence to indicate that the growth of competition has been associated with reduced risk taking in the drama genre. There is also some evidence

that one aspect of the mechanism sketched here has been increasingly operating in related industries which suffer similar problems of uncertainty. It appears, for instance, that the time a film is given to achieve the threshold audience which prevents its removal from the screens has grown shorter (see 'Won and lost over the weekend', *The Economist*, 29 November 1997). Nevertheless the evidence here is at best indicative because it is indirect. It would be much better if there were more direct measures of risk taking that could not only be applied to any theme or format but also to any genre of programme. I take up this issue in Section 5.

4.5. Monopolistic competition

The fixed costs of making and broadcasting a programme are high compared with the variable ones and this creates significant economies of scale which can form a barrier to entry even when conditions of entry are in all other respects free. The resulting market will be characterized by monopolistic competition, and it is well known that such markets can fail (see Dixit and Stiglitz, 1976). Goods that are particularly highly valued and where the fixed costs of production are relatively high may not be produced even though their production would be a Pareto improvement. The problem here arises because, although the strength of preference translates into sufficient willingness to pay in the aggregate to make the good profitable, there is no mechanism for varying the price charged to each consumer so that those who really value the commodity and would be willing to pay a higher one do so.

This type of failure is likely to be exacerbated in television markets by the fact that most programming is funded through advertising (see Spence and Owen, 1977, for the original discussion of this; Anderson and Coate, 2003, for a recent review of the arguments in a more complex setting; and Berry and Waldfogel, 1999, for an analysis of the welfare effects of free entry with advertising in radio). The additional difficulty occurs because advertising tends to generate income simply on the basis of numbers watching; whereas when competition occurs over price and the price varies between programmes, the income from a programme depends partly on the intensity of preference of those watching as well as their numbers.

Although the welfare comparison between advertiser and price-funded markets is complicated by the fact that advertising may itself (or may not) contribute to welfare, both systems could underproduce a certain kind of highly valued programme. Does this provide grounds for a PSB intervention?

The broadcasting industry is not immediately obviously different in this respect. Many industries enjoy economies of scale and so operate with some form of monopolistic competition where this problem can arise. So, why pick on broadcasting? One line of argument here turns on the identification of the programme types that might fail for this reason. Some Arts programmes, like live classical music or theatrical productions are thought to be candidates, and they are particularly important in this context because they are also the programmes that are likely to connect with two

Table 7. Programme spend and audience share

1999 (%)	BBC1	C3	Sky	BBC2	C4	C5	GMTV	Others
Share of programme spend	22.5	22	16.4	15.2	10.4	3.2	1	9.2
Share of audience	26.5	29	5	11.8	10	5	1.2	9

Source: David Graham and Associates (2000).

earlier sources of failure, to generate positive consumption externalities and to fall in the category of a 'merit' good.

The actual evidence to support this is rather sparse. There is, however, some evidence on what programme genres might be threatened under an unregulated market. The David Graham and Associates (2000) study referred to in the discussion of news and current affairs identifies three further programme genres where all broadcasters except for BBC 1 currently make a loss or below average profits. They are: Music, Arts and Religion. Hence, if preferences for these programme types are really very intense and people would be willing to pay high sums, as is sometimes conjectured, then there could be a case for their PSB promotion. But there are some considerable 'ifs' in this argument and this is really another area where there is a desperate need for further evidence.

4.6. Monopolistic competition with endogenous fixed costs and 'home' programming

Sutton (1991) has argued that in industries where the quality of a product can be influenced through a choice of how much to spend on the fixed costs of production, the level of fixed costs becomes endogenous to the process of competition. Television would seem to be a case in point. There is evidence of this interaction in what Motta and Polo (1997) refer to as one of the stylized facts of the television broadcasting industry: the close correlation between programme spend by a broadcaster and its market share. I reproduce in Table 7 some research on this for the UK television market by David Graham Associates (2000) that was done for the Department for Culture, Media and Sport. With the exception of Sky, that was building its audience in 1999 through large expenditures mainly on sports programmes, there is a very close association.

The endogeneity of fixed costs has important implications for what may happen as the television market becomes more competitive (see Motta and Polo, 1997, for a full discussion). In an industry where fixed costs are exogenous and where products are differentiated, we would expect that if a constraint, like spectrum scarcity, is gradually relaxed, then broadcasters (either existing or new ones) will start to make new types of products and so fill out the product space. The extent to which this happens depends on the size of these fixed costs in relation to size of the market as a whole.

Table 8. Concentration in broadcasting

Audience share of . . .	UK	France	Germany	Italy	Spain
Top broadcaster	24.5	32.7	14.6	23.7	25.6
Top 2 broadcasters	47.4	53.2	28.9	46.4	45.7
Top 3 broadcasters	58.9	69.9	42.8	60.1	65.7
Top 4 broadcasters	68.6	82.7	56.1	70.8	73.1
Typical spend per 1% audience share	€50m	€18m	€40m	€25m	€17m

Source: www.worldscreen.com/eurodata.php for audience share in 2002/03, Oliver and Ohlbaum (2003) for typical spend figures.

In a market with endogenous fixed costs, however, this process of differentiation is attenuated by competition over quality. There is, in effect, another way for any broadcaster to capture audience as competition intensifies. It is not just a matter of pitching into some part of the product space that has hitherto not been well served. The broadcaster can also gain audience by improving the quality of their existing products. There are typically multiple potential equilibria in such industries and so the actual outcome in any market of this type is liable to depend critically on the precise history of competition within it. For instance, Oliver and Ohlbaum (2003) argue that the relatively high level of programme expenditure by the BBC has encouraged commercial broadcasters in the UK to what are by European standards high programme spends.

Thus the growth of competition in television may not only see the proliferation of types of broadcasters. It may also encourage greater expenditure on programmes in ways that are mediated by the presence of PS broadcasters. There seems to be no reason for supposing that all television markets will end up with the same mix of diversity and quality. Again, there is some evidence to support this from a cross-European comparison of the industrial structure that is emerging under the influence of increased competition, see Table 8. Almost all countries in this table had a similar early pattern of development with initial domination by PS broadcasters followed by the gradual introduction of additional commercial broadcasters and although the industry remains highly concentrated in 2002/03, differences are emerging in the degree of concentration and in the typical programme spend by a commercial broadcaster. There is no obvious inference to be drawn from this with regard to how welfare might vary between the multiple equilibria of such a competitive process, since quality is being traded off with diversity and there is no reason to suppose these tradeoffs should be the same in different countries. There is, however, another aspect to how a free market in television programmes might function as a result of this connection between quality and the level of fixed costs where there could be important welfare consequences. At the moment there are PSB 'home' production quotas in all EU countries and if these were removed, there could be a significant growth in audiences for US programmes in Europe. This is because US programme makers

Table 9. Programme budgets of commercial broadcasters

	NBC (US)	SAT1 (Germany)	TF1 (France)	C3 (UK)	Canale 5 (Italy)	Antenna 3 (Spain)
Programme budget	€2865m	€580m	€692m	€1234m	€522m	€350m

Source: Oliver and Ohlbaum (2003).

