

PUBLIC SERVICE BROADCASTING¹

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Abstract

This essay discusses the merits of public intervention in the provision of television broadcasting services. I argue that intervention was justified in the past, when there were just a few channels and when advertising was the sole source of commercial funds. However, the advent of subscription television overcomes many of the market failures which once existed. Moreover, asymmetric treatment of broadcasters acts to distort the incentives of commercial broadcasters. Finally, viewers have an increasing ability to avoid unappealing, but perhaps socially desirable, content, which further weakens the case for public intervention in the market.

1. The Historical Context

In this essay I wish to discuss three questions about the provision of television broadcasting in the modern age:²

1. Will the broadcasting market deliver what people want to watch?
2. Should people be allowed to watch only what they want to watch?
3. If not, will people watch what we want them to watch?

I start with the second question and consider whether broadcasting policy should be directed to “give the public what it wants”? In the UK, the tone of the debate about public service broadcasting was set in the earlier radio era. John Reith, the first Director General of the BBC, wrote,³ “the preservation of a high moral tone is obviously of paramount importance.” And “[t]here is no harm in trivial things; in themselves they may even be unquestionably beneficial, for they may assist the more serious work by providing the measure of salt which seasons.” Coase (1950, page 177) remarked that

¹ This is the edited text of an inaugural lecture given at University College London on March 10, 2005. It is based in large part on joint work with Helen Weeds, see Armstrong and Weeds (2004), although the views and errors expressed here are my own. I am grateful to her and to two referees for useful comments.

² This essay is more about television than radio. Many of the arguments presented below do not apply to radio to the same extent. For instance, at the time of writing, subscription radio is not a widespread phenomenon, and so the choice is between state-funded radio versus advertising-funding radio. The latter is likely to involve substantial market failure (see section 3 below). Moreover, radio is a less “vivid” medium, and less likely to assert the hypnotic pull of television (see section 4.3 below). See Coase (1950) for a fascinating account of the early years of radio broadcasting in the UK, and the rationales given at the time for monopoly provision.

³ These quotes are from 1924 and 1925. See Coase (1950, page 47).

public service broadcasting may have given some listeners what they wanted better than it did others: “Though the programme policy of the [BBC] gave the lower social classes what they ought to have, it gave the educated classes what they wanted; or, at any rate, more of what they wanted than they thought they would obtain with what was believed to be the only alternative – commercial broadcasting.”

Ronald Coase is perhaps the most distinguished economist to have written about broadcasting. Although his contributions to this topic are several decades old, the issues he raised and the criticisms he targeted at public policy remain relevant today. For instance, Coase (1966) discussed the UK’s 1962 *Pilkington Report on Broadcasting*. I quote at length:⁴

“I can give you the flavor of the argument by quoting some passages [of the Pilkington Report]...:

‘No one can say he is giving the public what it wants, unless the public knows the whole range of possibilities which television can offer and, from this range, chooses what it wants to see. For a choice is only free if the field of choice is not unnecessarily restricted. The subject matter of television is to be found in the whole scope and variety of human awareness and experience. If viewers are thought of as “the mass audience” they will be offered only the average of common experience and awareness; the “ordinary”; the commonplace. They will be kept unaware of what lies beyond the average of experience. In time they may come to like only what they know. But it will always be true that, had they been offered a wider range from which to choose, they might have chosen otherwise, and with greater enjoyment. “To give the public what it wants” is a misleading phrase: misleading because as commonly used it has the appearance of an appeal to democratic principle but the appearance is deceptive. It is in fact patronising and arrogant, in that it claims to know what the public is, but defines it as no more than the mass audience; and in that it claims to know what it wants, but limits its choice to the average of experience. In this sense we reject it utterly. If there is a sense in which it should be used, it is this: what the public wants and what it has the right to get is the freedom to choose from the widest possible range of programme matter. Anything less than that is deprivation...’

It is I think apparent that these passages, full of sound and fury, do not give us any criteria by which to decide whether any particular program should be transmitted. I will quote another passage:

‘The broadcasting authorities have certainly a duty to keep sensitively aware of the public’s tastes and attitudes as they now are and in all their variety. But if they do more than that, this is not to give the public “what someone thinks is good for it.” It is to respect the public’s right to choose from the widest possible range of subject matter and so to enlarge worthwhile experience.’

⁴ See Coase (1966, pp. 442-44).

