

van Dijk, M.; Nahuis, Richard; Waagmeester, D.

Working Paper

Does Public Service Broadcasting Serve the Public? The Future of Television in the Changing Media Landscape

Discussion Papers Series, No. 05-13

Provided in Cooperation with:

Utrecht University School of Economics (U.S.E.), Utrecht University

Suggested Citation: van Dijk, M.; Nahuis, Richard; Waagmeester, D. (2005) : Does Public Service Broadcasting Serve the Public? The Future of Television in the Changing Media Landscape, Discussion Papers Series, No. 05-13, Utrecht University, Utrecht School of Economics, Tjalling C. Koopmans Research Institute, Utrecht

This Version is available at:

<https://hdl.handle.net/10419/322673>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Tjalling C. Koopmans Research Institute

Tjalling C. Koopmans



Universiteit Utrecht

**Utrecht School
of Economics**

**Tjalling C. Koopmans Research Institute
Utrecht School of Economics
Utrecht University**

Vredenburg 138
3511 BG Utrecht
The Netherlands
telephone +31 30 253 9800
fax +31 30 253 7373
website www.koopmansinstitute.uu.nl

The Tjalling C. Koopmans Institute is the research institute and research school of Utrecht School of Economics. It was founded in 2003, and named after Professor Tjalling C. Koopmans, Dutch-born Nobel Prize laureate in economics of 1975.

In the discussion papers series the Koopmans Institute publishes results of ongoing research for early dissemination of research results, and to enhance discussion with colleagues.

Please send any comments and suggestions on the Koopmans institute, or this series to M.Damhuis@econ.uu.nl

ontwerp voorblad: WRIK Utrecht

How to reach the authors

Machiel van Dijk
Daniël Waagmeester
CPB Netherlands Bureau for Economic Policy Analysis
PO Box 80510
2508 GM Den Haag
The Netherlands
Phone +31-70-3383482
Fax +31-70-3383350
Email: mfvd@cpb.nl (Machiel van Dijk)
dwm@cpb.nl (Daniël Waagmeester)

Richard Nahuis
CPB Netherlands Bureau for Economic Policy Analysis
PO Box 80510
2508 GM Den Haag
The Netherlands
Phone +31-70-3383482
Fax +31-70-3383350
Utrecht University
Utrecht School of Economics
Vredenburg 138
3511 BG Utrecht
The Netherlands.
E-mail: rnah@cpb.nl

DOES PUBLIC SERVICE BROADCASTING SERVE THE PUBLIC? THE FUTURE OF TELEVISION IN THE CHANGING MEDIA LANDSCAPE

Machiel van Dijk ^a
Richard Nahuis ^b
Daniël Waagmeester^a

^aCPB Netherlands Bureau for
Economic Policy Analysis

^bCPB Netherlands Bureau for
Economic Policy Analysis

Utrecht School of Economics
Utrecht University

April 2005

Abstract

The media landscape is subject to substantial technological change. In this Discussion Paper we analyse how technological trends affect the economic rationale for PSB. After identifying the aims and nature of PSB, we derive eight possible market failures from the specific economic characteristics of information. The changing relevance of these market failures is subsequently discussed in the light of the technological changes. Based on this analysis, we argue that public service broadcasting (PSB) for the digital age should be light in the sense that it has a much smaller mandate. The main reason for this conclusion is that, due to technological developments, many market failures in the broadcasting industry are no longer relevant. The broadcasting market thus functions more and more like a normal market. This implies that the allocation tends to the efficient outcome, as long as consumer valuation is properly accounted for. This is not the case when there are externalities and possibly not when it comes to valuing quality. In the presence of these market failures, an efficient allocation is not warranted in the broadcasting industry. It is these remaining market failures that give a future PSB a right to exist.

JEL classification: D60, H41, L82

1 Introduction

Public service broadcasting (PSB) is a minor item on the government budget compared to, for example, education. However, most people will spend more time watching television over their lifetime than they spend in a classroom. In this sense, television, and what appears on the screen, is very important. Discussions about the quality, or the lack thereof, of the programmes are of all times. Proposed changes in the rules of the game - especially when it concerns changing public service broadcasting - lead to very emotional debates. This paper systematically reviews the case for PSB, taking into account the major changes that have occurred since the introduction of PSB.¹

Though discussions about PSB are of all times, a review of the case for PSB has particular urgency now. First of all, the urgency relates to technological changes. We are at the verge of the long predicted convergence between television and the computer. New transmission networks arise (digital TV etc.) and the capacity constraint in content distribution seems no longer binding. Second, there is a direct policy urgency. In the UK, the BBC's charter renewal is being discussed. In The Netherlands the government will speak out on the future of PSB in the summer of 2005. In many other EU-countries it seems that public support for PSB is eroding, which leads to discussions about public financing.

The historic rationale for PSB is based on two (possibly three) concerns. The first concern was that a fully market-based start of public broadcasting might not be viable, due to the public good nature of broadcasting.² A second reason for public concern was that television would be dangerously influential and/or detrimental for moral values. A quote of a chairman of a radio broadcasting organisation who went to the UK to see if they should start broadcasting television is also telling: "It's rubbish, it's only skin-deep. I don't want to talk about it any further."³ Public intervention was 'needed' to avoid this and to make TV into something that would edify the masses. The third reason could be qualified as a combination of the first two: the broadcasting market would not deliver the social optimal programmes. So the concerns can be summarised as being based on market failure and paternalism.

The rationale for PSB today might still be the same, but new motivations might have come up and the historic rationales might have lost their relevance. We aim to analyse what the relevant rationale for PSB is today. The next section provides a historic overview. Section 3 is more

¹ This paper benefited from comments by Marcel Canoy and Rick van der Ploeg. The paper builds on insights from Nahuis et al. (2005) but focuses on the role of the PSB and has a more European perspective.

² Not only the difficulty of pricing was an issue. The coordination problem was also important; for television sets to be sold, a sufficient amount of programmes should be produced and broadcast. Philips lobbied intensively with the Dutch government to start a national broadcasting organisation, such that the demand for television could get the necessary big push in The Netherlands. Source: *Andere Tijden* 23 September 2003.

³ Translated from Dutch, quoted in *Andere Tijden* 23 September 2003.

explicit about what governments aims at with PSB and how these goals can be translated in economic terms. Section 4 gives an overview of the economics of media with a focus on how well the market performs under different regimes, like advertisement support and pay TV. Section 5 discusses how developments in technology and demand affect the performance of the broadcasting market, after which we derive the current rationale for PSB.

The analysis leads to the following main result. The market-failure rationale for PSB is much less important than it used to be, whereas the paternalism-based rationale might be as relevant as before. However, implementing a PSB that is effective in reaching its aims is going to be more difficult. The diminishing relevance of the market-failure motivation is mostly due to technological developments. First, spectrum scarcity is by and large removed due to better (digital) compression technology and the emergence of new transmission channels. This development alone would not do. However, it is very likely that pay TV is going to play a much larger role in 'broadcasting.'⁴ Pay TV, especially in combination with more opportunities for price discrimination, is much better in translating the preferences of viewers into programmes. There is one caveat to this prediction. The transition of ad-supported TV to pay TV depends (among other things) on the protection of copyrights. If instant copying is not avoidable, pay TV is not viable. This depends on encryption technologies, prevailing law and law enforcement. Another technological factor spurring this transition is the development of ad-avoidance technology. Rapid development and implementation is likely to make ad-supported TV less and less viable. The major market-failure that remains relevant is the external effects attached to viewing certain programmes. For instance, democratic performance or social cohesion, which are often cited as being at least partially dependent on news provision.

Moreover, quality might not be well recognised by viewers and the market might supply this sub optimally. Paternalism-based PSB is thus as relevant as before. Note that we are not arguing *how* relevant this is. First of all this is a difficult question for which there is little empirical guidance. Secondly, it is a question that needs to be answered by democratic choice. We, however, do not find evidence that paternalistic motivations will lose weight. By paternalistic motivations we do not refer directly to the notion of "edification of the people". Rather, we refer to the imperfect ability of people to look forward and to judge (even ex post) the quality of information like news and opinion. The final part of our result is that it will be harder to implement the remaining relevant goals for PSB than it would have been before the major technological developments. Avoiding negative externalities, like programmes that incite violent behaviour, is far more difficult in a world where everybody can 'broadcast' any programme on the internet. National jurisdictions have limited instruments to avoid this (see Hoefnagel, 2002). It is even more challenging to get people to consume programmes with positive externalities or

⁴ Some authors refer to pay TV as narrowcasting, we do not follow this.

those programmes that are ‘good’ from a paternalistic point of view. In section 6 we discuss the possibilities and impossibilities of actually implementing a PSB that is in line with the rationale.

Other results that emerge from the analysis are more methodological. The most important result is that public service broadcasting should no longer be analysed by focusing on TV only, but on the type of content. After all, TV is only one of the distribution channels through which information, like a news item, can reach consumers. Hence the definition of what a relevant market is, is going to be determined by the type of content, rather than by the distribution channel through which this information is dispersed.

This paper relates to an extensive literature on the economics of the media. We do not provide an extensive discussion of these papers here as that literature discusses very specific models or details of the question we address. This literature is discussed in the main text.

Literature that addresses the more general question on the rationale for PSB is much more scarce. One exception is a recent article by Hargreaves Heap (2005) that argues that although we are progressing towards, what Hargreaves Heap calls, a multi-channel world characterised by competition, there remains a case for a ‘dedicated’ public service broadcasters. His main point is that a future PSB should have a clearer assignment, in the sense that performance indicators need to be improved. His article formulates some suggestions on how to be more specific about these indicators. In contrast to Hargreaves Heap, we discuss the theory on the economic rationales behind various market failures very explicitly. Another more general discussion on the role of PSB in Europe is O’Hagen and Jennings (2003). They focus on differences in the way PSBs are financed and how that influences their public service content. We add to their paper an explicit account of the changes in the media landscape and a much more explicit discussion of the theory. Finally, Polo (2004) discusses different regulatory measures to enhance pluralism, one of them being having a PSB.⁵

⁵ Other more general papers are: European Commission (1999), which discusses the Community’s audiovisual policy in the digital age, Motta and Polo (1997) who focus on competition policy for the media markets and Anderson and Gabszewicz (2004) who discuss the two-sided nature of media markets.

2 A brief history of PSB in Europe

2.1 The origin of PSB

In 1923, associates of radio-visionary David Sarnoff scorned his plea for investment in radio technology, reportedly by stating: “The wireless music box has no imaginable commercial value. Who would pay for a message sent to nobody in particular?” As David Sarnoff proved during the 1920s (he became a successful man in radio, and later television), his associates were wrong. It was the era in which radio broadcasting became popular, after its invention in the early 20th century. In the United States, as in Europe, radio was a matter of private broadcasters. In the US, this basically hasn’t changed; the market for media products is by and large approached as any other market.