Table 10. Relative profitability of acquired programming

	BBC1	BBC2	C3	C4	C5
Average 'profits'/hour	0	0	194k	25k	9k
'Profits'/hour of 'acquired' programmes	71k	40k	151k	47k	19k

Source: David Graham and Associates (2000). 'Profits' = the contribution to overhead costs for non-BBC broadcasters.

have much higher programme budgets than do European programme makers both because of their large home market and because they spend more per person on programmes than do their European counterparts (see Table 9 where with the exception of SAT1 which is the second largest, the programme budgets of the largest commercial broadcasters are reported). These differences give US programme makers a significant competitive advantage over quality in European markets.

Of course, US programme makers suffer the disadvantage of having programmes to sell in European markets that are 'culturally' strange both in setting and language, so the quality advantage need not necessarily lead to US programme growth if markets did become free. The evidence on the relative profitability of programme types in the UK when distinguished according to their production source does suggest, however, that this is the likely outcome in an unregulated market. Table 10 shows that 'acquired' programmes (those purchased from abroad, mainly the US) are the most profitable source of programming, except for C3; and the exception of C3 may not be typical as an earlier report for 1994/95 found that 'acquired' programmes were the most significant source of 'profit' for that channel. In addition there is evidence from the differences in the proportion of 'acquired' programmes between broadcasters that supports this contention. Those channels with less stringent home quotas rely on more 'acquired' programming than do those with more stringent quotas. Thus C5, with a home quota of 50% imports 42%, while C4 with a home quota of 65% imports 33%.

Although there are no similar estimates of relative profitability for other countries, the evidence on the relative cost of original programming in those countries strongly suggests that a free market would lead quite widely to more US programming (see Table 11). For the reasons suggested earlier this prospect is not necessarily worrying since it merely reflects the working out of a competitive process where quality is traded off for other attributes. But it can become a problem if there is a 'citizenly'

Table 11. Relative programming costs of original versus acquired

	ZDF (Germany)	France 2 (France)	BBC (UK)	RAI (Italy)	RTVE (Spain)
Original programming cost as multiple of purchased	3.8	2.0	3.1	4.3	2.0

Source: Screen Digest.

desire for living in a society with a culture that aids reflexivity. This is one possible reason for why the promotion of national cultures has been treated as one of the objectives of PSB; if US originated programmes offer less opportunity for European societies to reflect upon themselves, then the penetration of US programmes would be worrying.

The potential problem here is exactly the same as that discussed in Section 4.1 in relation to information. British people, for example, may all value the way that UK programmes supply a better resource for reflecting on their society than US ones, but whether a programme is a vehicle for such cultural reflection depends on whether a lot of people watch it and by definition a single individual's decision cannot affect this. The individual is simply too small in relation to the aggregate. Thus individuals will quite rationally not take the citizenship side of a programme into account when deciding whether to watch it, even though they value it, because their individual decision has no material influence on this aspect of a programme's contribution. This wedge between the private and social benefits of watching home programming can as a result lead to the underproduction of those programmes.

5. PSB PERFORMANCE INDICATORS

It will be plain from the discussion in the previous section that the assessment of whether there are, or are likely to be, significant market failures in an unregulated broadcasting market is hampered by the absence of good measures of those aspects of programmes where failure is a theoretical possibility. In addition, if there is to be (continuing) intervention in the television broadcasting market, then there have to be ways of phrasing PSB objectives so that it is possible to judge the extent to which the particular form of intervention is successful in realizing those objectives. Otherwise regulation will be impossible. For these reasons, the development of PSB performance indicators is crucial.

In this section, I consider what performance indicators might be associated with each of the failings identified in the previous section. *Each of these indicators is imperfect* and this is important for the argument in Section 6. For now the claim made on their behalf, especially where they are new, is that they provide some indications of the extent to which programmes might have achieved various PSB objectives, and some indication is better than none.

5.1. Information provision

This can be measured in a quantitative sense through the hours and timing of news and current affairs programmes; this is now how the PSB requirement is often phrased, at least with respect to the news on terrestrial television. The qualitative aspects of what stories get covered and how they are treated within these news programmes are not touched by these measures, yet these are important respects in which the market might fail. To check on the possible bias towards entertainment, an analogous target for the proportion of ‘tabloid’ news stories might be set, but this is unsatisfactory for the reason mentioned above: the proportion depends in part on the relative supply of each type of news story. The use of a target for the maximal permissible deviation from the average of all broadcasters would in part remove this problem but would not detect a wholesale shift towards more entertainment.

Another approach in relation to certain areas of reporting like health has been to look for a closer matching between the level of reporting and the quantitative significance of the relevant event (see Harrabin *et al.*, 2003). For instance, over the year 2000/01, there were 8571 deaths from smoking in the UK per news story on the BBC. This compares with 7500 obesity deaths, 19.6 AIDS deaths, 0.33 vCJD deaths and 0.25 measles deaths per BBC news story. Such differences may seem anomalous but deaths from smoking are in some sense *not* ‘news’. Hence it is not obvious that such targeting is appropriate for the news, although it might more helpfully be applied in relation to current affairs.

A better approach to the extension of quantitative requirements is to monitor directly the attributes of the news and current affairs programmes that seem at risk. Thus, in the case of the bias towards editorializing, the surveys on whether people ‘trust’ each broadcaster ‘to tell the truth’ could be used. These already exist in some countries and an analogous survey could be conducted on whether people ‘feel well informed’ as a result of watching a particular broadcaster to check on the bias towards entertainment.

5.2. Standards of ‘public decency’

It is not surprising, given the controversy over what are the relevant standards which need upholding, that the approach in most countries has been to rely on a procedural mechanism rather than some substantive list of ‘dos’ and ‘don’ts’. Some broad guidelines like the 9 o’clock watershed can be sensibly articulated but rules, like ‘couples should not touch each other on a bed without having their feet on the ground’, seem bound to miss the point and only encourage a peculiar kind of ingenuity. As a result the usual mechanism is a complaints procedure which involves a jury style judgment over whether standards have been upheld in particular cases.

5.3. ‘Horizon stretching’

The approach proposed here for identifying the extent to which programmes stretch horizons turns on the way that advertisers, at least, segment audiences in terms of

age, sex and socioeconomic status and sell programmes in these terms. This method of segmentation suggests that audience tastes are correlated with their age, sex and socioeconomic status. If this is the case, then it seems that programmes which attract a *relatively* diverse audience along the dimensions of age, sex and socioeconomic status are likely, *ceteris paribus*, to be stretching some part of the audience's horizons. The 'relative' term here is crucial to this intuition because it is only when a programme attracts an unusual audience range compared with what programmes of that type normally attract that it seems likely that some part of the audience has had their horizon stretched.⁷

The other key part of this sentence is the '*ceteris paribus*' clause; and this poses a difficulty. The diversity of an audience for any programme does not just depend on its ability to stretch some group's horizons. Some programmes intrinsically appeal to a wider audience. Drama series, for instance, typically attract a wider audience than arts programmes. So '*ceteris*' cannot generally be assumed to be '*paribus*'. If, however, we assume that the difference in genre is the major other reason why audience diversity varies across programmes (e.g. the drama series versus the arts programme), then the comparison of diversity *within* programme genres would be an approximate measure of the extent of horizon stretching. This is the basis of the measure proposed here. It is formalized in Appendix 1 where two approaches are offered to the problem that the relative influences of the sources of variation in taste (i.e. age, sex and socioeconomic status) are not known.