Up to now we have heard of respect for the public's right to choose and of need for the widest possible choice. It is at this point that the trap closes. They continue:

'Because, in principle, the possible range of subject matter is inexhaustible, all of it can never be presented, nor can the public know what the range is. So, the broadcaster must explore it, and choose from it first. This might be called "giving a lead": but it is not the lead of the autocratic or arrogant. It is the proper exercise of responsibility by public authorities duly constituted as trustees for the public interest.'

Thus the committee avoids the question of how it should be decided which programs to transmit and for the phrase "what the public wants," they substitute another and better, "what the public authority wants." What the public authority should want, how it would get the information which would enable it to do what it should, and how in practice it would be likely to act are questions which all disappear in a cloud of pious platitudes."

Coase (1966) goes on to argue that there is indeed market failure with advertising-funded television, and that subscription television, together with the auctioning of spectrum to the highest bidder, is the appropriate method to run the industry. I will, 40 years later, argue much the same: in a world where advertising funding is the sole method of commercial provision, there is a clear rationale for public policy to improve the quality and diversity of programming (as well as to diminish the nuisance of excessive advertising); but in a world where viewers can be charged directly for viewing and where spectrum is more plentiful, the benefits of substantial intervention probably outweigh its costs.⁵ And although the vocabulary might change over time, the temptation to lapse into "pious platitudes" about the rationale for public intervention in the broadcasting industry remains alive today.⁶

2. Technological Developments

In the analogue broadcasting world which existed until recently, there are two points to highlight. First, spectrum constraints required that just a few television channels could be broadcast simultaneously. This implied that diversity of content could not be achieved across channels, and that there might have been a need to ensure that each channel supplied sufficiently diverse content. More significantly, it implied that those commercial broadcasters lucky enough to obtain a licence would enjoy significant scarcity rents. (Indeed, the phrase "a licence to print money" was coined when the first commercial licences were awarded in Britain in 1955.) These rents could be used to fund

⁵ The same broad conclusions were reached in the pioneering Peacock Report (1986).

⁶ To illustrate, the recent government Green Paper on the *Review of the BBC's Royal Charter: A Strong BBC, Independent of Government* (March 2005, page 5) suggested that the BBC's current (concise) mission statement to "inform, educate and entertain" be expanded to five points, and "all BBC services should aim to fulfil: sustaining citizenship and civil society; promoting education and learning; stimulating creativity and cultural excellence; representing the UK, its Nations, regions and communities; and bringing the UK to the world and the world to the UK."

programming that the public authorities wished to see provided, but which would not be supplied voluntarily by commercial broadcasters.

Second, broadcasters were unable to charge viewers directly. (They could charge viewers only indirectly, by making them watch adverts.) This implies that there was an incentive to provide programmes that induce a large number of people to watch, but little incentive to provide programmes that deliver significant viewer surplus. I return to this point in more detail in the next section.

In the new digital world spectrum constraints are greatly reduced, and very many channels can be broadcast over the air, via satellite or via cable. This implies that scarcity rents are much diminished, and therefore that additional sources of funding will be needed if commercial broadcasters are asked to provide non-commercial programming. In addition, people can be excluded from viewing, and so charged for viewing. Finally, continuing a process which started with the invention of the remote control, viewers have an increased ability to avoid both advertising and unappealing PSB material. For instance, “personal video recorders” (PVRs) continuously record channels, and can enable viewers to skip through advertising breaks and party political broadcasts.

3. Market Provision of Broadcasting

The main cause of market failure in the analogue era was that advertising was the sole commercial source of funds. The basic problem with advertising-funded television is that whether or not a programme is profitable does not depend closely upon how *strongly* viewers like the programme. If a cheap quiz show draws the same audience as an expensive drama, then there is no point for an (unregulated) advertising-funded broadcaster to spend extra resources on the latter. Similarly, programmes that appeal strongly to a relatively narrow audience would not be produced, even though they might generate substantial social surplus.⁷ In the context of advertising funding, illustrations of how different genres are more costly to produce and attract different sized audiences are given below:⁸

Soaps	high margin and large audience
National news	high margin and low audience
Sport	low margin and medium audience
Drama series	low margin and large audience
Current affairs	low margin and audience
Arts and religion	very low margin and audience

Revenue from advertising is roughly proportional to audience, while the costs of making programmes do not vary with audience size. The (gross) margin in the above table is the

⁷ The classic reference is Steiner (1952). Steiner also shows that competition between advertising-funded broadcasters might be inferior to (multi-channel) monopoly, since with competition there is a tendency towards duplication of genres. Spence and Owen (1977) systematically compare advertising and subscription as a funding basis in terms of welfare outcomes.