In Europe however, there has been a tradition of public service broadcasting (PSB), one could say since the invention of radio and the realization of its potential for education or agitation (keep in mind the unsteady 1920s and 30s). The ‘mother’ of PSB - the BBC in the United Kingdom - saw the light of day as early as 1927. Roughly, we can sketch the following history, which is representative for most European countries.

As said, the first radio broadcasters were private initiatives. Not per se commercial, some were founded by associations of listeners and enthusiasts or by public interest groups.⁶ Soon thereafter, during the 1930s, governments started interfering by establishing public channels. The dominant model was a public radio monopoly, which was adopted during the 1940s by nearly all countries. Radio increasingly became an instrument of the state. On the one hand to provide for the public good (i.e. to educate), but on the other hand as a propaganda tool. The most striking example of the latter being Nazi-Germany, but other European countries were not shy to use the power of mass communication either. After the war, it was slowly realised that direct influence of the state on broadcasting was not always desirable, but the role of broadcasting for reconstruction and ‘social edification’ remained strong. In some countries a PSB with more independence evolved, though all broadcasters were still state owned monopolies.

The after-war years were also marked by the introduction of television. The same public radio broadcasters smoothly expanded their monopoly role to TV. In the 1960s the landscape started to open up. Part of the challenge came from pirates (illegal broadcasters) that appeared on the airwaves, mostly operating radio stations. Another challenge was the introduction of cable television and satellite as alternative platforms to terrestrial broadcasting. These challenges made the trend to more open broadcasting systems persevere. The 1980s saw the introduction of

⁶ In fact, also the BBC started of as a private firm, the British Broadcasting *Company*, before its transformation to a public *Corporation*. The Company was founded by manufacturers of radio equipment, as a means to increase sales.

(private) pay TV channels in some countries, and of course the first commercial channels on the open network. By the late 1980s, early 1990s the breakdown of the public monopoly was a fact.

Between the inception of PSB and the 1980s, the way society and the government saw the role of and logic behind PSB constantly changed. However, up to the 1980s, the economic perspective on broadcasting in essence didn't evolve very much. The turning point came with the opening up of the broadcasting system: the competition viewpoint became more and more relevant. The European Commission also took part in this change in perspective with the first *Television without frontiers* directive, which focused on the media market and its liberalisation. Current trends of digitalisation and platform convergence only emphasise the need for the competition point of view.

As a side-step, it needs to be said that one particular issue always did get economic attention. This is the so called spectrum constraint, which had major impact on the organisation of broadcasting. Early radio and television technology allowed only for a very limited number of channels. Over the decades the constraint has become less and less stringent. The new digital broadcasting technologies make the constraint virtually non-existent.

Note the striking contrast of the development of PSB in Europe with the situation in the United States. From the outset, the US have chosen for a free market for broadcasting. PSB had a very slow start, and never reached a level of funding comparable with European PSB. This has everything to do with the vision of PSB in the US: it is seen as an *additional* service to existing commercial initiatives, that strictly should provide those programmes that are not provided in the market.⁷ After the inception of radio the default in Europe quickly became public provision; in the US private provision.

This distinction is relevant since generally the *raison d'être* of PSB - in economic terms - is related back to the product characteristics of information and the state of technology. The latter was relevant since it produced a restriction on supply (the spectrum constraint). The most relevant product characteristic, which is also closely related to technology, is the non-excludable nature of information. Basically, everybody who has receiver equipment can receive a broadcast. This means it is impossible to ask a price for any specific programme or channel (in any case, given the technology up to the 1980s). The relevant point here is not to discuss these constraints in detail, but to highlight the fact that given these constraints, at least two general options were available. PSB may have been a logical choice, but it is not an inevitability dictated by the market characteristics. This is shown by the American alternative.

⁷ For instance, educational programmes have always been a focal point of US PSB.

2.2 The assignment of PSB

So we've established that PSB is not the only possible response to the technological and product characteristics. Much depends on the role that society - usually: the government - adheres to broadcasting. In Europe these objectives are much more ambitious than in the US. Given this role and the objectives for broadcasting, PSB is one way to achieve these objectives. However, in the current media landscape, other public policy choices are also available.⁸ This would imply that also private broadcasters are subject to certain government constraints. Indeed, nowadays a fair amount of hybrid forms are visible in Europe: e.g. public channels with (partial) financing through advertisements and private channels with public service obligations, and in general a coexistence of public and private (commercial) channels. However, PSB still plays a large, often dominant role in most countries. This raises the question about what PSB entails. For a short answer to that question, the words of John Reith, founder of the BBC, used in 1927 are still relevant today: PSB has the assignment "to inform, to educate and to entertain". The European Commission defines PSB as follows:⁹

Public Service Broadcaster means a broadcaster with a public service mandate. (...) Such a mandate would be consistent with the objective of fulfilling the democratic, social and cultural needs of a particular society and guaranteeing pluralism, including cultural and linguistic diversity. To fulfil this mandate, the public broadcaster benefits from license fees or direct financial support from the State.

There are two distinguishing elements in this definition: a mandate and some form of public financing. Note however that ownership is not mentioned as a relevant characteristic. Every country has its own particular interpretation of the public service objectives. In the next section the general categories of these objectives will be discussed in an economic framework. First, however, we will provide a quick overview of the different organisational forms of PSB that co-exist in Europe. This is by no means a full discussion, merely a quick overview to give some perspective on the discussion that follows.

2.3 Varieties of the PSB model

For sake of simplicity, we describe three alternative models of PSB.¹⁰ In general we can distinguish between heavy regulation (e.g. Netherlands, France) and lighter regulation

⁸ Consider for instance programme requirements and quota's, specific subsidies and advertisement regulation.

⁹ See the web site of the European Union, <http://europe.eu.int/comm/avpolicy/>.

¹⁰ General regulations that most countries have for both public and private television are not discussed here. This applies for instance for regulation of programming of violent or offensive content, of sponsoring or on maximum hours of advertising per day.

(Germany, Denmark), regulation on programmes (Netherlands, Flanders) or production (France, the Walloon provinces in Belgium) and internal (England, Germany) or external mandate supervision (Denmark, Norway). (European Institute for the Media (2002))

The BBC model

As said, the BBC is the oldest public service broadcaster around. With the design of the BBC, its independent status (free from political or commercial interference) was deemed very important. Therefore it is established by the crown and not by parliament, which means it is constitutionally separated from the government. The way this is done is by making it a public corporation, which is run by governors who act as trustees. These governors are appointed by the government, and their role is to “represent the public interest, notably the interests of viewers and listeners. (...) They are accountable to BBC licence payers and Parliament (...)”¹¹ As for financing, a license fee was introduced. This means that users (owners of receiver equipment) pay directly for the service, rather than having direct government control over the broadcaster’s budget. Advertising is not allowed on the BBC.¹²

The mandate of the BBC is fairly general and not formulated in terms of additionality (to commercially delivered programming). Supervision on the fulfilment of the BBC-mandate is internal. Monitoring employs both qualitative and quantitative yardsticks, and audience consultations are part of the process.

For the commercial channels, there is a separate regulatory body. Companies are free to obtain licences for new commercial channels. However, commercial channels are also under certain programme obligations. These range from taste and decency guidelines to programme diversity requirements.¹³ Note that Channel 4 (C4) in the UK is also a PSB; it is established as a public corporation. C4 is financed exclusively by advertising revenues, and has a heavy public service remit defined in terms of additionality: C4 fills the gaps (in programmes and targeted audiences) that other UK broadcasters leave open.

The Dutch model

The Dutch model is characterised by a hybrid public/private structure. The PSB is basically made up of a number of private broadcast associations of viewers (members), who share a public licence which is officially handed to one ‘overall broadcaster’, the NOS. The licence is granted by the Department of Culture, which also stipulates the programme requirements in the Media Act. The licence is accompanied by a PSB subsidy, although until recently this was a licence

¹¹ Quote from the BBC web site, <http://www.bbc.co.uk/info/running/>, which is a summarised version of the Royal Charter under which the BBC is established.

¹² The BBC runs some commercial services (like BBC World), which are solely financed by advertising. Its profits flow into the BBC and also benefit the public channels.

¹³ For instance, the licence agreement will stipulate that a high quality news programme is broadcast at peak hours.

fee.¹⁴ The PSB structure is in principle open to new associations, if they have a certain number of members and if the Minister of Culture deems their programming 'additional'. Apart from the subsidy, an roughly equal amount of funding is obtained through advertising on the three public channels. The mandate of the PSB is broad (no additionality rules) and has rather specific targets, which are however not quantified or ranked in terms of priority. The broadcasters participating in the PSB have a collective responsibility for meeting the mandate. Since there are no clear-cut targets, the assessment of whether the mandate is met is open to political debate. For clarity, there is no political influence on any individual broadcasts or broadcaster.

A distinctive feature of the Dutch model is the position of viewers, in the sense that they can become a member of a certain broadcast association. The associations each have a certain identity, which in principle is based on a particular philosophy of life. In actual fact, the associations are more based on the historical stratification of society, rather than the current stratification. In any case, by becoming a member, the viewer can support a particular association and guarantee its position in the PSB. In practice, the influence of members is very limited; they have hardly any influence over the assignment of air time to the various associations nor any influence on programming decisions.

The supervision of the Media Act is external; there is one regulatory body for both public and commercial channels. Commercial channels can freely be established, and are only under minimal regulation, which entails no public service requirements.

The German model

Because of its decentralised nature, the setup of the German PSB system is rather different than in most European countries. The *länder* (the Federal states) have autonomy over cultural matters, hence also over broadcasting. There is therefore a variety of regulatory structures for the regional broadcasters. Together, they form two national channels, ZDF and ARD.¹⁵ The ARD is organised as an American style network, so it is made up of regional organisations. The ZDF is a national (interstate) channel, which is governed by a body that represents the regional states.

A central theme is the role of a governing council in each state, the appointment of which is taken care of by the state parliaments. However, the governing council is not a political body, since the aim is that it is independent from the government. The composition of the council is meant to be some cross section of society, in which the different social groups that make up civil society are represented (European Institute for the Media (2002)). The council supervises the execution of the public service mandate. The commercial sector is also regulated at the state level, and also by some council. However, there is a strict separation in regulation of public and commercial channels.

¹⁴ The official argument for abolishing the licence fee was to save on transaction costs related to the collection of the fee and the difficulty of monitoring who owns a receiver.

¹⁵ There are also several thematic national channels, like a cultural or a children's channel.