One approach assumes nothing and simply identifies those programmes within a genre as 'horizon' stretching when they have an audience that is in the top 'X%' with respect to the variance of *all* the taste variables (i.e. age, sex and socioeconomic status) for programmes in that genre. Once identified, the extent of horizon stretching is then measured by the size of the audience on these programmes. The alternative assumes that the influence of each taste variable on the variance of the underlying tastes is the same for all programmes in a particular genre. So the average amount of horizon stretching can be calculated for each programme by summing the coefficients of variation of each of the taste variables for that programme and when this is multiplied by the size of the audience, there is a measure for the extent of horizon stretching for each programme within that genre.

5.4. Innovation

Measuring the extent of innovation in programme making looks tricky because any such assessment seems bound to be subjective and consequently mired in differences of opinion. I propose a way of sidestepping such disputes here that turns on the idea that innovation is associated with risk taking and the extent of risk taking is revealed

⁷ The more direct approach of looking at whether someone who, say, never normally watches a gardening programming is persuaded to watch one is not going to be possible because of the absence of data on individual viewing habits.

in the variance of outcomes. In other words, more innovative strategies in programme making are riskier than less innovative ones and will be associated with a higher variance in audience outcome than the less innovative ones.

As before, the intuition is complicated by the fact that a broadcaster's variance in audience depends on several other factors. First there is the effect of innovation by others. Innovation by any broadcaster adds to the variance in all others, so some part of a broadcaster's variance is due to the innovation of others. Some assumption has to be made about these effects. In Appendix 2 where this idea is formalized, I show that, provided these cross broadcaster effects are symmetric, the extent of innovation will be captured by the variance of a broadcaster's audience compared with the average variance of all broadcasters.

Second, a particular broadcaster's audience in a class of programmes can vary because the budget for individual programmes within that class itself varies. As we have seen, programme expenditure is closely related to audience share and so any variation in expenditure on individual programmes is bound to lead to audience variation. If innovation were simply judged by variance in audience share, any broadcaster could always satisfy this 'innovation' performance standard by increasing the variability of the spend on programmes. In other words, a broadcaster could cut expenditure on some programmes and boost it on others; given the relation between programme spend and expected market share this would add to the overall variance of outcomes. If, however, expenditure changes are linearly related to audience changes, then such redivisions of the budget should not have an effect on overall audience share. In comparison, variance which arises from greater innovation should be associated with a higher average audience share. This might seem to suggest a simple addition to the variance test: does the broadcaster's audience share exceed that predicted by its expenditure share?

The difficulty with this addition is that it is subject to a similar criticism as the simple variance test. A particularly good audience share relative to expenditure could be due to the quality of decision making as much as a relatively high level of innovation. Nevertheless if the two statistics are combined to form a dual test, we are in a better position to judge whether a particular broadcaster innovates more than other. Thus there are two aspects to the performance indicator proposed here on innovation.

1. Is the broadcaster's variance in audience share greater than others?
2. Is the broadcaster's audience share greater than that predicted by its expenditure share?⁸

Passing the first condition means that the broadcaster has either innovated more and/or varied expenditure more than others. Passing the second means that the broadcaster has either innovated more than others or made relatively better decisions.

⁸ It will be evident that expenditure shares for PS broadcasters may have to be adjusted to remove the influence of any other PSB objective in this test.

Consequently a broadcaster could pass both tests if they were a relatively high innovator, but equally they might have both made relatively better decisions and varied programme expenditures. But the latter seems rather unlikely since it is difficult to understand why a broadcaster that makes 'better decisions' would choose to vary expenditures to achieve variance in audience shares when greater innovation would achieve the same result and also raise the average audience. Thus relatively high innovation is more likely to pass the combined test. Ockham's razor considerations point in the same direction: the simpler of the two possible explanations for passing both tests is that the broadcaster is a relatively high innovator.

5.5. Intense preferences

If evidence supports the idea that there are particularly intense preferences for music and the arts, then a natural if imperfect performance indicator is the number of hours devoted to such programmes in prime time.

5.6. Home country subject matter

There are several difficulties associated with the definition of what contributes 'home' subject matter. The practice has been to associate it with 'home' production (that is programmes actually made by UK companies), but in an environment where programmes can be co-funded and made with one eye on their appeal to the North American market, this is not entirely satisfactory. Nevertheless, it is a simple measure and remains serviceable.

6. PUBLIC SERVICE BROADCASTING REMEDIES

In this section I shall consider which of the two broad types of PSB intervention is appropriate for the failures identified in Section 4.

Both selective and general kinds of intervention directly affect the supply of programme types to the market and, as remedies, they can be related in a multi-channel world, at least in principle, to whether markets are likely to fail for reasons affecting demand or supply. If the source of a market failure is something on the demand side, like the possible negative externalities associated with watching excessively violent programmes, then in a multi-channel world there is little or no sense in addressing this problem through a targeted supply side intervention (via a dedicated PS broadcaster or an Arts Council of the Air). A dedicated PS broadcaster cannot address this failure by doing something different in their own programming (such as producing less violent programmes) because the excessive demand for these violent programmes would simply be met by other broadcasters in a free market.

The natural or usual approach to this type of failure is to use a tax on the good in question to internalize the externalities. But, since most programmes are not *individually*

priced, this is not feasible in television. Of course, some channel *packages* are priced, but with the exception of a few sporting events, individual programmes are not separately priced, so there is no relative price of individual programmes to manipulate. This may change in the future but it is unlikely over the current policy horizon. As a result, the only way to prevent suboptimally high consumption is through restraint on what is supplied to the market as a whole by imposing constraints on *all* broadcasters. This may lead to some shifting of the demand to other media, but this substitution is bound to be smaller than when the only constraint is on dedicated PS broadcasters and the other broadcasters are free to meet whatever demand there is. Thus in the case of violent and pornographic programmes, constraints are typically framed in terms of an obligation on *all* broadcasters to respect standards of ‘public decency’.

Matters are rather different when the origin of a market failure is in the decisions made on the supply side. Here it is possible to rectify the mix of programmes either through a general requirement on all broadcasters or through selective intervention. So long as there is no problem on the demand side, either way of altering appropriately the mix of programmes supplied will do the trick. Thus these kinds of failure *can* provide grounds for a dedicated PS broadcaster whereas demand failures typically do not. There is one possible exception to this rule: the case of horizon stretching programmes.

If there is a problem with the underproduction of ‘horizon stretching’ goods (either because it is a merit good or it generates positive consumption externalities), then it arises on the demand side and so the simple provision of ‘horizon stretching’ programmes by a dedicated PS broadcaster seems a poor remedy for the problem because existing tastes are what they are and they will guide audience programme choices. People simply will not bother with the ‘horizon stretching’ programmes even when they are supplied if they do not have a taste for them. There is an argument against this conclusion. It trades on viewer inertia. Once a broadcaster has got an audience through catering to well-established tastes, it could slip in the odd programme that surprises and tests horizons. Jana Bennett (the BBC’s Director of Television) writing in the *Guardian* Media section on 3 February 2003 puts it this way: ‘it’s a revival of the idea of “hammocking” difficult programmes between entertainment’. There is evidence that much television viewing is passive (see Svennevig, 1998), so this is a potentially serviceable argument.

7. WHY HAVE A DEDICATED PS BROADCASTER?

I turn now to the specific issue of where this discussion of market failure leaves the case for a dedicated PS broadcaster. There are, in effect, two parts to this question. The first concerns why one might have any kind of selective or targeted interventions in the first place (rather than general regulations which apply to all broadcasters). I review the arguments advanced so far on this in the next subsection. Second, if the

grounds exist for selective intervention, why have a dedicated PS broadcaster rather than some other selective intervention, like an Arts Council of the Air (e.g. see Cox, 2003, and Elstein *et al.*, 2004)?