⁸ These descriptions relate to ITV’s evening schedule in 2003. See Oliver (2005, figure 7).

advertising revenues minus the programme costs. Thus, for instance, drama series attract plenty of viewers but are costly to produce, and so have a low profit margin. Soaps also attract a large audience but are cheaper to make. If there were no content regulation for this advertising-funded broadcaster, we expect that it would show only programmes towards the top of this list of genres.

Moving to a subscription television system, however, greatly mitigates this problem. Since the broadcaster can extract viewers' surplus directly, we expect that it will have an incentive to show a diverse selection of programmes of quality appropriate to viewers' willingness-to-pay. For instance, drama series might be unprofitable for an advertising-funded broadcaster, but not for a subscription broadcaster which can extract viewers' higher willingness-to-pay for this genre compared to soaps, say. A sceptic might argue that the current state of pay-TV in Britain is evidence against this claim. However, the presence of a state-funded, sometimes high-quality broadcaster in the market (the BBC) greatly diminishes a commercial broadcaster's incentive to supply high-quality programming. (I return to this point later.)

The effect of the funding basis on the quality of programmes can be illustrated in the stylised duopoly model which is presented in the technical appendix to this essay. In the context of that model one can show that:

1. When broadcasters charge viewers (the pay-TV regime) programme quality is higher (in fact, it is at the socially optimal level) compared to the regime where advertising provides the sole source of funds.
2. When broadcasters charge viewers there are fewer adverts compared to the regime where advertising provides the sole source of funds. (Thus, advertisers are worse-off in the pay-TV regime.)
3. If PVRs become adopted widely and most viewers simply skip over adverts, then the free-to-air business model is not likely to remain viable. In a pay-TV regime, the widespread use of PVRs to skip adverts will make viewers worse off in general, and they will pay a higher subscription charge that outweighs the benefits from skipping over the adverts.
4. The comparison between pay-TV and free-to-air funding regarding viewer welfare is ambiguous. In the pay-TV regime viewers pay more, but they view higher quality programmes and fewer adverts.

In passing, we can use this conceptual framework to shed light on a claim often made about the benefits of public service broadcasting, which is that a policy of raising one (regulated) broadcaster's programme quality will force other (commercial) broadcasters to follow suit. In fact, in this model at least, this claim is quite wrong. If the quality of one broadcaster (say, the BBC) is increased, this will, all else equal, decrease the audience of rival broadcasters. Since a subscription-funded broadcaster's return to investing in high programme quality is increasing in the broadcaster's audience, this implies that the commercial broadcaster will respond by *reducing* its own programme quality. The same point applies if the public service broadcaster offers its programmes for free: this will again decrease the market share that commercial broadcasters can

achieve, and hence decrease the quality that commercial broadcasters will choose to offer. (I return to this point in section 4.1 below.)

Note, however, that I have interpreted the slippery concept of “high quality” as reflecting something that most viewers like in programmes. If instead it were taken to mean “edifying”, and edifying programming is less popular with viewers, then requiring the public service broadcaster to provide this type of content might well *assist* competitors.⁹ In section 4.2 we return to the vexed question of whether competition can co-exist with traditional public service broadcasting.

4. Rationales for Intervention in Broadcasting

The mission of the BBC is to “inform, educate and entertain”. In the broadest terms this crystallises the role of public service broadcasting in many countries. In slightly more detail, common aims of broadcasting policy are to ensure that diverse and high quality programming is supplied which caters to all interests and communities. In addition, programmes that yield educational and other social benefits are to be encouraged, including programmes that might make the population more tolerant, and also more aware of their regional and national identity. And in a related vein, there is often intervention to ensure that sufficient locally produced content is available, and that the domestic “ecology” of programme production is protected.¹⁰

Leaving aside old-fashioned industrial policy or naked protectionism, the most compelling arguments for intervention concern market failure. As was well expressed by Gavyn Davies (who subsequently served as chairman of the BBC from 2001 to 2004):¹¹

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

Market failure rationales for intervention in broadcasting markets fall into two broad categories, which are discussed in the remainder of this essay. The first rationale involves the need to ensure that viewers can watch what they want to watch. (This relates to question 1 at the start.) For instance, in the analogue world with advertising funding it is likely that there will be insufficient diversity and quality of programming in a purely commercial market. As discussed in the previous section, the move to

⁹ In the radio era the BBC’s output was especially austere on Sunday. Commercial advertising-funded broadcasters, transmitting from overseas so as to overcome the BBC’s monopoly on domestic transmission, become very popular in the 1930s, with the bulk of their audience on Sunday. See Coase (1950, chapter 5).