The heart of the public service mandate is described in a treaty that is ratified by all *länder*. The treaty states that each broadcaster should provide a comprehensive service and also should encourage plurality of opinion. These principles hold for both public and private broadcasters. The public service mandate (only for PSBs) is further determined by subsequent rulings of the Constitutional Court. This prescribes the breadth of the programming, for instance stating that programming should not be restricted to news and culture, but should also include entertainment (i.e. no pure additionality to commercial programming). These programming rules are not specified in detail or in quota though, only in principle. The actual decisions are taken by the directors of the different PSBs, who are appointed and are held accountable by the governing councils.

The PSBs are primarily financed by a licence fee. The amount of the fee is determined by an expert committee, which assesses whether a broadcaster is spending its money efficiently. Advertising and sponsoring are also permitted, but only to a limited extend (for instance, no advertisements are allowed during the evening programming).

3 What is the aim of PSB?

PSB should aim at those media objectives that are not sufficiently met by unregulated markets. Typical media objectives are pluralism and diversity, independence, quality and accessibility. The wish to correct for potential market failures is not the only motivation underlying these objectives. Paternalism also plays a role in media policy making. The government may, for instance, wish to encourage the consumption of arts in order to uplift its people. Finally, the demand for certain events or news items may be so universal that the government thinks that everyone should have access to it, regardless of income. The underlying rationale is then much more equity rather than efficiency based.

Notwithstanding that these media objectives are based on economic or non-economic motivations, their interpretation can be cast in economic terms. In what follows we analyse the objectives from an economic point of view and investigate their relevance for various types of content. We distinguish four types of content: news and opinion, culture, entertainment and specific information (about, e.g., hobbies, tourism, health). As we will show, this distinction is primarily based on differences in the significance of market failures and differences in the relevance of the media policy objectives.

3.1 Pluralism and diversity

Pluralism and diversity refer to the extent that media supply reflects the variety in ideologies, communities and preferences within the society. In economic terms, this objective can be translated as the match between the heterogeneity in supply and in demand. This objective is relevant for all types of content.

3.2 Independence

This objective is met if content is generated independently of political or other influences that may bias the information. Independence is especially an issue under asymmetric information, when the consumer can or does not know about interests that bias the information. The economic interpretation of this objective is that incentives should be such that independent content provision pays off.¹⁶

As independent media enhance the democratic process, this objective is particularly relevant for news and opinion. Independent provision of specific information may entail external effects as well. Think, for instance, of the possible consequences of unreliable information on health issues.

¹⁶ Note that independence should not be confused with impartiality or with being unprejudiced. A medium can provide information motivated by a certain vision or by commercial incentives. But as long as this is clear, independence is not affected.

3.3 Quality

Quality is highly subjective and can be interpreted in many ways: aesthetically, professionally, or in relation to the utility of the end users. In economic terms, quality is a product characteristic of content that is related to the preferences of the buyer. The motivation why it is a policy objective is to some extent paternalistic: the consumption of high quality content is supposed to be inherently good. But externalities may also be involved here, in the sense that high quality content could enhance the democracy, whereas low quality content could, e.g., provoke irresponsible behaviour. A second economic dimension of quality is that its production usually involves relatively high fixed costs. The quality objective is most relevant for news and opinion and culture.

3.4 Accessibility

Accessibility to live coverage of national events or other widely demanded content can be limited due to the prices being charged in an unregulated market. The government may consider this undesirable, because having access to these events and content is often viewed as a basic right. The underlying motivation is thus not economic, but more of an equity nature. It has much more to do with redistribution of wealth rather than with promoting efficiency. Accessibility is mostly relevant for news and opinion but possibly also for some forms of entertainment.

3.5 Conclusion

Governments aim at independent media that provide diverse, accessible and high-quality content. Unregulated media markets could produce outcomes that do not sufficiently meet these media policy objectives. The role of PSB can be seen as to correct for these potential shortcomings. But under which conditions and to what extent do these shortcomings actually arise in the market for information goods? The next section deals with this question.

4 The economics of information (a graphical exposition)

This section describes the key features of the economics of information.¹⁷ Information is the good that is produced, traded and consumed in the broadcasting industry. We give a short description of the key differences between information and a standard good described in economic models, such as a pizza, when we discuss the supply side of the broadcasting industry. Further, we discuss the trade mechanisms that prevail in the broadcasting market and discuss specific features of media consumption. By then we will be fully equipped to describe the market failures that may prevail.

Key features of the information good: an introductory overview

There are four key differences between information and pizzas. The first one is that each time someone consumes a pizza, the producer has to make a new one. With a TV-programme, one additional person viewing does not invoke any additional costs on the producer. Thus information is non-rival as the marginal costs are zero. More specifically, there are relatively high fixed costs and very low marginal costs. Second, if you order a pizza, you know pretty well what you will get. If you watch a movie, only after consumption your true valuation is known. Hence there is information asymmetry. Third, for some information it is difficult to exclude users. Anyone with a TV-set and an antenna can consume broadcast programmes. With a pizza exclusion is much easier. Finally, the consumption of a pizza does not generate substantial external effect whereas with the consumption of information this might be the case. For example programmes with a lot of violence might induce violent behaviour.

4.1 The supply side

The production of broadcasting is usefully described as consisting of three stages. In the first stage, content is produced, such as making a movie, a news report or filming an event. In the next stage the content is bundled: combining different types of content to a channel (or possibly a pay-per-view package where the viewer can pick his or her selected programme(s)). Third, the packaged content is transmitted to consumers or households. This is done either by cable, satellite, terrestrial or some sort of broadband. If the stages are not integrated there are flows of payments between the producers in the different stages. The direction of the monetary flow, however, is not necessarily upward only. It is, for example, possible that channels are charged for using scarce transmission capacity.

Somewhere in these three stages revenue should be generated from consumer *payments*, one way or the other. There is one direct method, that is pay TV and there are two indirect methods.

¹⁷ For a general overview of the economics of information, see Shapiro and Varian (1998).

Consumers pay indirectly by viewing advertisements; then the advertisers are charged for using airtime. Or consumers pay indirectly through the tax system.¹⁸

The broadcasting industry is characterized by substantial fixed costs. This holds true for all stages of the production column. Content for example, once produced, has a marginal cost of zero. Essentially, viewing a programme is a non-rival activity. Similarly for transmission: once the investment in a cable network is sunk, transmission costs are very low. The (fixed) production costs, however, might well be increasing in reaching a larger audience. In the remainder we focus on content production, however, and we thus do not discuss the stages separately, as this is not necessary for our main line of reasoning.¹⁹ The high-fixed low-marginal cost structure affects market functioning in two important ways. First, in general a cost structure with economies of scale tends to lead to concentrated markets. For content production this tendency is somewhat less relevant as the fixed costs have to be incurred over and over again.²⁰ Second, allocative efficiency requires pricing equal to marginal costs. The consumer with a willingness to pay which just exceeds zero should be served in order to maximize social welfare. A price of zero, however, is inconsistent with firms recovering their average costs. Hence, such a price does not lead to a viable industry. The different strategies of firms to still make positive profits are discussed in the next subsection. Before we can discuss these we need to stress a second feature of information goods.

Non-excludability is a second feature that is sometimes relevant for information goods. Non-excludability implies that the owner of a good cannot exclude users from enjoying their product. Non-excludability and non-rivalry together are crucial characteristics of public goods. The past developments in the broadcasting industry can only be understood by discussing non-excludability (see also the section on 'a brief history'). Especially with terrestrial transmission - important still in many countries - excluding users is difficult or costly. True non-excludability rules out any use of direct pricing. The non-excludability is not only relevant for understanding the historical development, but is still relevant as the cheap copying opportunities and free de-scrambling methods undermine the possibilities for charging consumers.

¹⁸ This is possibly done by a licence fee, as in the UK, or by higher general taxes, as is the case in The Netherlands.

¹⁹ See Motta and Polo (1997) for an elaborate discussion of the consequences for competition policy due to high fixed costs in the different stages of the production of broadcasting.

²⁰ Of course, this tendency is also present in content production. Think of Reuters, CNN etc, but in all these cases the news still has to be adjusted to specific local tastes. Note that these oligopolistic firms make use of scale effects. From a social welfare point of view, this is not necessarily a bad thing.

4.2 Trading information: On pluralism and diversity

Information ‘trade’ in the broadcasting market is possible by free-to-air broadcasting (with or without advertisements), by means of a pay-per-view or pay TV channel, or a mixture of these systems. In this section we discuss the allocative efficiency of these different transactions. We only briefly touch upon the issue of *why* the different systems are present in different market segments.

A general discussion of advertising supported TV could be guided by a formal model. We, however, argue that a discussion of the general trade-offs is more fruitful. The reason being that there is a myriad of models with different set-ups without any consensus about what is relevant (just to give an idea, there exist Hotelling-beach, Salop-circle, duopoly and monopolistic competition models which either do or do not model the advertising market explicitly and which do or do not model quality choice etc.). So we prefer to discuss the general insights and trade-offs in greater detail, while the specific results are discussed in footnotes.²¹

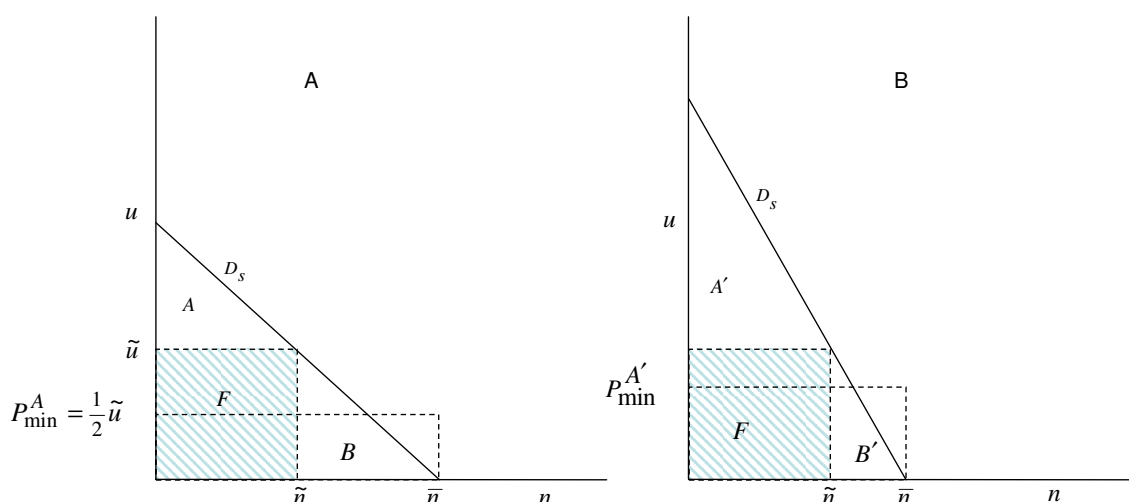
4.2.1 Advertising

There are several reasons why advertising can be an important revenue generating mechanism in (parts of) the broadcasting industry. First, technical difficulties related to exclusion can make the use of a price mechanism expensive or even impossible. In that case, and in the absence of subsidies or donations, ads are the only available means of generating revenues. Second, resorting to ads for revenues might simply be more profitable than any possible pricing policy. Third, pricing might be more profitable ex post but not ex ante. This is easily understood by the following example. For pay TV to be viable, a sufficient number of households should have a decoder. For households to buy a decoder, a sufficient number of pay TV channels should be available. This coordination problem might cause ad-support to be the only viable mechanism.