7.1. Selective supply side interventions

I have argued that selective PSB interventions on the supply side, whether of a dedicated PS broadcaster kind or the Arts Council of the Air variety, are only likely to make sense as a remedy when the origin of the market failure is on the supply side. An exception to this rule, that arises because of the influence of viewing inertia, is the demand side failure with respect to ‘horizon stretching’ programmes. Thus the case for selective interventions turns on the significance of three of the potential failures discussed in Section 4: inadequate innovation, the undersupply of ‘horizon stretching’ programmes and the undersupply of programmes that are highly valued but by a relatively small number compared with the fixed costs of making them.

The sense of significance here has two dimensions. Does the market failure cause large welfare losses, and are these more important in broadcasting than other media industries? There is some reason for singling out broadcasting in relation to risk and some evidence, albeit only indicative, that increased competition in television has reduced risk taking. So the first of these failures could be significant and would potentially apply to all programme genres. Unfortunately evidence is scarce on the extent of the other two possible failures. The only reason for focusing on broadcasting in relation to them is the relative importance of broadcasting in terms of audience exposure. The television industry may have the same capacity to underproduce, say, ‘horizon stretching’ programmes as the motion picture industry, but what makes the failure in broadcasting attract public policy attention is the fact that we spend much more time watching television than going to cinemas.

This lack of evidence supplies a reason for continuing with selective interventions, at least for some short period of time. Their maintenance together with the development and use of PSB performance indicators in public policy will help produce a data set where one can judge whether dedicated PS broadcasters perform differently from commercial broadcasters in these respects and whether the growth of competition has any effect on that difference.⁹

Hence, since the theory and the current evidence point to a need for selective PSB interventions and since such interventions are also necessary for the accumulation of the further evidence required for a more informed judgment, there are strong grounds for continued selective intervention, at least for a few more years. This leaves open the question of the form these interventions should take.

⁹ I set on one side for reasons of space the tricky question in political economy as to how to motivate governments to use such indicators.

7.2. Is there a future for dedicated PS broadcasters?

The obvious advantage of the Arts Council of the Air proposal is that it introduces competition into the provision of PSB programmes. However, a measure of competition could also be created with dedicated PS broadcasters by having more than one. Indeed in some countries there are already several (in the UK, there is the BBC and C4). It is crucial, however, that the relationship between the various dedicated PS broadcasters is set up in a way that genuinely provokes competition. Thus, for instance, competition between the BBC and C4 is weak because there is no direct link between their respective funding levels and their relative PSB performance. This could be addressed by dividing in some degree the public subsidy (the licence fee in this case) between the two broadcasters according to their relative performance and, in this way, the prospect or otherwise of competition would cease to be a decisive difference between the two approaches to targeted supply side intervention.

The major difference between the approaches turns on the difficulty of writing satisfactory contracts for the supply of one-off PSB programmes. In part the difficulties surface here because of the high level of uncertainty over whether any single programme will succeed and in part from the 'rough and ready' nature of any prospective performance indicators noted earlier. As uncertainty undermines the ability to write fully contingent contracts, the typical contract would make the reward depend simply on performance as measured by the appropriate indicator for the type of programme. Within this class of contract, there is the potential to vary who shoulders the burden of the risk. A contract can be 'tight' in the sense that rewards change significantly with performance or it can be loose in the sense that rewards only vary slightly with performance. In the former the risk is largely borne by the programme producer and it is the contractor, the Arts Council of the Air, who picks up the risk in the latter. The earlier arguments about risk aversion on the part of a commercial broadcaster would tell here against the 'tight' type of contract as commercial broadcasters may not take them up adequately. In addition, since the performance indicators are only 'rough and ready' measures, a 'tight' contract would not guarantee that PSB objectives are achieved even if risk aversion were not a problem.

A 'loose' contract is not necessarily any better in this respect, because it gives discretion (i.e. greater scope) for commercial broadcasters to pursue their commercial objectives and such commercial behaviour will tend to reproduce precisely the market failures that PSB is designed to offset. So, in both cases the intervention will not prove entirely satisfactory. Either the risk aversion of broadcasters and/or the imperfection of the performance measures make 'tight' contracts unsatisfactory; and 'loose' contracts fail because they give discretion to commercial broadcasters to pursue their commercial objectives (i.e. the contract only has a relatively small effect on behaviour). This is the difficulty with an Arts Council of the Air writing contracts with a commercial broadcaster.

Of course, this does not mean that a dedicated PS broadcaster avoids such contractual difficulties. But before I consider what these differences might be, it is worth noting that one of the proposed performance indicators for PSB cannot be used in contracts for single programmes. I have argued that an appropriate performance indicator for judging relative innovation in programming is a version of relative variance in audience share and this can only apply to a contract for a number of programmes rather than a single programme. This is a statistical property. One observation is not the basis for an estimate of variance. Instead a sufficiently large number of programmes from a statistical point of view will have to be commissioned and observed before performance can be judged in such cases. Of course, contracting for a 'large' number of programmes is not the same as having a dedicated PS broadcaster, but it is a step in that direction.

'Tight' contracts are not ideal for a dedicated PS broadcaster for the same reason that the performance indicators are imperfect measures of PSB performance. The real potential advantage of dedicated PS broadcaster lies in the 'loose' type of contract. This is because such organizations are not driven by commercial objectives and so there is no imperative for them to use their discretion under a 'loose' contract to pursue the commercial objectives (and so reproduce whatever is the putative market failure that PSB is designed to offset). They have the slack to pursue whatever objectives are valued by the organization and so long as these are pro-PSB, there is the possibility that the discretion will be used to reinforce rather than undermine the PSB objectives.

Naturally this poses a question about whether it is reasonable to assume that a dedicated PS broadcaster will pursue PSB objectives. Of course, it helps if the organization is formally dedicated to PSB, but this is no guarantee. Indeed there is evidence from other industries, like health, where there are both not-for-profit and for-profit organizations that their behaviour is largely indistinguishable (see Sloan, 2000). This is not so surprising since both types of health organization are competing for the same revenue source and this forces each to behave in rather similar ways. Thus it is important in broadcasting to prevent the same effect by constraining the extent to which commercial and PS broadcasters compete over the same funds; and this weighs against advertising and subscription funding of PS broadcasters.

Significant public funding may give the PS broadcaster the 'freedom' to pursue PSB objectives, but a 'loose' contract also gives those who work for the dedicated PS broadcaster the opportunity to further their own interests. To guard against this possibility, and so realize the potential advantage of a dedicated PS broadcaster, it is important for the dedicated PS broadcaster to select employees who value PSB highly. There is a literature on how this might be done which connects with a large literature on the role played by intrinsic reward in motivating employees (see Brennan, 1996 and Frey, 1997). The basic idea is this. It should be possible to devise a remuneration package that appeals to those who intrinsically value the pursuit of PSB objectives and *not* those who would respond merely 'opportunistically' to the discretion

given by 'loose' contracts. In particular, if the wage is set suitably below what is available at commercial organizations and is accompanied by an 'in-kind' benefit that is valued by those who intrinsically value PSB, then the low wage should put off the 'opportunistically' inclined but *not* those who naturally value PSB outputs because they will find that the in-kind benefit compensates for the low wage. The trick is to find a suitable in-kind benefit that will select in those who intrinsically value PSB.