¹⁰ In the UK at least, commentators often refer to the programme production sector as an “ecology”, perhaps in order to suggest that, like some delicate natural habitat, careful protection is needed to ensure its survival. Graham (2005, page 99) takes the analogy further and writes, “Like other ecologies, the UK’s broadcasting ecology will be best preserved by evolution not revolution.”

¹¹ See Davies (1999, page 10).

subscription television, together with a greatly expanded number of channels, largely overcomes this problem. Another familiar argument in this first category is that, since the cost of delivering television programmes to an extra viewer is zero, economic efficiency requires that the charge for viewing should also be zero. (In economic terminology, television is a “public good”.) This argument is often taken to lead directly to the use of a licence fee, or equivalent public subsidy, to finance broadcasting, and I discuss this next.

4.1 Is Television a Public Good? (Part I)

There are a number of problems with this economic argument that, in my opinion, make it unsuitable as a guide for policy. First, it applies equally to all broadcasters, not just to one. Second, the argument applies only for an *existing* set of programmes. It ignores the effect of such a policy on the incentive to develop good programmes in the future. In most other creative industries, we do not think that price should equal the marginal cost of supply. We do not think that novels, for instance, should be available at marginal cost, say 50p, since that would give poor incentives to writers and publishers. We do not think that a new pharmaceutical should be set equal to the cost of producing an extra dose, say 5p, when the development costs are so enormous. And there seems no good reason to think it is a sensible idea in the context of television.

Another reason why the licence fee is arguably undesirable concerns its application to just one broadcaster. If one broadcaster is financed by public funds while all others must stand on their own (either by means of advertising or subscription), then there is a clear danger of market distortion and inefficiency. In a nutshell, in order to attract a viewer away from the BBC, a commercial broadcaster must offer programmes which are significantly more attractive than the BBC’s, so as to offset the payment (or the disutility from seeing adverts) that the viewer must additionally incur.

To illustrate this, consider an example from another media industry. Suppose a train company puts a specific newspaper on everyone’s seat on each journey. Travellers know that this will be freely available, and so there will be a tendency to read this free newspaper, even if another newspaper is actually preferred. In fact, a closer parallel with the broadcasting situation would be if the specified newspaper were put for free through each household’s letterbox every morning. In such a situation it is hard to imagine many other newspapers being able to compete effectively, even if they offer a superior product. Or take a broadcasting example. People in the UK sometimes complain about the “low brow” nature of classical music radio compared to the BBC’s service, since they broadcast only short pieces of music interspersed with car adverts, and so on. But of course, since they have no access to public funds (unlike the BBC), the commercial channels have no alternative! Perhaps the commercial broadcasters would actually offer a better service than the BBC’s in a more symmetric competitive environment? Many commentators have worried about the “predatory” nature of the BBC’s entry into commercial spheres with its new digital channels (24 hour news, children’s channels, and so on) but there seems too little recognition of the fact that exactly the same distortion is present in the core free-to-air markets too. These considerations make it unsurprising

that the pay-TV sector has so far failed to provide much diverse and high-quality programming (as some argue), when it must compete against a generously publicly-funded broadcaster which offers its service for free.

Of course, there will be some people disadvantaged by a move to make the BBC self-financing. But the BBC itself estimates that 80% of people would pay a subscription fee at the level of the current licence fee, and so only a modest increase above this level would be required to maintain current revenue.¹² And many people who chose not to subscribe would anyway be better off, since they would no longer have to pay for programmes they do not particularly value. Worries about the adverse impact of a change to subscription on poor households could be mitigated directly (as the over-75's are currently). And anyway, the licence fee, with its "poll tax" character, is hardly ideal from a social equity viewpoint.

4.2 Externalities

The second broad category of rationales for intervention concerns the existence of externalities and "citizenship-enhancing" factors associated with viewing particular kinds of television. That is to say, if large numbers of people view particular kinds of programmes, this will affect the wider population in some way that the viewers themselves do not take into account. (This relates to question 2 at the start.) There could be negative externalities: a clear example would be if watching violence on television induces violent behaviour.¹³ (We discuss other negative externalities in the next section.)