Let us first consider the basics that determine the allocation of programmes under ad support. Figure 4.1 depicts demand curve D_S , representing demand for sports. The vertical axis shows the willingness to pay (u) and the horizontal axis the number of viewers (n). Hence, each potential consumer either consumes one unit of sports or zero units. The fixed cost of producing the programme, F , are represented as a square, $\bar{n}\bar{u}$, in the figure. Obviously, welfare maximisation requires the programme to be produced: triangles $A + B$ represent the maximum possible surplus. With advertising support it is easy to calculate the minimum per-informed-consumer ad price for the programme to be produced and broadcast: $P_{Min}^A \geq \frac{\bar{n}\bar{u}}{\bar{n}} = \frac{1}{2}\bar{u}$ (note that at a price zero $\bar{n}$ viewers watch). Thus P_{Min}^A is the price per viewer, that the producers should get to just recover the fixed costs (with associated revenue of $P_{Min}^A \bar{n}$).

²¹ A more general discussion needs to take into account: competition between suppliers, substitution of viewers between different programmes, competition on the advertising market etc.

Figure 4.1 Programme allocation under ad support



There is nothing that guarantees that the ad price is indeed sufficiently high. Therefore when one thinks about the allocation of programmes in general, it is likely not very efficient as the informative role of the price system in a regular market is not very accurately taken over by the price of ads. Indeed, there need not be any relation between total willingness to pay for the programme by viewers and the value of them viewing ads to the company trying to sell something. Only the *number*²² of viewers counts, not their willingness to pay for the programme. Owen and Wildman (1992) formulate this very eloquent “The first and most serious mistake that an analyst of the television industry can make is to assume that advertising-supported television broadcasters are in business to broadcast programmes. They are not. Broadcasters are in the business of producing audiences. These audiences, or means of access to them, are sold to advertisers.” Figure 4.1 (part B) illustrates that the minimum ad price $P_{\min}^{A'} > P_{\min}^A$ should be higher when the total number of viewers is smaller, despite the fact that the total valuation for sports is the same (the figure is constructed such that $A + B = A' + B'$).²³

Possible market failure 1 If the price of advertising is relatively low, some socially valuable programmes will not be broadcasted under advertising support. More specifically there is a bias against programmes with a high valuation by a small potential audience.

Before we turn to a more general discussion of advertising supported TV, it is important to take a few moments to think about ads. In discussing Figure 4.1 we assumed ads are something completely neutral, in the sense that they need not be taken into account for the welfare analysis.

²² Of course, their budget, or influence on how the budget is spent, matters.

²³ See Spence and Owen (1977) for a more general analysis.

This shortcut is made for expositional ease only. But ads are not broadcast without a purpose. Firms are willing to pay for broadcasting ads. Now, if the value of the ad exceeds the disutility of watching the ad, advertisements add to social surplus. To think about the value of ads, we can consider three types of ads: informative, manipulative and signalling or persuasion ads. Informative ads make people aware of the existence of a good (or good-price combination) that make some of them change their buying decision (read: get a higher utility from their spending funds). Basically these ads improve the allocative efficiency in the rest of the economy. Manipulative ads change consumers' utility functions and are generally bad for welfare, see Dixit and Norman (1979) for an extensive analysis. Signalling or persuasion ads do not inform consumers about new products but they can signal quality. The reasoning is as follows: a heavily advertised product must be a good product, because if it were a bad product no repeat purchases would occur. Without repeat purchases, heavy advertising would not be a profitable strategy, hence the product must be good. This interpretation of advertising also leads to less 'wrong' buying decisions and hence less inefficiency.

Competition leads to a tendency for duplication. Suppose there are two channels and two types of programmes, Sport (S) and Culture (C), and 80% of the potential viewers prefer to see sports. Channel 1 broadcasts sports. Channel 2 then chooses between S and C , where the first choice gives them 40% audience (half of the sports minded) whereas C gives them 20% only. Hence, they duplicate. This is inefficient; the inefficiency arises from the fact that Channel 2 ignores that it takes away half of the viewers of Channel 1. This is the familiar business-stealing effect (see Mankiw and Whinston (1986)). A monopolist would broadcast S and C , given that the fixed cost of producing C is sufficiently low.²⁴

A second aspect related to ad-supported tv is that duplication of programmes, with consumers *disliking* ads, leads to very tough competition for viewers. This insight mitigates the tendency for duplication. Let us follow the previous example. Suppose both Channel 1 and 2 broadcast S . If people dislike ads, they watch the sports programme with the least ads, say - for some reason - that is Channel 2. If the viewer-ad elasticity is sufficiently high, Channel 1 will respond by lowering its amount of ads and a type of Bertrand-Nash outcome would be the result. Hence, one of the channels could do better by broadcasting C .²⁵ This is not the only possible setting. The story might go the other way round if programmes are bad substitutes (the viewer-ad elasticity is low). This example leads us to a discussion of excessive advertising.

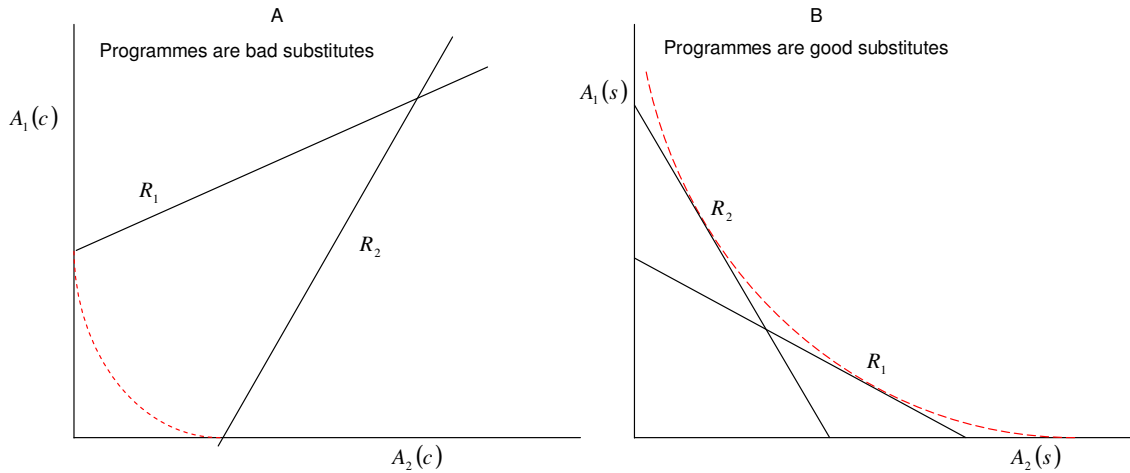
Whether advertising is excessive or not, depends on the answer to three questions: (i) are ads a big nuisance to viewers? (ii) how high is the social value of ads? (iii) are different contents or programmes good substitutes? The relevance of the first two questions is rather obvious. The

²⁴ See Berry and Waldfogel (1999) and George (2001) for evidence that the trade-off between competition and diversity is relevant empirically.

²⁵ See Anderson and Coate (2005), for a more extensive discussion.

interplay of these with the last question deserves some elaboration.

Figure 4.2 Are programmes substitutes?



Suppose the alternative programmes on Channel 1 and 2 are relatively bad substitutes, S and C for example (Figure 4.2 (A)). Let us just focus on the choice between Channel 1 and 2 (and not on watching tv or doing something else). If Channel 1 increases its ad volume, Channel 2 will respond by increasing their ad volume, as the loss of doing so is decreased due to the larger ad volume on Channel 1. Hence, if the programmes are bad substitutes, ads are strategic complements and excessive advertising is the outcome (the social optimal amount of ads is sketched by the dashed line, assuming that the value of ads is relatively low to the incurred nuisance). If programmes are good substitutes, the equilibrium might be characterised by too low advertising (if the social value of advertising is positive, see figure 4.2, panel B).

Possible market failure 2 Due to the possibly negative nuisance externality imposed upon viewers with advertising supported TV, there might be excessive advertising.

Above, we illustrated our case with two channels only. How important is the number of channels? If there is a limited number of channels, ad-supported TV leads to excess profits for the owners of the channels,²⁶ something which is far less plausible if the number of channels is very large. This distributional issue is beyond the scope of this paper.

The specific analysis of Spence and Owen (1977) builds on monopolistic competition with a given ad price. They show that, with a move towards more channels, the duplication problem discussed above is mitigated. However, the tendency toward excessive advertising is strengthened. As a larger variety of choice leads to a better fit with specific consumer tastes,

²⁶ This does not hold true if the licences are auctioned.

consumers are less likely to switch to other programmes and therefore react less sensitively to increased advertising. Moreover, the analysis of multiple channels shows that more channels lead to more variety, but the weak incentives – due to the lack of price-information – for the optimal allocation stand upright.

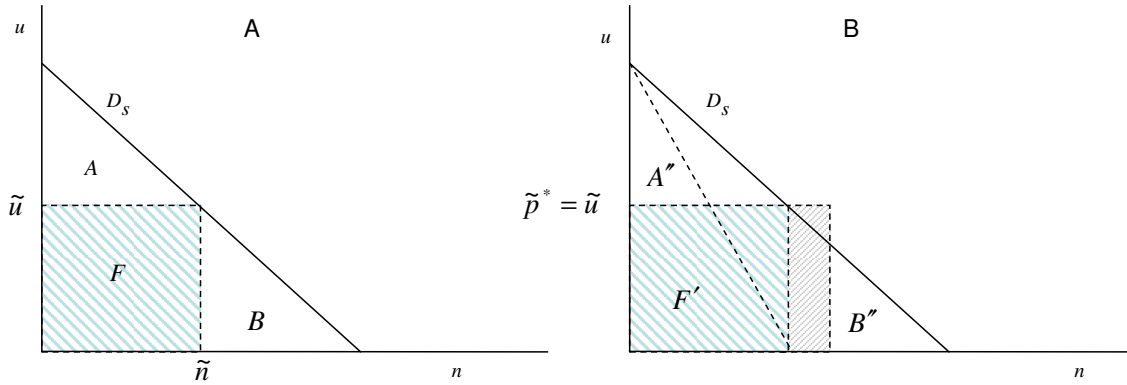
4.2.2 Pay TV

Pay TV requires that some conditional access technology makes the good excludable.²⁷ The crucial difference between pay TV and ad-supported TV is that the price mechanism plays its role. Prices transfer some information about consumer valuation. In general this makes the allocative efficiency of pay TV exceed that of ad-supported TV.²⁸ It is, however, immediately clear that static efficiency will not be possible due to the specific cost structure. Equilibrium prices will exceed marginal costs, and thereby exclude viewers whose willingness to pay is larger than the marginal costs.