One candidate in-kind benefit comes from taking the savings from the relatively low wages in terms of bigger real programme budgets (i.e. not cutting programme budgets in nominal terms). If this was combined with an internal decision-making structure that replicated the external performance indicators, thereby encoding the commitment to innovation and horizon stretching, then this might produce the desired selection. Creative people might plausibly value relatively highly programme quality and the long-term nature of judging performance that comes from the innovation indicator because it gives freedom in the short run. This is the thought, but clearly there is a need for research into the appropriate in-kind benefits (for an interesting echo, see the *Economist* Special Report on 'The Entertainment Industry', 18 January 2003, where it is noted that successful creative organizations give considerable autonomy to work groups, have a clear culture or identity and devote large resources to hiring the right kind of people).

There is another potential reason for preferring the dedicated PS broadcaster route when one already exists and is successful. It comes from recognizing the practical difficulties of harnessing the creativity required for innovation within any large organization. Large organizations (or long-term contracts if the creative relation is formed between two smaller organizations) are usually crucial because deeper pockets allow the risks to be taken. But large organizations (or long-term relations between two smaller organizations) are necessarily bureaucratic in some degree and such structures fit uneasily with the creativity required in innovation as this depends on people thinking in non-routine ways. Of course, the pursuit of profit in large organizations and creativity are frequently harnessed together. So the point here is *not* that the two cannot be married. Rather it is to recognize a tension that exists in most corporations; and it is liable to be particularly difficult to manage in a so-called creative industry like television. So, if there is an apparently successful dedicated PS broadcaster, then it would not be sensible on pragmatic grounds to destroy the apparently hard-to-come-by magic that reconciles bureaucracy with creativity by opting instead for an Arts Council of the Air.¹⁰

The argument in this section can, in effect, be put in a slightly different way by first noticing that the alternative of an Arts Council of the Air is itself a not-for-profit

¹⁰ Elstein *et al.* (2004) argue against this view citing the facts from the UK that the ITV franchises used to have well-respected PSB departments before the introduction of competitive bidding for franchises and that the lauded documentary on the 'Death of Yugoslavia' was made by an independent producer. Actually neither example tells against the point made here. The first reinforces the worry over what happens when a commercial broadcaster truly becomes commercial and the second overlooks the key fact, which is that this documentary series was commissioned by the BBC.

organization dedicated to PSB objectives. So there is a question about exactly how it differs from a dedicated PS broadcaster. To pursue this, consider how such a Council would be made accountable. Since the usual model for such organizations is some version of the 'great and the good', the question is not often asked and this would be one immediate source of difference. But if the need for accountability is taken seriously, then there is an issue of how to prevent the 'great and the good' pursuing their own hobby horses. The earlier argument about competition is likely to weigh in favour of several and *not* one Council as part of the answer. So a sensible version of the proposal would have the Councils competing for a sum of public money on the basis of how well they have delivered PSB objectives. But given the imperfect nature of the performance indicators, the relation between performance and reward cannot be too steep and we would need to buttress the arrangement using some Brennan-like in-kind selection mechanism to make sure that only those members of the 'great and the good' who naturally wanted to pursue PSB objectives actually worked for the Councils. But if this is the case, then the only apparent difference between this proposal and having several dedicated PS broadcasters is the fact that PS broadcasters have traditionally not only commissioned programmes they have made them.

In short, the difference between the proposals would concretely amount in the UK to whether the BBC should be allowed to continue to make programmes. This reduces the debate over the form of selective intervention to a relatively minor matter. Since there are some efficiency arguments for vertical integration (see Caves, 2000), the BBC is already required to purchase a proportion of independently produced programmes and C4 is largely a commissioning PS broadcaster, it seems that one should not assume that there is a clear answer to this question. Once we have ways of judging how well PS broadcasters are performing, we can see whether vertical integration does deliver benefits and adjust the requirements on independent production accordingly. The point, in other words, is that there is no strong case for changing materially the system of selective intervention, rather there is a case for subjecting the existing system to a process of change that is informed by evidence in relation to PSB performance.

8. CONCLUSION: THE FUTURE OF PSB DEDICATED PS BROADCASTERS AND THE ECOLOGY OF BROADCASTING

I have argued that, despite the arrival of the multi-channel world, there is the prospect of continuing market failure in television broadcasting and this supplies *prima facie* grounds for PSB interventions which aim to alter the character of broadcast programmes. These interventions can take one of two broad forms: the general regulation of all broadcasters or selective intervention through the targeted subsidy of some broadcasters. Table 12 provides a taxonomic summary of how the likely failures relate to each type of intervention.

Table 12. Summary

Source of failure	Type of PSB intervention		Performance measure
	General regulation	Selective subsidy	
Information externalities	X		Hours in prime time, survey measures and qualitative checks ^a
Behaviour externalities	X		Jury type complaints procedure
'Faulty' decision making over horizon stretching		X	Diversity of audience test
'Faulty' decision making over innovation		X	Audience variance and share test
Monopolistic competition and intense preferences		X	Hours in prime time
Cultural references as a public good	X		Home production quotas

^a 'Qualitative' checks in the sense that judgments of what are the top breaking news stories against which performance can be assessed, like the earlier judgments on 'public decency', are bound to be in some degree contestable.

Effective intervention of both kinds depends on having appropriate PSB performance indicators. Currently, this is an area of significant weakness in the conduct of public policy and Table 12 summarizes the paper's suggestions for these indicators. The diversity and variance indicators are worth drawing attention to, as they are new to this literature. They (or others in the same vein) are particularly important in relation to the case for dedicated PS broadcasters because there is actually little evidence at the moment on the extent to which markets *actually* fail to produce adequate 'horizon stretching' and innovative programmes or on the capacity of dedicated PS broadcasters to compensate for these failures. The development of these indicators should help remedy this deficit and so help not only with making PS broadcasters more accountable but also with contributing to a more informed debate over PSB in the future.

I have also argued that a dedicated PS broadcaster like the BBC, RAI, RTE, etc. is to be preferred to an Arts Council of the Air as a mechanism of selective subsidy largely for contractual reasons. To put this slightly differently, once the proposal for an Arts Council of the Air is seriously examined and a mechanism for rendering such a Council accountable is introduced, the difference between this and a PS broadcaster is smaller than it at first appears.

The paper also has broader implications for policy in relation to the ecology of broadcasting in European countries. In addition to dedicated PS broadcasters, there is a case for PSB regulations that apply to all broadcasters but they should be more clearly and narrowly defined than at present. References to concepts like 'quality' that cannot be measured are not helpful, and the requirement for diversity is likely to become redundant in a multi-channel world. Instead, the regulations should apply to all broadcasters that achieve some threshold audience share (and

not just the terrestrial ones) and should focus, more narrowly as suggested in Table 12, on news and current affairs programmes, standards of public decency and home production.¹¹

There are also reasons for introducing some competition over funding between dedicated PS broadcasters within a country and for reducing the extent to which PS broadcasters directly compete over sources of funding the commercial broadcasters in that country. With clearer PSB performance indicators, this is desirable because it would focus competition on where it is likely to promote PSB objectives. This is obvious with respect to the introduction of competition between PS broadcasters in relation to the PSB objectives, but it is equally important to reduce the incentives that currently exist for PS broadcasters to compete with commercial broadcasters over market share and so reproduce any tendency towards market failure rather than offsetting it.