And there are positive externalities. People might learn life-saving skills by watching medical dramas. History and science on television can serve as a form of adult education, and no one would dispute that this has merits. There is the currently popular notion that television is an important medium to build citizenship, and that news and current affairs programmes are needed to obtain a well-informed citizenry who can adequately discipline government and other powerful interests. Perhaps people become more community-oriented, or more tolerant, by watching certain behaviour on television? (However, just as with negative factors such as violence, a direct link between viewing certain types of content and the viewer's own behaviour is highly contentious.) But there is nevertheless some irony in using the largely *anti*-social medium of television to attempt to build community spirit.¹⁴

While there may be disagreements over the scale and source of externalities, there is a coherent rationale for intervening in the broadcasting market to accentuate those

¹² See Terrington and Dollar (2005). This is a pessimistic counter-factual. In practice, a self-funded BBC would introduce more sophisticated pricing than a lump-sum subscription charge for all its channels, and this would most likely generate higher revenue and with less exclusion of low-valuation viewers. Moreover, it is plausible that the BBC might become more efficient if it had to compete for subscribers.

¹³ See Hamilton (1998), for instance.

¹⁴ Putnam (2000, page 217) provides a good quote from T.S. Eliot, who wrote in 1963 that television "is a medium of entertainment which permits millions of people to listen to the same joke at the same time, and yet remain lonesome."

programmes with positive externalities and diminish those with negative externalities. There is no particular reason to suppose the scale of such externalities has increased or decreased since the analogue era. However, one crucial way in which the digital transformation, and more generally the advent of broadcasting competition, has had an impact is on the feasibility of ensuring that people actually *watch* socially desirable content (question 3 at the start). In the early days of monopoly, the BBC could effectively force people to consume an austere diet of organ recitals, public announcements, and so on, since a listener's only option was to switch off. Nowadays, competition from many channels, together with the introduction of the remote control and PVR devices, means that people will switch over, or skip, as soon as unappealing content comes on. For instance, if we think people should watch more, or higher quality, news than they would do left to themselves, there is perhaps not much we can do about it. As Richard Eyre, then Chief Executive of ITV, succinctly put it:¹⁵

“Free school milk doesn't work when the kids go and buy Coca-Cola because it's available and they prefer it and they can afford it. So public service broadcasting will soon be dead.”

Of course, precisely the same issue faces advertisers and advertising-funded broadcasters. Just as with advertising, the obvious strategy to ensure viewers consume public service content is “product placement”, i.e., to include such material *within* popular programmes. This might include, for example, instances of racial tolerance, or discussions about the duty to vote, in the storylines of soaps. But there are obvious limits to how far this can be taken without losing the programmes' original attractions. Whatever their innate desirability, if the benefits of positive externalities cannot, in fact, be realised, there remains only a weak basis for public intervention.

Lord Reith believed that a broadcasting monopoly was “essential ethically, in order that one general policy may be maintained throughout the country and definite standards promulgated.” This view led the BBC to try to thwart competition (e.g., from overseas transmitters) in the 1930s, so that its listeners would not be tempted by less uplifting fare.¹⁶ This was a perfectly sensible concern, given the objectives of public policy at that time. Now, though, there is no realistic scope for reducing commercial competition, and the viewer's choice is far wider, and more easily made, than Lord Reith could ever have feared. The likely result is that this “edifying” element of public service broadcasting will indeed soon be dead.

4.3 Is Television a Public Good? (Part II)

Pronouncements from the industry and government often suggest that policy should be aimed at making television ever more attractive and readily available. An alternative viewpoint is that many people watch *too much* television, both from an individual and a social perspective. On average, individuals in the industrialised world watch television

¹⁵ MacTaggart lecture at the Edinburgh International Television Festival, 27 August 1999.

¹⁶ See Coase (1950, page 186) and the previous footnote 9.

for about 3 hours each day. Thus, someone who lived to be 80 would spend 10 years watching television.

The political scientist, Robert Putnam, has provided a fascinating summary of various studies about viewing habits, and about the correlates of heavy viewing. For instance, Putnam (2000, figure 59) reports that in the 1990s the approximate proportion of American adults who watched television in the following time slots during the previous day was:

Wake up	45%
Breakfast	35%
Lunch	31%
Before dinner	65%
Dinner	55%
After dinner	88%

He documents a strong correlation between heavy viewing and various markers of anti-social behaviour (the number of letters written to friends, “giving the finger” to another driver, and so on). Of course, one would hesitate before inferring any direction of causality here. Socially isolated individuals might turn to television to fill their time. However, Putnam describes a number of “natural experiments” where local communities were suddenly able to receive television signals, and where field observations indicated that there was a causal link between television and the subsequent reduction of community activities.