Possible market failure 3 With pay TV some viewers are inefficiently excluded.

Figure 4.3 (A) provides an example of pay TV with a monopolist. Again, consider the demand for sports, as in Figure 4.1. The monopolist sets the optimal price where the marginal benefits equal marginal costs (of zero): the price is $\tilde{u}$ and the size of the audience is $\tilde{n}$. So the revenues exactly equal the fixed costs in this example. However, there is a welfare loss equal to B as viewers with a positive valuation, but below $\tilde{u}$, are excluded.

Figure 4.3 Pay TV in a monopolistic situation



²⁷ In most of the analysis, we do not distinguish between pay-per-view and pay TV. Only in section 4.2.2 we make the explicit distinction.

²⁸ It is, however, very simple to construct counterexamples where this is not the case. We will discuss these in a moment.

Now, consider panel B where we assume that the fixed costs are slightly higher (indicated by the added dashed part in panel B). The monopolist will not be able to recoup the fixed costs by setting his optimal price $\tilde{p}^*$. The programme, however, is socially desirable, as $A'' + B''$ is much larger than the small rectangle that we added to the fixed costs. The optimal price for the monopolist (and hence his revenue) is not affected by the higher fixed cost. Note, that a sufficiently high ad price (for example an ad price equal to $\bar{u}$) would ensure production, as then everybody with a positive valuation will watch the programme, generating a revenue larger than F' . As discussed in section 3, high-quality programmes tend to be high-cost programmes. The analysis above thus indicates that high-quality programmes tend to be undersupplied in the market.²⁹ This is especially so, if high-quality programmes are not ‘properly’ valued by consumers.³⁰

Possible market failure 4 With pay TV some socially desirable (high-quality) programmes might not be produced.

Also related to the specific cost structure is the possibility that there is excessive entry on the market. In contrast to market failure 3 and 4 - where not all consumer valuation is taken into account - this market failure is due to the entrant ignoring that it affects the profitability of other firms (see Mankiw and Whinston (1986)).

Possible market failure 5 In some market segments there might be excessive entry.

How would a monopolist using the price system be able to supply such a programme as in Figure 4.3 (B)? Price discrimination is the key. Perfect price discrimination achieves an efficient allocation. But, to be able to perfectly price discriminate, some conditions should hold. First, the producer must know each individual’s valuation of the programme. Second, resale by consumers should be ruled out. The first condition is generally violated in practice and the second is very difficult to implement in an information market (where copy and transport costs are close to zero). Having said this, however, information markets use other methods to price discriminate. Two methods are used in practice: windowing and bundling. Windowing is supplying a programme through different platforms (and possibly at different points in time) for different prices. Windowing is common practice with entertainment. A movie for example is first shown in cinema’s, then rented as videotape or DVD, then sold as DVD or videotape (or the other way round), and then sold to pay TV channels and finally to broadcasting channels. Such a strategy is less likely to be relevant with information that depreciates very rapidly like news and opinion. Then bundling is an option. Bundling is combining goods and selling the package for one price.

²⁹ For an elaboration, see Spence and Owen (1977).

³⁰ The next section discusses imperfections in consumer valuation in greater detail.

In general bundling is not a very efficient outcome as people are ‘forced’ to consume goods they otherwise would not want. However, given the fact that marginal costs equal zero for much of the broadcasting industry this is not very harmful.

Figure 4.4 Bundling

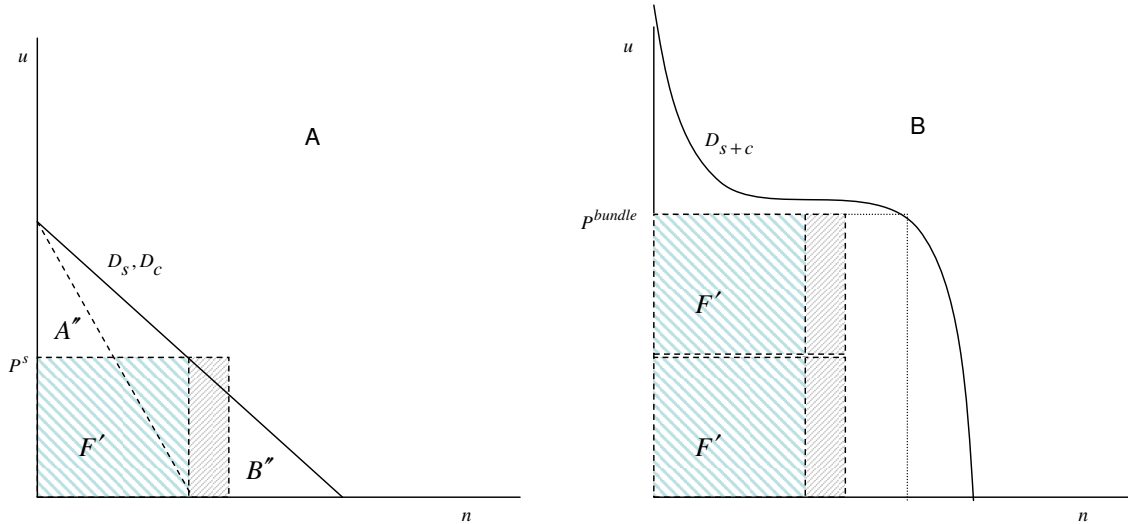


Figure 4.4 illustrates the economics of bundling. For simplicity we assume now that sports and culture have identical demand functions and both have too high fixed costs for viable production by a monopolist (so both demand curves are as in figure 4.3, panel B). Now, consider one monopolist trying to sell a bundle of S and C . If the valuations for S and C are drawn independently from for example an uniform distribution, the demand for the bundle looks like Figure 4.4 panel B. To understand this, think about what the demand for a bundle would look like if the individual valuation for the two goods is perfectly negatively correlated.³¹ Then a horizontal demand curve results. Given a demand curve for the bundle such as in Figure 4.4 panel B, the monopolist prices the bundle at p^{bundle} and easily recoups the total fixed costs ($2xF'$).³² Summarising, instead of using heterogeneous prices to price discriminate, bundling reduces the heterogeneity of demand.³³

Remark The relevance of market failures 3 and 4 depends on the ability of producers to price discriminate.

³¹ The ultimate sports freak does not value culture and the other way round.

³² If, on the other hand, individual willingness to pay is positively correlated, bundling is not effective as the slope of the demand curve is steeper.

³³ See Bakos and Brynjolfsson (1999) for a formal exposition.

The efficiency properties of an outcome with price discrimination depend on how well producers are able to price discriminate. This is ultimately an empirical question (for which there is very little evidence). A higher degree of price discrimination again has distributional consequences, but now we cannot ignore them (in panel B of figure 4.4 most surplus is captured by producers).³⁴ In many competition policy cases consumer surplus is taken as the important evaluation variable. This can be discussed, but it is more relevant if the producer surplus adds to another country's income; something which is likely in a globalised media landscape.³⁵

Remark Note that if advertising is combined with pay TV, the relevance of the excess advertising market-failure disappears, as the producers internalise their viewers disutility from ads by changing their prices.³⁶

Pay TV: pay-per-view or pay-per-channel?

So far we did not distinguish between pay-per-view and pay-per-channel. Pay-per-view implies that viewers decide whether or not to pay for each separate programme. Hence pay-per-view is incompatible with a bundling strategy as discussed in the previous section. However, as might be clear from the exposition on bundling, such a strategy is very profitable for producers. Is it therefore likely that pay-per-channel is going to prevail? Indeed, as price-undercutting by pay-per-view channels is not a profitable strategy. To see this, note that a single-programme producer, such as in panel A of figure 4.4, is not able to produce at all. Therefore, in case a pay-per-channel supplier is already present, a pay-per-view producer cannot enter the market profitably. Indeed, Nalebuff (2000) shows that bundling strategies tend to lead to highly concentrated markets. So, on the one hand bundling leads to a better (or more diverse) allocation. But there is a counter effect of bundling: it leads to highly concentrated markets. The impact of the latter effect on diversity is not *a priori* clear.

Remark Pay-per-channel is likely to prevail above pay-per-view. The effect of the different strategies on diversity is not *a priori* clear.

4.3 The demand side: On quality and independence

Let us first discuss quality, as this has both demand and supply side elements in it. Earlier, quality has been defined as relatively expensive goods (high fixed costs) and (de)merit goods. We have seen that in general there is a bias against relatively high-fixed-cost goods with a steep demand curve. So here we only focus on the consumption externality part of quality.

³⁴ Hansen and Kyhl (2001) analyse the welfare consequence of a ban on pay TV.

³⁵ Ultimately, the surplus is captured by the scarce factor, be it talented football players, movie producers or marketing talents.

³⁶ For an elaboration, we refer to Anderson and Coate (2005).

4.3.1 Consumer choice: externalities

Externalities that are attributed to the consumption of TV-programmes are as follows:

(A) Positive externalities: (i) being informed has a positive effect on the functioning of the democracy (ii) viewing important events is subject to a positive network externality (iii) there might be some educational benefit from consuming 'quality' programmes;

(B) Negative externalities: consuming certain programmes might lead to behaviour that has negative externalities, like violence, excessive risk taking and so on.

Possible market failure 6 There are some positive and negative externalities related to the consumption of information.

4.3.2 Consumers: Imperfections in consumption decisions

Above, we discussed several externalities: positive or negative impacts of one consumers' decision on other consumers, that are not taken into account by the consumer who decides. Here we discuss some examples of decision making where the consumer is possibly not able to fully take into account the impact of his consumption decision on himself.

First, the consumption (and trade) of information is difficult as a consumer is not able to fully assess the relevant characteristics of the good before actually consuming it.

Some information has the characteristic of an *experience* good. This can lead to biases in consumption. Consumers might not try enough new programmes, especially if they are costly. But a rational consumer will maximise his expected value of trying, and thus accepts some choices that impose ex post a negative value.