In short, this paper provides a discussion of the general case for PSB and for dedicated PS broadcasters in a multi-channel world. This has wide policy applicability because the old PSB tradition that has characterized broadcasting in many countries is no longer fitted to a multi-channel world where public accountability matters. In particular, this discussion should encourage a policy of, and help supply the means for, distinguishing more sharply between PS broadcasters and commercial ones. This should avoid PS broadcasters behaving like commercial ones, to the detriment of their PSB objectives, and it should enable competition to operate more effectively both between PS broadcasters and between strictly commercial ones.

Discussion

Carol Propper

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This paper addresses the issue of whether there should be dedicated public sector broadcasters. It very usefully reviews several extant arguments, and puts forward some new ones, so providing a list of reasons for possible intervention. These are:

- Because information is a public good the broadcasting market would produce too little information if left to itself.
- Externalities in watching TV mean that unregulated TV would lead to bad behaviour.
- Horizon stretching programmes are merit goods and so will be underprovided.
- Poorly defined property rights mean too little innovation.

¹¹ Thus in terms of the newly established tier 2 and 3 regulations in the UK, tier 2 would be more simply and narrowly defined and there would be no tier 3 for commercial broadcasters.

- In monopolistic competition where the price is fixed across customers, goods which are expensive to produce will not be produced even if valued highly by some group.
- Costs are endogenous, so as competition increases, product differentiation will not necessarily occur.

Hargreaves Heap argues that, given these concerns, we need to develop measures of some of these attributes, particularly innovation. Then we can monitor whether competition is leading to negative outcomes and whether any PSB type broadcaster is undertaking the actions we require of it. This seems a sensible idea, though the author is well aware that such measures will be ‘gamed’ by organizations subject to them.

The paper then goes on to discuss, in the light of these concerns, what kind of regulation might be needed, and in particular, whether there should be a dedicated PSB. Table 12 suggests that externalities in consumption, information as a public good, and cultural references as a public good can all be dealt with by general regulation of the industry, leaving horizon stretching, innovation and monopolistic competition and intense preferences to be dealt with by either a selective subsidy or a dedicated PSB.

The author comes down in favour of a dedicated PSB on the basis of three arguments:

- The first is that it is difficult to write contracts per programme to extract PSB goals.
- The second, made more obliquely, is that a PSB producer will attract individuals who have PSB type aims and can be offered low salaries in return for large programme budgets that they will then use to make innovative and horizon stretching programmes.
- The third is pragmatic: given that we currently don’t have measures of the attributes we wish to promote, we should maintain a PSB and measure exactly what happens to its output – and that of its rivals – as competition increases.

The last of these arguments has quite an appeal. My comments relate mainly to the second argument. I also want to bring in a broader issue that the paper gives relatively little weight to: changes on the revenue side of the industry.

The argument that a PSB, by having different aims – which are imposed by the government and reinforced by the kind of measures Hargreaves Heap advocates – will attract different types of individuals has considerable resonance in the recent broader literature on the production of public services. The donated labour literature argues that there are certain goods that people want produced – for example, care for the elderly or for the mentally ill. Individuals do not necessarily want to supply this care themselves, but wish the organization they work for to produce it. Individuals will ‘donate’ their labour to organizations that produce this type of output.

However, a profit-making firm will extract this donated labour as it cannot credibly commit not to, as it has a residual claimant – the shareholders – to any profit. On the other hand, a not-for-profit firm, because it has no residual claimant, can commit to not extracting this donated labour. Thus, not-for-profits may be more efficient in the production of these kinds of goods. The matching and missions literature argues that firms have missions and that competition between firms for labour results in workers matching to firms which have missions that accord with their own beliefs.

Both of these arguments suggest that a not-for-profit PSB with a well signposted mission may attract staff of the type that Hargreaves Heap has in mind – and will produce at lower cost than a for-profit firm. But they could also be used to support an ‘Arts Council for the Air’ arrangement. Firms who have quality as one of their missions will attract employees who want to produce quality; these types of firms will be those who will bid for the right to produce (subsidized) high quality programmes.

And there is a further caveat from the healthcare industry. In many countries, healthcare is provided (though not funded) by the private sector. Healthcare is certainly a sector in which we might expect missions and donated labour. Not-for-profit firms are a common form of firm in this industry. Yet evidence from the most studied market – the US – suggests that not-for-profits in this market behave almost identically to for-profits. The reason is that changes on the demand side – specifically increased competition – have meant that non-for-profits have had to cut their margins in the same way as for profits. The outcome is that not-for-profits behave in very similar ways to for-profits, both in the range of goods they produce and in their pricing strategies.

This suggests that if competition is fierce, the not-for-profit status of a PSB will not prevent it from emulating its for-profit rivals. So, at the very least, the mission will have to be strongly re-enforced if the dedicated PSB broadcaster is to meet the goals society might want them to have. I personally do not think a set of performance targets alone will do the trick – there are many examples of organizations undertaking effort to meet their targets but not to produce the outputs society wishes them to produce (the behaviour of schools with respect to ‘league tables’ and hospitals with respect to waiting list targets in the UK is an obvious example).

Competition is rising in the broadcasting industry. Accompanying the increase in competition has been a change in the way TV is paid for. In the UK 30% of the population watch pay TV. The existence of pay-to-view channels affects many of the arguments made in the paper. For example, if there is pay-to-view TV then those with a taste for opera or news can simply pay to view it. Or if I can pay to watch 24-hour news (as indeed I already can on one of the pay-to-view channels) is the PSB issue so pertinent? For example, HBO – a provider funded by viewer subscriptions in the US – is a leader in the provision of innovative programmes. This perhaps suggests that, as the technology to enable pay-to-view spreads, many of the issues raised in Table 12 will no longer be a problem and the case for a dedicated PSB will be weaker than that advanced in the paper. Perhaps what we need is regulation to

deal with the type of 'minimum standards' of public decency, while a combination of bidding for contracts to supply PSB-type programmes and the spread of pay-to-view will deal with the more tricky innovation and niche market issues.

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With the move from analogue to digital television dramatically reducing entry barriers in the industry, it is timely to review the case for public service broadcasting. This paper argues that the case remains a strong one. Even a large number of private television providers, it claims, will provide too little information, too many programmes with negative external effects, and too few 'horizon-stretching' programmes. Moreover they will engage in too little innovation and will be plagued by the inefficiencies endemic in monopolistically competitive industries. The arguments are presented in the context of the British Broadcasting Corporation (BBC) whose contract ('charter') with the UK government is due for renewal soon.

It seems to me that the arguments for public provision are much stronger in the case of news and current affairs programmes. Under-provision of information imposes costs on almost everyone, both as consumers and citizens, and inadequate coverage of dissenting views is a clear index of an erosion of democratic norms. We have to be careful not to claim too much for television. The same arguments could be adduced in support of a state-supported quality newspaper. And it is worth recalling that the biggest media-related controversies in 2004 in both the UK and US were not prompted by television, but rather arose from the coverage of the case for invading Iraq by BBC radio and by 'quality' newspapers such as the *New York Times* respectively. Nevertheless, the immediacy of television news and the high fixed costs of providing a comprehensive and credible television coverage of current affairs, make a strong case for public provision, provided its independence from political interference can be guaranteed.