Psychologists Kubey and Csikszentmihalyi (1990, 2002) document a study they performed about viewing habits and mood. They write:¹⁷

“Heavy viewers spend more time with TV, but find it is less rewarding. ... Although ... feeling badly in unstructured and solitary time leads to the use of television, ... heavy viewing and the rapid montage of much contemporary television may also help reinforce an intolerance in the heavy viewer for daily moments that are not similarly chocked full of sight and sound.... It seems likely that heavy viewing helps perpetuate itself. Some television viewers grow dependent on the ordered stimuli of television or similar entertainments and become increasingly incapable of filling leisure time without external aids.”

Special worries relate to children’s viewing habits. Watching television reduces a child’s metabolic rate, reduces physical exercise, and invites over-eating (especially when combined with tempting adverts for junk food). Neuroscientist Manfred Spitzer (2005) argues that television impairs a child’s ability to learn and to concentrate. He estimates that viewing habits and the consequent obesity lead to the premature death of some 20,000 Germans each year.

¹⁷ Kubey and Csikszentmihalyi (1990, pp. 164-65).

In the early years of radio, there was a hope that broadcasting might act as a spur to enliven national life. For instance, Sir William Haley (then Director General of the BBC) wrote in 1947:¹⁸

“[The public service broadcaster] does not want people to be listening all the time ... For broadcasting will not be a social asset if it produces a nation of listeners. ... If it cannot give to literature more readers than it withholds, it will have failed in what should be its true purpose. Its aim must be to make people active, not passive, both in the fields of recreation and public affairs.”

From the present perspective this seems to have been an over-optimistic ambition.

5. Conclusion

I end, where I began, with Coase’s views:¹⁹

“What should be done? The task of charting a sensible future for the broadcasting industry is not one which can be left to the industry, which has its own interests to protect. It cannot be left to the Federal Communications Commission, which cannot conceive of any future which is not essentially a repetition of the past. Who, therefore, is to perform this task? I suggest that it has to be assumed by academic economists. [...] I would not argue that academic economists are technically the best qualified to investigate what government policy should be towards the broadcasting industry. But unless they do it, no one else will.”²⁰

So I can put forward my view. There are four points I wish to emphasise. First, the digital world is less prone to traditional market failures, and will supply the programmes that viewers broadly wish to watch. Second, the remaining rationale for public intervention is linked to externality and “citizenship” concerns. These provide a coherent case for continued public intervention in a limited form. Thirdly, the possible adverse health (and indeed “anti-citizenship”) effects of excessive television viewing, especially for children, might mean that government should not expend so much effort to make television ever more attractive and freely available. And fourth, the ability to ensure actual viewing of public service broadcasting material, no matter how worthwhile, is increasingly constrained. Taking these points together, it is not unreasonable to conclude that, given the declining benefits and major costs (including the distortion to competition due to the presence of a state-funded broadcaster in the market) of intervening in this market, the time has now come when intervention at, or anywhere near, the current level is no longer appropriate.

¹⁸ See Coase (1950, pp. 175-6).

¹⁹ See Coase (1966, page 446).

²⁰ Regarding the approach of policymakers, we can see a similar inertia on this side of the Atlantic. The recent Green Paper on the *Review of the BBC’s Royal Charter: A Strong BBC, Independent of Government* (March 2005) suggested little that was significantly different from past practice concerning public service broadcasting or the licence fee.

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APPENDIX

This appendix presents the formal model discussed in section 3. There are two broadcasters, A and B , each supplying a single channel.²¹ Suppose that over the relevant period each consumer watches a single channel. There is an exogenous level of horizontal product differentiation between the two channels: if broadcaster i supplies viewers with utility u_i it will obtain a market share of viewers given by the Hotelling formula

$$s_i = \frac{1}{2} + \frac{u_i - u_j}{2t},$$

where $t > 0$ measures the exogenous degree of channel differentiation and u_j is utility provided by the rival broadcaster. Utility u_i is made up of three ingredients:

$$u_i = v_i - \delta n_i - p_i,$$

where v_i is the endogenous quality of the broadcaster’s output, n_i is the number of adverts shown on the channel, and p_i is the subscription charge (if any). The parameter δ represents the perceived nuisance of adverts to viewers. Suppose that a broadcaster’s advertising revenue is proportional to its audience. More precisely, suppose that if a broadcaster chooses a quantity of advertising n it receives advertising revenue $R(n)$ per viewer. Assume that there are decreasing returns to supplying advertising, in the sense that $R(\cdot)$ is a concave function. A broadcaster can choose its quality v_i by incurring the quadratic fixed cost $\gamma v_i^2/2$. There are no other