Slightly more troubling is that some information has the characteristic of a *credence* good. That is, even after consumption, consumers are not able to value the good properly. This is most easily understood by referring to news and opinion. After watching the news the viewer is unaware of the accuracy of the news. So consumers might value quality improperly. Independence of information is also closely related. For viewers it is, for example, difficult to judge whether product information programmes are biased toward one of the sponsors or advertisers of the programme.

There exist some market mechanisms that mitigate this issue. If there is a diverse supply from different sources, some consumers will consume more than one source and thereby act as a control mechanism.³⁷ Also the different information sources can control each others quality.

Quality and independence is also served by a well functioning reputation mechanism. Reputation is asymmetric. For firms to create a good reputation is much more difficult than to lose it. Obviously, this leads to very careful behaviour on the part of firms with a good

³⁷ Mullainathan and Shleifer (2004) show that a necessary condition for this mechanism to work is that the ex ante views are sufficiently differentiated across viewers. Fierce competition and limited concentration in supply of news are therefore important conditions for mitigating the credence problem.

reputation. A necessary condition for the reputation mechanism to work, is a competitive market. On the other hand, in a very competitive environment where quality does not pay-off without a good reputation (as consumers do not recognise it), obtaining a good reputation might be very difficult (see Akerlof (1970) for a discussion of the existence of markets with unobservable quality and no reputation).

Possible market failure 7 Due to the imperfection in the consumers' determination of the relevant characteristics of the good, consumption might be biased toward low quality goods and it is uncertain whether the market for high-quality goods exists. This depends on the pay-off of supplying high quality and the possibility of obtaining a good reputation.

Second, even though the consumer might know the relevant characteristics of the good, he or she might not know the consequences of consuming certain information or programmes. This class of 'consumption failures' is not literally a market failure, but relates to 'paternalism'. The somewhat negative association attached to this term does not reflect what we intend to convey, we just follow the convention. Further discussion will clarify how we interpret paternalism. The idea that the public broadcaster knows better what is 'good for you' to view, is outdated and we do not challenge this. But there are other notions of paternalism that might still be relevant.

The first aspect is that people might be or tend to be short-sighted.³⁸ Again an example to clarify. Take classical music on TV. For most people it takes time and effort to learn to fully appreciate it. As people tend to be short-sighted, they put too little weight on the future benefits of their current consumption. Hence their willingness to pay is not in line with true long term evaluations. Then such a programme might not be broadcast, even though the social value might be positive.

The second aspect is that people simply cannot judge well how they are affected by watching a certain programme. For economists, consumer sovereignty is one of their basic building block, so this might look like a strong assumption. However, no one will deny that you should protect children from certain material. And no one would advocate confronting people with porn in between programmes, for example. Moreover, there generally is large support for bans on tobacco advertisements. All we want to say here is that it is not entirely obvious where this line of reasoning stops.

Possible market failure 8 Due to the imperfection in the consumer's ability to determine the consequences of viewing certain programmes, 'market' failures might arise. These relate to paternalism.

³⁸ There is ample evidence for this.

4.4 Putting the pieces together

This section analysed the potential market failures in the broadcasting industry. We distinguished eight different, but sometimes related, market failures.³⁹ The question then arises if we can ex post ‘rationalise’ the aims of PSB. Table 4.1 shows such an interpretation, by linking the various market failures to the most common governments aims.

Table 4.1 The link between market failures and the aims of PSB

Possible market failure	Most related PSB aims	Other relevant PSB aims
1. Underprovision under ad-support	Pluralism	Quality
2. Excessive advertising		
3. Inefficient exclusion under pay TV	Accessibility	
4. Underprovision under pay TV	Pluralism	Quality
5. Excessive entry	Pluralism	
6. Positive and negative consumption externalities	Quality	Independence
7. Consumption bias towards low quality	Independence, quality	
8. ‘Paternalism’	Independence, quality	

A comparison of pay TV and advertising support

So far we discussed the potential market failures that may arise in the information trade in the broadcasting industry by discussing pay TV and advertising-supported tv separately. For the discussion on the future of PSB it is, however, useful to make an explicit comparison of the two systems.⁴⁰

Some recent analyses compare the different market forms on dimensions of quality and diversity. It is beyond the scope of this paper to provide a detailed treatment of the different modelling strategies. Here we just summarise the important insights with respect to the comparison of pay TV and ad-supported tv.

The most important insight from the literature is that more variety not always improves welfare. The production of more varieties of information goods implies that the associated fixed costs have to be made again for each variety. Hence there is a trade off between diversity and saving on fixed costs. Whether the market reaches the socially desirable quality and diversity is a question that we addressed earlier. In general, the answer is no, but then the question is when pay TV is superior to ad-support.

³⁹ As an additional market failure, Hargreaves Heap (2005) points at the possibility of too low levels of innovation in broadcasting. Underlying reasons are imperfect property rights, a short time horizon (impatience in ‘trying something new’) and ‘conformism’, as a tried response to uncertainty (on whether a new program will be succesful or not). We do not include this market failure here, since its uniqueness to broadcasting is unclear.

⁴⁰ Recall that we dealt with the difference between pay-per-view and pay-per-channel in section 4.2.2; here we do not repeat this.

Waterman (1990) shows that pay TV leads to too much diversity. In the market, the incentive to introduce an alternative variety is related to the expected profit relative to the fixed costs of producing the new variety. The socially optimal decision would be taken as follows: the net-utility of the new variety should outweigh the fixed costs. The entrant, however, does not take into consideration that he reduces the profit of existing companies (this is the business-stealing effect, see Mankiw and Whinston (1986)).

We have already seen that an advertisement-sponsored market tends to deliver too low diversity, as producers can appropriate only a part of the created surplus. Anderson and Coate (2005) show that the chance of too low diversity increases if the valuation for programmes is large relative to the scope for advertisement revenues. When programmes are bad substitutes, the risk of insufficient diversity increases. But too much variety is also conceivable in an ad-supported market. Too much variety can be expected if the expected profit of introducing a new variety is larger than the social benefit of the new variety. This is more likely if the programmes are good substitutes and if there is much possibility to advertise.⁴¹ Berry and Waldfogel (1999) show for the American radio market (that is an ad-supported market) that the business stealing effect is in fact relevant.

Anderson and Coate (2005) also show that variety with pay TV is at least as high as with advertisement-sponsored media. Does this imply that welfare is always higher with pay TV? In many cases: yes. The exception to this rule is when pay TV excludes many potential viewers and when advertisement-sponsored tv already offers excessive variety.

Another aspect of the supply of programmes is quality. Higher quality is generally interpreted as products with higher fixed costs. Waterman (1990) shows that when firms can invest in quality, they choose too low quality levels in most cases. He shows that this distortion is more severe in an ad-supported market than in a pay TV market. Bourreau (2003) adds to the work of Waterman the following: with pay TV less duplication arises, because by counterprogramming suppliers limit the fierceness of price competition. With advertisement-sponsored TV, the incentive to limit competition is less strong, which makes duplication more likely.

⁴¹ This is business stealing in an ad-supported model.

5 A changing media landscape

The media landscape is subject to continuous social, technological and institutional change. These changes can affect the motivation for PSB, as well as its design. This section focuses on recent and future trends and analyses their implications for media policy.

5.1 What are the trends?

Technological change has been the main engine for many developments in the media sector. The most important one of the last decade has obviously been the rise of the internet. By connecting computers via existing communication networks, the internet offers a highly open and accessible information and communication system. And although the time consumers spend on media consumption has been rather constant over the last decades, we see a clear shift from radio and newspapers to television and internet. Many observers agree that this trend is very likely to continue.

Given the current capacity of the local infrastructures, the internet is not yet the dominant medium for all types of content. Only for news and specific information, the internet is virtually a fully-grown substitute channel. Existing cable and telephone networks cannot yet sufficiently handle the large information streams that are required to offer, e.g., high quality video-on-demand. But due to digitalisation of information, the different networks become more and more able to perform similar tasks. Cable networks can now be used for internet and telephone, whereas traditional telephone networks are being used for internet. This trend of convergence is likely to continue as well. Many experts expect that fibreglass will eventually replace the existing cable and telephone networks, but rapid progress is also being made in wireless communication technologies.

Setting aside the question of which technology will eventually prevail, it is clear that innovative efforts will be aimed at increasing the capacity of networks. The reason for this is purely commercial. Larger capacity will not only allow for offering larger choice sets, it will also enable firms to interact more directly with their clients. Different customers can then be charged different prices for different content packages that better match individual needs.

The production of content is also subject to continuous technological progress. New digital techniques have led to more quality against lower costs in, e.g., desktop publishing, special effects and recording and editing. For some activities, such as the production of local news, total costs decrease as a result of technological change. But in other activities, such as the production of movies, new technological opportunities lead to rising production costs. For the latest *Lord of the Rings* movie, for instance, total costs reached a stunning 278 million euro.⁴²

⁴² Waterman (2004) elaborates on the relation between quality and total costs of content production.

5.2 What are the consequences?

What do these trends imply for the objectives of media policy and, related, for PSB? The objective of pluralism and diversity seems to benefit most from the technological trends. Given capacity constraints, commercial suppliers only focus on the largest (i.e., most profitable) target groups. But because of the expected growth in distribution capacity (i.e., more channels), the provision of content to smaller, less profitable target groups becomes more interesting for suppliers as well. Higher capacity is therefore expected to lead to a more heterogeneous supply. Furthermore, the increasing possibility to price consumers more directly allows for content supply that much better accounts for consumer valuation of content. As mentioned, content supply driven by the advertising mechanism, provides an inferior indication for the valuation of content. Finally, tailor-made content provision directly implies a better match of demand and supply at the individual level as well.

The trends have ambiguous effects for the quality objective. On the one hand, increasing capacity could lead to more high-quality content along the lines mentioned above (i.e., through servicing of smaller groups and through internalising the valuation of quality). However, the internet also provides an easily accessible platform for undesirable, low quality content. We may therefore see more supply of high-quality content with positive externalities, as well as an increasing supply of 'bad' content with potential negative external effects.

An interesting question, particularly in the context of quality, is how accessibility is affected by the trends. In general, a trend towards more direct pricing goes along with higher excludability and thus lower accessibility. As it is likely that higher quality will be higher priced, the accessibility of this type of content will be less as well. Adverse selection effects can then, in turn, lead to increased accessibility of low quality content.

The independence of media, finally, is not likely to be seriously challenged by the trends. Although we have witnessed a large number of mergers, acquisitions and joint ventures in the media sector in the last decade (OECD, 1999), further concentration is not expected. Limits imposed by competition laws and other legal constraints on cross-ownership will simply impede this. Only vertical integration, arising from autonomous growth, could continue in the future. As the efficacy of the reputation mechanism is related to competition levels, the expected stabilisation of media concentration will probably not significantly impair the incentives for independent content provision. The increased opportunities for direct pricing and the upcoming ad-avoidance technologies may even be favourable for independence, as content providers become less dependent on advertisers.