What about programmes other than news and current affairs? Here, the claim to horizon stretching can perhaps be justified for 'non-fiction' programmes, or for adaptations of classics. But the paper casts its net more widely, since the only specific examples given in the case of the BBC are *Blackadder* (a comedy series) and *Eastenders* (a soap). Such programmes may meet other criteria proposed in the paper, exhibiting a high level of innovation and providing the public good of common cultural references. But it is not clear that private provision fails these tests: with due allowance for differences in genre, they are equally well passed by such US programmes as *Sex and the City* and *The Sopranos*. Possibly the most vibrant cultural reference in modern societies (using 'cultural' in a broad sense) is provided by sports programmes, on which the BBC spends a significant proportion of its budget. It is not clear to me that there is a specific public service case for this.

The paper is on stronger ground in identifying the problem with private provision as the presence of high fixed costs that make market failure likely. Here the appropriate

model of market structure is probably not the symmetrically differentiated large-group case of Dixit and Stiglitz but rather the Hotelling vision of horizontal product differentiation. If tastes are distributed along a line from those who prefer 'opera' to those who prefer 'sport', then, with a small number of firms, consumers at the extremes will not be catered for. If, in addition, sports-lovers have higher aggregate income, then providers are likely to neglect the unfortunate opera-lovers altogether. Finally, add to this horizontal model a vertical dimension, whereby the stations which supply only sports risk losing market share unless the quality of their product matches that of a sole publicly funded and high-quality opera provider. This kind of model can, I believe, rationalize the view (corroborated by evidence from many countries) that high-quality public provision raises overall welfare as well as increasing the quality of all stations and the diversity of the whole spectrum.

If the case for public provision is accepted, then as in any state-funded firm it is essential to devise performance measures. The paper proposes two new measures: a measure of relative audience diversity as a way of capturing horizon stretching, and the variance of audience share across programmes as an indicator of risk-taking. I must confess to being unconvinced by both. The first measure would militate against innovative programmes that appeal only to niche groups. The second would discriminate against innovative producers who have a string of successes. It would also encourage strategic behaviour, whereby one sure-fire hit was accompanied by some intentional flops (although this could backfire, as in the hilariously tasteless movie *The Producers*). More generally, both measures risk falling foul of Goodhart's Law (as restated by Marilyn Strathern): 'When a measure becomes a target, it ceases to be a good measure.'

Overall, the paper takes a benign view of the BBC. Its bottom line is that the present institutional arrangements should be carried over unchanged (apart from extra performance requirements) into the digital age. This ignores a range of issues, such as the regressive financing system (in effect a lump-sum tax) and the risk that a well-funded but ratings-driven BBC will devote excessive resources to popular programmes at the expense of its public broadcasting mission (a source of criticism of BBC management even before the Iraqi war controversy). Yet despite these problems the BBC is an exceptionally successful institution, the envy of the civilized world. So, on the specific policy issue of BBC charter renewal, the author is preaching to the converted, though I fear that he is unlikely to persuade those whose prejudices for whatever reason run in the opposite direction.

Panel discussion

Both demand and supply side questions provoked considerable discussion at the panel. On the demand side, there was disagreement about the extent to which the

various market failures identified in the paper could be dealt with by ad hoc solutions. For instance, Karen-Helene Midelfart pointed out that in Norway sales-tax breaks are granted to newspapers, a measure that can be interpreted as a subsidy to information provision. Patrick Honohan pointed to investigative journalism as an example of a market solution, though an imperfect one, since information gets attention only if the story is important enough. There was also some discussion of the nature of the argument from market failure in the provision of horizon-stretching programmes. Fiona Scott Morton suggested time inconsistency of consumers as a motivation for the role of horizon-stretching in public service broadcasting. The consumer would want the horizon of his future self to be stretched whereas his current self values this less. Hence, there is scope for a subsidy of, or a consumer subscription to horizon-stretching programmes. However, subsidies to horizon-stretching programmes are less effective with pay-per-view technology. Marco Ottaviani thought that organizational biases are more important than behavioural biases: risk aversion might be the result of commercial incentives rather than the intrinsic preferences of viewers. Also Paul Seabright was not convinced by the argument that people did not know their preference unless they watched certain programmes. The same would hold for hard drugs. He suggested two other motivations for horizon-stretching: the externality of making people more open-minded and tolerant, and the analogy of state subsidies for general rather than specific education. Hans-Werner Sinn added that, particularly in the context of children's consumption of TV, paternalism cannot be avoided.

On the supply side, there was considerable interest in understanding the reasons for the many differences between national systems. Georges de Menil thought national culture more important in determining the quality of broadcasting than the presence of public or private ownership, pointing to the high quality of both public and commercial television in the UK, and the low quality of both in France. Giuseppe Bertola stressed Carol Propper's analogy with healthcare: provision of health services varies widely between countries from direct production over funded systems to private insurance. Gabrielle Demange wondered, however, why the paper focused only on the national audience. She argued that competition between TV programmes is global and takes place on a subject level, such as that between news channels. Richard Baldwin was interested in a comparison with the US market where the 'better' programmes are available in pay TV. Richard Portes mentioned, however, that in the US the PBS played the role of an Arts Council. Ronald Schettkat argued that the idea of an Arts Council does not seem to work since the PBS buys programmes from the BBC. Richard Portes added that experience with Radio 3 in the UK suggested that long-term commitment might be necessary for the provision of a good programme.

Marco Ottaviani suggested applying the measures of horizon-stretching and innovation to the past experience in order to get a feel for how well these measures perform. He wondered whether the risk of programme providers is insurable. Fiona Scott Morton added that the regressive nature of the tax used to finance public TV

is justified if the poor benefit most from the offered TV programme, for example, because they cannot afford to go to the opera.

John Fingleton worried about the transparency and efficiency of the BBC. He wondered whether the BBC had been forced to contract out parts of the production for efficiency reasons. Commenting on the annual reports of the BBC, Shaun Hargreaves Heap stressed that the BBC is quite transparent but needs to become more accountable to justify government subsidies.

APPENDIX 1: A MEASURE OF HORIZON STRETCHING

Suppose programmes within a genre can be distinguished along a single dimension and that each individual has a most preferred type of programme within each genre that can be associated with a particular point in that space. I call this the most preferred type for each individual his or her 'bliss spot'. For example, in drama the dimension might refer to the level of seriousness and some people's bliss spot is on the 'light' side, others like 'more serious' best, and so on. The dimension of differentiation is now normalized for all genres so that it runs over the (0, 1) interval. Thus the 'most serious' kind of drama gets 0 and the 'lightest' gets 1 and points in between get intermediate values depending on how close they are to each extreme. In these circumstances, a measure of the diversity of an audience's preferences is given by the variance of the bliss spots along this dimension. This is, in effect, a measure of the average range of preferences attracted to that programme.

I now assume that a person's particular bliss point is a function of the variables that advertisers find useful in categorizing the audiences attracted to particular programmes (his or her age, sex, socioeconomic status) as well as a range of further variables, X , Y , Z as in Equation (A1).

$$B_{ij} = a_j \cdot age_{ij} + b_j \cdot sex_{ij} + c_j \cdot socioec_{ij} + d_j \cdot X_{ij} + e_j \cdot Y_{ij} + \text{etc.} \quad (\text{A1})$$

where B_{ij} is the bliss point of person i for j genre programmes and I allow for the influence of each variable on the determination of an individual's bliss point to vary with programme genre, hence the coefficients a , b , c etc. are indexed by the genre type j .