²¹ The following model is similar to Anderson and Coate (2005) except that here the quality of programmes is chosen by the broadcasters. For related theoretical models of competition between broadcasters, see Crampes *et al.* (2005) and Peitz and Valletti (2004). The former paper, which has exogenous programme quality, examines a free-entry model of broadcasting (or media more generally) and also allows the advertising revenue function to be nonlinear (unlike the model described in this appendix). The second paper models (duopoly) broadcasters as choosing the degree of horizontal differentiation, i.e., the degree of programme “diversity”, rather than (vertical) programme quality.

costs involved in delivering programmes to viewers. In sum, the profit of broadcaster i is

$$\pi_i = \left(\frac{1}{2} + \frac{v_i - \delta n_i - p_j - [v_j - \delta n_j - p_j]}{2t} \right) (p_i + R(n_i)) - \frac{1}{2} \gamma v_i^2 \quad (1)$$

We next analyse the outcomes of this model, first in the case where broadcasters can charge directly for viewing and then when broadcasters must rely on advertising alone to fund their operations.

Pay TV regime: One can show that broadcaster i 's profit in (1) is concave in (p_i, v_i) if and only if

$$4t\gamma > 1, \quad (2)$$

and this is assumed henceforth. (If this condition does not hold, then there is no market sharing equilibrium, and a channel wishes to corner the market for viewers by setting a high quality level.)

Since $p_i = v_i - u_i - \delta n_i$, broadcaster i 's profit in expression (1) can be written as

$$\pi_i = \left(\frac{1}{2} + \frac{u_i - u_j}{2t} \right) (v_i - u_i + R(n_i) - \delta n_i) - \frac{1}{2} \gamma v_i^2.$$

Therefore, it is a dominant strategy (i.e., regardless of the broadcaster's chosen level of utility u_i) for each broadcaster to choose the advertising intensity n_i , where

$$n_i \text{ maximises } R(n) - \delta n. \quad (3)$$

Given market share s_i , which is determined by the two broadcasters' choices of utilities u_i and u_j , firm i 's most profitable choice of quality is given by $v_i = s_i/\gamma$. Thus, when subscription charges are used, private and social incentives to supply quality coincide, and broadcasters supply the socially optimal level of programme quality given the size of their audience. (This result is an artefact of the assumption that all viewers have the same preferences about programme quality.)

One can calculate that the symmetric equilibrium subscription price and quality are respectively given by

$$p_1 = t - R(n_1) ; v_1 = \frac{1}{2\gamma}. \quad (4)$$

Note from (4) that if $R(n_1) > t$ then firms would like to charge a *negative* price for viewing: the revenue from advertising is so great that firms wish to pay viewers to watch. Since this outcome is not likely to be feasible in practice, we impose a non-negativity constraint on subscription prices. With this assumption, if parameters are such that $R(n_1) > t$ then the regime of “pay TV” collapses to the free-to-air advertising-funding regime, since firms do not charge viewers (even though they could). Therefore, differences between the two regimes only exist when

$$R(n_1) < t \quad (5)$$

and this is assumed henceforth.

Broadcasters break even if and only if the concavity condition (2) is satisfied, in which case the industry profit is $t - 1/(4\gamma)$. Notice that this equilibrium profit is *increasing* in γ , the cost of making better programmes. (Of course, keeping a rival broadcaster’s actions fixed, one broadcaster’s profits will decrease if its cost γ rises. However, when each firms’ cost rises, there is a strategic effect that softens competition, and the net effect in this model is for equilibrium profits to rise.)

One policy intervention that would increase viewer surplus (but not overall welfare) is to require channels to raise the quality of their programmes above the equilibrium level of $v = 1/(2\gamma)$. As long as this does not cause the channels to go bankrupt, it has no effect on the prices offered to viewers. Of course, however, programme quality is something that is intrinsically hard to regulate.

Finally, consider the effect of advertising becoming impossible (say, due to the widespread adoption of PVR devices). In this model, the only effect is to increase the price to viewers, and programme quality is not affected. Viewers are strictly worse off: the increase in price outweighs a viewer’s benefit of not having to watch adverts. The equilibrium level of advertising in expression (3) describes a viewer’s ideal amount of advertising, given that the revenue from advertising is passed on to the viewer in the form of a reduced subscription charge. A similar point is that, in the pay-TV regime, there is no argument (even from the perspective of viewers alone) for regulation that places a ceiling on the amount of advertising that broadcasters show.