5.3 Any need for PSB in future?

The objectives of the government are related to market failures, as is previously discussed. The discussion about trends allows us to assess the current relevance of the potential market failures compared to relevance before the digitalisation. We have summarised the findings in table 5.1.

Table 5.1 The effect of trends on market failures

Possible market failure	Effect of trends
1. Underprovision under ad-support	Decreasingly relevant due to rise pay TV
2. Excessive advertising	Decreasingly relevant due to rise pay TV
3. Inefficient exclusion under pay TV	Increasingly relevant due to rise pay TV
4. Underprovision high quality content under pay TV	Decreasingly relevant due to means to price discriminate
5. Excessive entry	Unable to assess
6. Positive and negative consumption externalities	Control of content production and consumption less effective
7. Consumption bias towards low quality	No effect of trends
8. 'Paternalism'	No effect of trends

The trends seem to stimulate a better allocation in media markets. Pluralism and diversity, as well as quality, are likely to improve as a result increased distribution capacity and interactivity. Though whether the market for quality works well is rather uncertain. The incentives for independent content provision do not seem to be effectively harmed.⁴³ The problem of externalities will not disappear. In particular the increased opportunities to broadcast or publish inferior, inaccurate and even harmful content may aggravate the negative externalities problem. Finally, although the production of merit goods may increase, accessibility of this type of content may worsen too.

Provided that missing markets are indeed likely to remain and provided that lower accessibility effectively limits the exposure of 'inherently good' content, a PSB will still be needed to meet the various media policy objectives. There are still potential welfare gains related to having a PSB. However, it is not a foregone conclusion that these gains can be realised at sufficiently low cost. The next section focuses on important elements of the design which would suit future PSB best.

⁴³ Especially during the transition from ad-supported TV to pay TV the introduction of ad-avoidance technology might give producers an bigger incentive to mix ads with content. This can negatively affect independence, as changing the content in ways favourable for 'advertisers' is, with effective ad-avoidance technology, the only way to generate revenues.

6 Rationales and options for policy

In this concluding section the analyses of the previous sections come together and lead to the following question: if policy intervention is based on overcoming problems which are the result of market failures, and if these market failures become less relevant due to a changing landscape, there might be a need to redefine media policy.

6.1 Objectives are partially met by the market...

We have established there are three lines of reasoning which can justify some form of government intervention in the media market: market failures, redistributive concerns and paternalism.

The changing media landscape mitigates the market failure problems. Excluding consumers becomes easier, which opens up options for individual pricing. The spectrum constraint is also less and less binding, due to broad bandwidths. As discussed, this will lead to increased levels of diversity and pluralism. Although this might lead to a welfare loss (viewers are excluded, although the marginal costs of servicing these viewers are zero), it will nevertheless accommodate the government aims. Missing markets might be serviced too, although this is not certain. In short, the market for media products will look more like a 'normal' market for tradable goods. Two market failures remain. The external effects of independent and good quality news provision (the media's democratic role) are not internalised in the market. And consumers are still faced with the asymmetric information problem.

For redistributive concerns we have to assess the issue of accessibility. Since exclusion of consumers could become routine rather than exception, access to information becomes harder (i.e. information gets a positive price, as is the case with other goods in a 'normal' market). In that sense it could be argued that there is a need for PSB, since the nature of PSB is that it is broadcast on an open channel.⁴⁴ However, we would argue here that as long as the market functions properly, information is available at reasonable prices. This guarantees access to a reasonable extent. As Coase (1961) argues, "(...)if reliance on ability to pay is so unfortunate when applied to television programmes how much worse it must be when applied to food or clothing (p. 57)."⁴⁵

The argument of paternalism or short-sighted consumer decisions is not mitigated in a more market oriented environment.

⁴⁴ For the Dutch situation, the discussion of paying for television is somewhat theoretical, since the vast majority of households already do so: they have a cable subscription. The three PSB channels are available through aerial for free, but nearly all households prefer to pay for cable. Note however that this is not the same as pay TV, since there is very limited choice in bundles or in selecting paid content.

⁴⁵ Compare the newspaper market, where access has never been a government concern. Of course, when public money is spent on broadcasts, then these should be available on an open channel.

6.2 ...so a diminished role for PSB remains...

So all in all two issues remain that the PSB might provide a solution for: external effects and paternalism. Both relate to a provision of information that consumers do not have an immediate demand for, but for which they need to be 'seduced'. This implies that supply might fall short.

In terms of the government aims, the largest challenge will no longer be in pluralism and diversity, nor in accessibility. Independence remains a concern, but if competition is sufficient and the reputation effect works well, the PSB's role in providing independent information can be limited. The largest concern therefore is quality. Also, it could be that the levels of pluralism and diversity that the market provides for, are still not enough to match the 'government preferences'.

In terms of content markets, we can pinpoint a role for the government in news and opinion products and cultural information. The externalities and paternalism arguments as well as the government's quality aim are concentrated on these two markets.

All this means a different role for PSB. There is an important additional argument for this: since there is convergence among platforms or media outlets, the focus on television alone for securing government objectives is no longer self-explanatory. After all, the distinguishing feature that would lead to channel-specific policies is limited substitutability for consumers. But if an article in the newspaper is seen as an alternative to a news broadcast on television, then why should these be treated as separate markets? In the extreme case, if they are perfect substitutes, then an independent newspaper industry is enough to secure the government aim of independence; an additional demand for independent television would then not be necessary.

The role of the government is increasingly resembling its role in most other economic sectors. From several angles the importance of healthy competition is stressed. In securing this an extra keen eye should be out for possible abuse of dominant positions. Namely, the combination of high fixed costs and low marginal costs implies economies of scale, which in turn implies an advantage for consolidation. This is not in itself a problem, but it stresses the importance of well executed competition law.

If competition law is not sufficient to meet government aims, general media policies are the next logical step. Remaining government aims could then be targeted with media-specific policies. Policy options are positive regulations (e.g. programme requirements, quotas), negative regulations (e.g. bans on advertising and negative-externality content) and forms of subsidisation. The trade off is always between intervening towards government goals and not influencing programming. This is due to the fear of government failure: the risk that the government will make the wrong choice. This is easy to envisage for cultural content for example, as with news and opinion, where it is just not desirable that the government has a say in content. Given these considerations, a public broadcasting service is a viable option, since it combines a general government mandate with some form of lump sum subsidy.

6.3 ...which can be accommodated by a PSB *light*

The challenge for PSB is to provide programmes that are additional to market provision, and still able to attract audiences. The main focus of a PSB *light* would be on high quality programming of news and cultural content.

There are a number of advantages to a PSB *light*. Because of its limited mandate, the remaining commercial channels can freely compete on other programme categories. The possible market distortions that occur in the commercial sector due to public provision are minimised. Most likely the commercial channels will also offer some form of news and culture, in which they - presumably - take into account the 'quality standard' that the PSB is setting in the market. In this way, a broader audience than just PSB-watchers would benefit. Also, the costs of a PSB *light* can be lower, since the range of programmes that it offers is smaller. Additionally, a PSB *light* can establish a clear profile. This profile will be helpful in trying to attract and 'seduce' the public to watch the PSB.

The issue of government failure (risk of making the wrong choice) is not necessarily removed by establishing a PSB *light*. Providing a mandate is hard - *ex ante* - as it is difficult to define what good cultural and news programmes are. Even *ex post* it is hard to assess quality objectively. A solution would be to give the PSB *light* a performance contract with a clear but general mandate, in which objective goals (e.g. minimum audience shares among certain groups) are written into the contract alongside more subjective ones. The performance can then be assessed on both these criteria; the more objective a criterion is, the more direct it can be linked to flexible financing. An expert committee independent from the PSB and the government can assess the quality of the PSB performance afterwards. This way the PSB gets a clear mandate, together with an incentive to perform well and reasonable security about its future (due to the lump sum part of the budget). An advantage is that the government is also forced to specify its aims in a clear way.

Let us briefly return to the different varieties of the PSB models, as discussed in section 2. The choice for programme requirements formulated in terms of additionality is a necessary step towards a PSB *light*. However, none of the three varieties have a mandate as focussed as the proposed PSB *light*. The BBC is perhaps the closest in terms of mandate, although it is less focussed than we suggest. The BBC probably also is a good example of how to combine an independent position with a (relatively) clear mandate. In terms of independence, the German model is interesting in the way supervision on the various requirements is designed. Note however, that although 'outsourcing' this task minimises the risk of government failure in the classical sense, the tension between interference (supervision) and independence still remains.

An interesting feature of the Dutch model, and to a lesser extent the German model, is that the design is tailored to revealing consumer preferences. The rationale for this is clear: if the market for broadcasting does not reflect these preferences well, it is very useful to have another

mechanism in place. Apart from the question whether consumers' preferences are in fact revealed and translated into programming, a fundamental question is attached to this approach: in the digital age, is it the major role of PSB to respond to consumer preferences? We have argued that it is not. In the future broadcasting market, supply will arguably be more responsive to consumer preferences. The PSB should be focussing on the remaining tasks that the market cannot provide for: internalising externalities and providing quality content.

References

- Akerlof, G., 1970, The market for "lemons": Quality uncertainty and the market mechanism, *Quarterly Journal of Economics*, vol. 84, no. 3, pp. 488–500.
- Anderson, S.P. and S. Coate, 2005, Market provision of broadcasting: A welfare analysis, *Review of Economic Studies*, forthcoming.
- Anderson, S.P. and J. Gabszewicz, 2004, The media and advertising: A tale of two-sided markets, forthcoming in Handbook on the Economics of Art and Culture (available at <http://www.ecare.ulb.ac.be/ecare/Princeton/programme.html>).
- Bakos, Y. and E. Brynjolfsson, 1999, Bundling information goods: Pricing, profits, and efficiency, *Management Science*, vol. 45, no. 12, pp. 1613–1630.
- Berry, S. and J. Waldfogel, 1999, Free entry and social inefficiency in radio broadcasting, *RAND Journal of Economics*, vol. 30, no. 3, pp. 397–420.
- Bourreau, M., 2003, Mimicking vs. counter-programming strategies for television program, *Information Economics and Policy*, vol. 15, no. 1, pp. 35–54.
- Coase, R., 1961, Why not use the price system in the broadcasting industry, *The Freeman*, vol. 11, pp. 52–57.
- Dixit, A. and V. Norman, 1979, Advertising and welfare, *Bell Journal of Economics*, vol. 9, pp. 1–17.
- European Commission, 1999, Principles and guidelines for the community's audiovisual policy in the digital age.
- European Institute for the Media, 2002, Comparative analysis of television programming regulation in seven european countries: A benchmark study.
- George, L., 2001, What's fit to print: the effect of ownership concentration on product variety in daily newspaper markets, working paper, Michigan State University.
- Hansen, C.T. and S. Kyhl, 2001, Pay-per-view broadcasting of outstanding events: Consequences of a ban, *International Journal of Industrial Organization*, vol. 19, no. 3-4, pp.