If I further assume that each of the variables affecting individuals' bliss points are unrelated then, it follows that the variance of bliss points among the audience for a particular programme within the j genre is given by the weighted sum of the variances of the variables on the right-hand side of Equation (A2), as below.

$$\text{var} B_j = a_j^2 \cdot \text{var}(age_j) + b_j^2 \cdot \text{var}(sex_j) + c_j^2 \cdot \text{var}(socioec_j) + d_j^2 \cdot \text{var} X_j + e_j^2 \cdot \text{var} Y_j + \text{etc.} \quad (\text{A2})$$

Unfortunately, the only data that are routinely collected on audiences for programmes are their age, sex and socioeconomic status. Furthermore, we do not know the value of the coefficients a , b , c , etc. So this equation cannot be precisely evaluated and used to make comparisons between programmes over the diversity of their

audiences. The only thing further that can be said is that for two programmes within a genre the relative significance of variance in the known variables is the same (i.e. the relative size of the coefficients a , b , c , as compared with the unknown others is the same) and this makes the comparison of programmes within a genre more reliable than those between genres.

There are two possible responses to this indeterminacy which would allow an estimate of the extent of 'horizon' stretching. In both cases, we assume that the missing variables either do not contribute to the variance of B in the aggregate or are like a random white noise error term, so their omission does not bias the estimate of B based on the known variables. They differ over what is further assumed about ' a ', ' b ' and ' c ', the parameters for the known variables. The first is 'conservative' in the sense that it assumes nothing. Thus for a particular programme genre ' k ', it identifies a horizon stretching programme as one that has a variance for each of the taste variables (age, sex and socioeconomic status) which places it in the top $X\%$ for variances of this kind for all the programmes in this genre. So a programme is 'horizon stretching' when it dominates 'most' others (i.e. the $100 - X\%$) in the variance of *each* of these audience identifiers. This means that it does not matter what the precise weights of ' a ', ' b ' and ' c ', these programmes will exhibit greater variance in terms of bliss spots than other programmes.

The extent of horizon stretching depends in part on the number of programmes identified in this way and so varies with the choice of X . Some work is required to see what a sensible value of X would be. It also depends on the size of the audience attracted to these programmes. Thus the first measure of horizon stretching proposed here is the audience size attracted to the horizon stretching programmes identified in this way.

The second approach to parameter uncertainty is to assume that the influence of each variable on the variance of the bliss point is the same. To take account of differences in the means of each variable, this would mean that the variance of bliss points for a particular programme ' l ' was given by (A2'), where $\text{coefvar}(P_{jk})$ is the coefficient of variation of variable P for the actual programme ' l ' in the genre ' k '.

$$\text{var}B_{jl} = \text{coefvar}(\text{age}_{jl}) + \text{coefvar}(\text{sex}_{jl}) + \text{coefvar}(\text{socioec}_{jl}) \quad (\text{A2}')$$

Again this measure of variance must be multiplied by the number watching programme ' l ' to arrive at a measure of the extent to which horizon's have been stretched by this programme.

APPENDIX 2: A MEASURE OF INNOVATION

I assume that broadcaster's audience share A_i is determined for a particular time slot in the following way.

$$A_i = a_i x_i - \sum_{j \neq i} a_{ij} x_j + (\dots) + r_i - \sum_{j \neq i} b_{ij} r_j \quad (\text{A3})$$

where x_i is the expenditure level on programmes at i for this time slot and (\dots) refers to other variables and r_i is a random variable capturing the effect of the level of innovation, s_p on audience.

$$r_i = s_i + e_i \quad (\text{A4})$$

where $E(e_i) = 0$ and $\text{var}(e_i) = f'(s_i)$, $f' > 0$, in recognition of how higher levels of innovation boost the expected audience but also increase its variance, and $\text{cov}(e_i, e_j) = 0$ as there is no reason to suppose that the risky aspects of one broadcaster's innovation are correlated with that of others. (So we measure innovation in terms of its ability to attract an extra person on average.)

Successful innovation by other broadcasters (i.e. $r_j > 0$) negatively affects audience in i since a proportion of the gain to j will come from i and b_{ij} reflects this, hence $0 < b_{ij} < 1$.

Thus:

$$A_i = a_i x_i - \sum_{j \neq i} a_{ij} x_j + (\dots) + s_i - \sum_{j \neq i} b_{ij} s_j + e_i - \sum_{j \neq i} b_{ij} e_j \quad (\text{A5})$$

Since budgets are typically set at discrete points in time (e.g. annually) as are decisions over what programmes to make, it may be reasonable to assume that the ' x 's and ' s 's are fixed for the duration between these decision points. I return to this assumption below, for now it means that any observed variation in audience for that programme slot over the decision period is a direct measure of $\text{var}(e_i)$.

$$\text{var}(A_i) = \text{var}(e_i) + \sum_{j \neq i} (b_{ij})^2 \text{var}(e_j) \quad (\text{A6})$$

It follows that $\text{var}(A_i)$ supplies an upper band for $\text{var}(e_i)$, our index of the extent of innovation. In one sense this means that no broadcaster should object to the use of this measure because it could not underpredict the level of innovation, but it does restrict the usefulness of the measure when making cross broadcaster comparisons or comparisons over time. However, if we make some assumptions about the b_{ij} terms, the measure can be rendered more precise.

For example, suppose we assume that a broadcaster's change in audience share from innovation depends on the value of its ' r ' term relative to the average of other broadcasters. This is the equivalent to assuming that $b_{ij} = 1/(n-1)$ for all i and j (i.e. innovation by any broadcaster affects all other broadcasters in equal measure, which given the accounting constraint that all audience share changes must sum to zero implies the value of $1/(n-1)$ for the b coefficients).

Equation (A6) now becomes:

$$\text{var}(A_i) = \text{var}(e_i) + \sum_{j \neq i} [1/(n-1)]^2 \text{var}(e_j) = [\text{var}(e_i) \cdot (n^2 - 2n) + n \cdot \text{var}(e)] / (n-1)^2 \quad (\text{A7})$$

where $\text{var}(e) = \text{average variance in } e_i = (1/n) \sum \text{var}(e_i)$.

Summing across all broadcasters yields an expression for the average variance of e in terms of the average variance of audience share.

$$\sum \text{var}(A_i) = [n^2/(n-1)] \text{var}(e) \quad \text{or} \quad \text{var}(e) = [(n-1)/n] \cdot \text{var}(A) \quad (\text{A8})$$

where $\text{var}(A) = \text{average variance in audience shares} = (1/n)\Sigma \text{var}(A_i)$.

Substituting (A8) into (A7) and rearranging to derive an expression for $\text{var}(e_i)$ yields:

$$\text{var}(e_i) = [(n-1)^2/(n^2-2n)][\text{var}(A_i) - \{1/(n-1)\} \cdot \text{var}(A)] \quad (\text{A9})$$

Thus, under these conditions, $\text{var}(e_i)$ can be calculated exactly by using the number of broadcasters, n , and the calculated $\text{var}(A_i)$ s.

There is a further difficulty with this measure. Although it is reasonable to assume that the budgets for prime time slots are fixed for as long as a year, programme makers/commissioners still have scope to vary the allocation of those budgets for any time slot between different days of the week, weeks of the year and so on. In other words, returning to Equation (A5), a part of the observed variance in audience share over a decision period could be due to the broadcaster's decision to vary x_i s within the decision period. It is for this reason that the variance test is combined with the audience share test in the main part of the text.

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