Advertising-funded TV: Turning next to the advertising-only framework, a broadcaster’s profit is

$$\pi_i = \left(\frac{1}{2} + \frac{v_i - \delta n_i - [v_j - \delta n_j]}{2t} \right) R(n_i) - \frac{1}{2} \gamma v_i^2.$$

(This is just expression (1) with the subscription prices set equal to zero.) The first-order conditions for symmetric equilibrium in advertising intensity and programme quality are

$$\frac{R'(n_2)}{R(n_2)} = \frac{\delta}{t} \quad (6)$$

and

$$v_2 = \frac{R(n_2)}{2t\gamma}. \quad (7)$$

From (3), (5) and (7) we have

$$\frac{R'(n_1)}{R(n_1)} = \frac{\delta}{R(n_1)} > \frac{\delta}{t} = \frac{R'(n_2)}{R(n_2)}.$$

By concavity, the function R'/R is decreasing in n , and so we deduce that there is *less* advertising in the pay-TV regime than in the advertising-funded regime.

Since $n_2 > n_1$ it follows by concavity that $R'(n_2) < R'(n_1) = \delta$, and so expression (6) demonstrates that $R(n_2) < t$. This inequality implies that quality v_2 in (7) is *lower* than in the pay-TV regime, when quality was given by $v_1 = 1/(2\gamma)$. Of course, in the case of advertising-funded television, the widespread adoption of PVRs would most likely prove fatal.

We must check that broadcasters break even in this model with advertising funding. Industry profits are

$$R(n_2) - \gamma v_2^2 = R(n_2) \left(1 - \frac{R(n_2)}{4\gamma t^2} \right),$$

where the equality follows from (7). Notice that these profits are “inverse-U” shaped in advertising revenue: too little advertising revenue obviously leads to low profits, but too much revenue causes firms to compete very hard for viewers by offering high quality programmes, and this drives down profits. As in the pay-TV regime, the broadcasters’ profits are increasing with γ . The above expression shows that profits are positive provided that $R(n_2) < 4\gamma t^2$. However, we have just shown that $R(n_2) < t$, and so a sufficient condition for this is that $4\gamma t > 1$, which is exactly the condition (2) that ensures that the broadcasters break even in the pay-TV regime. Therefore, whenever broadcasters break even in the pay-TV regime they will also break even when they must rely on advertising alone. (Note that we are not suggesting that profits are higher with free-to-air broadcasting; in many cases they will not be.)

Finally, we can compare viewer surplus in the two funding regimes. First, consider the case of exogenously fixed programme quality v (or, equivalently, the case of very large γ). In this case, viewers in the pay-TV regime have utility

$$u_1 = v + R(n_1) - t - \delta n_1 \quad (8)$$

whereas in the free-to-air regime, viewer utility is

$$u_2 = v - \delta n_2 . \quad (9)$$

When $t < R(n_1)$ the two regimes coincide if negative prices are not feasible. When $t = R(n_1)$ one can check that $n_1 = n_2$ and so expressions (8) and (9) are equal. Next, consider the effect on the two utilities of raising t above $R(n_1)$. Clearly, from expression (8) we have $du_1/dt = -1$. However, by differentiating expression (6) it follows from (9) that $du_2/dt \geq -1$. We deduce that for $t > R(n_1)$, i.e., in all situations where the two funding regimes are different, when programme quality is fixed viewers are worse off in the pay-TV regime. The benefit that viewers obtain from seeing fewer adverts is outweighed by the extra price they must pay to subscribe.

The effect of making programme quality endogenous, however, can reverse viewer preferences over the two regimes. Take the linear example where $R(n) = \alpha n$ and where $\alpha < \delta$. In this case, a pay-TV channel (which chooses n_1 to maximise $R(n) - \delta n$) will not offer any adverts, and so from (4)

$$u_1 = \frac{1}{2\gamma} - t .$$

A free-to-air channel will, from (6) and (7), choose

$$n_2 = \frac{t}{\delta} ; v_2 = \frac{\alpha}{2\delta\gamma}$$

which yields a lower viewer utility: $u_2 < u_1$. Thus, in this case the higher quality programmes in the pay-TV regime more than compensate viewers for the higher price they pay to watch programmes.

To summarise the main points derived in this duopoly model: compared to the pay-TV regime, advertising-funded broadcasting involves lower quality programmes and more adverts; viewers are better off in a free-to-air regime if there is not much scope for affecting programme quality, while they are better off in a pay-TV regime otherwise.