589–609.

Hargreaves Heap, S., 2005, Public service broadcasting, *Economic Policy*, vol. 20, no. 41, pp. 111–157.

Hoefnagel, F., 2002, Internet en cultuurbeleid; Over de gevolgen van ICT voor het cultuurbeleid van de Nederlandse overheid, *Voorstudies en Achtergronden*, vol. 114, Wetenschappelijke Raad voor het Regeringsbeleid, The Hague.

Mankiw, D. and M. Whinston, 1986, Free entry and social inefficiency, *RAND Journal of Economics*, vol. 17, pp. 48–58.

Motta, M. and M. Polo, 1997, Concentration and public policies in the broadcasting industry: The future of television, *Economic Policy: An European Forum*, vol. 25, pp. 293–327.

Mullainathan, S. and A. Shleifer, 2004, The market for news, *American Economic Review*, (forthcoming), Mimeo (<http://post.economics.harvard.edu/faculty/shleifer/papers.html>).

Nahuis, R., M. Appelman, M. van Dijk, B. Vollaard and D. Waagmeester, 2005, Onderweg naar morgen; een economische analyse van het digitaliserende medialandschap, CPB Document 78.

Nalebuff, B., 2000, Competing against bundles, Yale School of Management Working Paper ES-02.

O'Hagen, J. and M. Jennings, 2003, Public broadcasting in europe: Rationale, license fee and other issues, *Journal of Cultural Economics*, vol. 27, pp. 31–56.

Owen, B. and S. Wildman, 1992, *Video Economics*, Harvard University Press, Cambridge.

Polo, M., 2004, Regulation for pluralism in the media markets, mimeo, Bocconi University and IGIER.

Shapiro, C. and H. Varian, 1998, *Information Rules: A Strategic Guide to the Network Economy*, Cambridge: Harvard Business School Press.

Spence, A.M. and B. Owen, 1977, Television programming, monopolistic competition, and welfare, *Quarterly Journal of Economics*, vol. 91, no. 1, pp. 103–126.

Waterman, D., 1989-1990, Diversity and quality of information products in a monopolistically competitive industry, *Information Economics and Policy*, vol. 4, no. 4, pp. 291–303.

Waterman, D., 2004, The effects of technological change on the quality and variety of information products, mimeo.

PREVIOUSLY PUBLISHED CPB DISCUSSION PAPERS

001. De Groot, H.L.F.
On the Optimal Timing of Reductions of CO₂ Emissions: An economists' perspective on the debate on 'when flexibility'; June 2001.
ISBN: 90-5833-073-7
002. Ter Rele, H.J.M. and Van der Steen, E.L.T.
Housing subsidisation in the Netherlands: Measuring its distortionary and distributional effects; June 2001.
ISBN: 90-5833-075-3
003. Ruud A. de Mooij and Sjef Ederveen
Taxation and foreign direct investment: A synthesis of empirical research; November 2001
ISBN: 90-5833-081-8
004. Richard Nahuis and Ashok Parikh
Factor Mobility and Regional Disparities: East, West, Home's Best?; January 2002
ISBN: 90-5833-093-1
005. Khaled Moussa Diaw and Joeri Gorter
The remedy may be worse than the disease: A critical account of The Code of Conduct; February 2002
ISBN: 90-5833-094-X
006. Kees Folmer and Ed Westerhout
Financing medical specialist services in the Netherlands: Welfare implications of imperfect agency; July 2002
ISBN: 90-5833-103-2
007. Jan Fidrmuc
Migration and regional adjustment to asymmetric shocks in transition economies; July 2002
ISBN: 90-5833-105-9
008. Richard Nahuis and Paul J.G. Tang
Strategic competition with public infrastructure: Ineffective and Unwelcome?; July 2002
ISBN: 90-5833-106-7

009. Bas Jacobs
An investigation of education finance reform: Graduate taxes and income contingent loans in the Netherlands; July 2002
ISBN: 90-5833-104-0
010. Sjef Ederveen, Henri L.F. de Groot and Richard Nahujs
Fertile soil for Structural Funds? A panel data analysis of the conditional effectiveness of European cohesion policy; July 2002
ISBN: 90-5833-110-5
011. Michiel Kok, Richard Nahujs and Albert de Vaal
On Labour Standards and Free Trade; August 2002
ISBN: 90-5833-109-1
012. Erik Canton and Frank de Jong
The Demand for Higher Education in the Netherlands, 1950-'99; August 2002
ISBN: 90-5833-111-3
013. Ewa Mendys - Kamphorst
Open vs. closed: Some consequences of the open source movement for software markets;
October 2002
ISBN: 90-5833-112-1
014. Richard Nahujs
One size fits all? Accession to the Internal Market; an Industry Level Assessment of EU Enlargement; October 2002
ISBN: 90-5833-113-X
015. Sjef Ederveen and Joeri Gorter
Does European cohesion policy reduce regional disparities? An empirical analysis;
December 2002
ISBN: 90-5833-115-6
016. Mark Lijesen
End user prices in liberalised energy markets; December 2002
ISBN: 90-5833-118-0

017. Alain Borghijs, Sijf Ederveen en Ruud de Mooij
European wage coordination: Nightmare or dream to come true? An economic analysis of wage bargaining institutions in the EU; May 2003
ISBN: 90-5833-123-7
018. Jos van Ommeren and Michiel van Leuvensteijn
New evidence of the effect of transaction costs on residential mobility; May 2003
ISBN: 90-5833-128-8
019. Albert van der Horst
Structural estimates of equilibrium unemployment in six OECD economies; June 2003
ISBN: 90-5833-126-1
020. Richard Nahuis
Rising skill premia; you ain't seen nothing yet?; July 2003
ISBN: 90-5833-131-8
021. Wolter Hassink and Michiel van Leuvensteijn
Price-setting and Price Dispersion in the Dutch Mortgage Market; September 2003
ISBN: 90-5833-132-6
022. Peter Mulder and Henri L.F. de Groot
International Comparisons of Sectoral Energy- and Labour-Productivity Performance: Stylised Facts and Decomposition of Trends; November 2003
ISBN: 90-5833-141-5
023. Peter Mulder and Henri L. F. de Groot
Sectoral Energy and Labour-Productivity Convergence; November 2003
ISBN: 90-5833-142-3
024. Alex Hoen and Machiel Mulder
Explaining Dutch emissions of CO₂; a decomposition analysis; November 2003
ISBN: 90-5833-146-6
025. Bas Jacobs
The Lost Race Between Schooling and Technology; November 2003
ISBN: 90-5833-145-8

026. Henry van der Wiel and George van Leeuwen
Do ICT spillovers matter: evidence from Dutch firm-level data.; December 2003
ISBN: 90-5833-1
027. H. Don
How econometric models help policy makers; theory and practice; February 2004
ISBN: 90-5833-158-X
028. F. Huizinga - P. Broer
Wage moderation and labour productivity; March 2004
ISBN: 90-5833-167-9
029. Berend Hasselman
An efficient method for detecting redundant feedback vertices; March 2004
ISBN: 90-5833-168-7
030. Frank Windmeijer, Eric de Laat, Rudy Douven, Esther Mot
Pharmaceutical Promotion and GP Prescription, March 2004
ISBN: 90-5833-169-5
031. Rob Euwals - Maurice Hogerbrugge
Explaining the growth of part-time employment; factors of supply and demand. April 2004
ISBN: 90-5833-170-9
032. Henk Kranendonk, Jan Bonenkamp and Johan Verbruggen
A Leading Indicator for the Dutch Economy; Methodological and empirical revision of the CPB system. June 2004
ISBN: 90-5833-175-X
033. Erik Canton and Andreas Blom
Do student loans improve accessibility to higher education and student performance? An impact study of the SOFES program in Mexico. July 2004
ISBN: 90-5833-178-4
034. Dinand Webbink
Returns to university education; Evidence from an institutional reform. July 2004
ISBN: 90-5833-180-6

035. Michèle Belot, Erik Canton and Dinand Webbink
Does reducing student support affect educational choices and performance? Evidence from a Dutch reform. July 2004
ISBN: 90-5833-181-4
036. Henk Kox and Arjan Lejour
A different approach to WTO negotiations in services. July 2004
ISBN: 90-5833-182-2
037. Pierre Koning
Estimating the impact of experience rating on the inflow into disability insurance in the Netherlands. August 2004
ISBN: 90-5833-184-9
038. Pierre Koning
Auctioning incentive contracts: application to welfare-to-work programs. August 2004
ISBN: 90-5833-185-7
039. Rudy Douven
Risk adjustment in the Netherlands; an analysis of insurers' health care expenditures. October 2004
ISBN: 90-5833-194-6
040. H.L.F. de Groot - R. Nahuys - P.J.G. Tang
Is the American model Miss World?. November 2004
ISBN: 90-5833-196-2
041. Arie ten Cate
Refinement of the partial adjustment model using continuous-time econometrics. November 2004
ISBN: 90-5833-199-7
042. A. Lejour and J.W. de Paiva Verheijden
Services trade within Canada and the European Union. What do they have in common? December 2004
ISBN: 90-5833-204-7

HOW TO ORDER

To order the *Central Economic Plan*, the *Macro Economic Outlook*, and other Special Publications published by Sdu, please contact:

Sdu Publishers
P.O. Box 20014
2500 EA The Hague
Telephone : +31 - 70 - 378 98 80
Telefax : +31 - 70 - 378 97 83

Special Publications published by Koninklijke De Swart, can be ordered at:

Koninklijke De Swart
P.O. Box 53184
2505 AD The Hague
Telephone : +31 - 70 - 308 21 21
Telefax : +31 - 70 - 308 21 59

CPB Documents, CPB Discussion Papers, CPB Reports, Working Papers, Research Memoranda, Monographs and the Special Publications '*Scanning the future*', '*Netherlands in Triplo*' (only in Dutch) and '*Aviation growth within environmental preconditions*' (only in Dutch) can be ordered at:

CPB Library
P.O. Box 80510
2508 GM The Hague
Telephone : +31 - 70 - 338 34 25
Telefax : +31 - 70 - 338 33 50
Email : library@cpb.nl

Are you interested in data or background information? Visit our Internet site!

The address is: <http://www.cpb.nl>.