

Economics and Regulation of Broadcasting

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Broadcasting is a key sector in modern society, not only economically but, more than most industries, culturally, socially and politically. Correspondingly it is a sector that is more than most subject to government regulation. It is also a sector that is more than most linked to the digital revolution in technology at the core of the “new global knowledge economy”. It is therefore an area of great interest.

The economics of broadcasting focuses on the nature of broadcasting markets and the nature government involvement in those markets. The markets are primarily based on demand for broadcasting programs and are heavily influenced by the technology of program delivery. They are also profoundly influenced by government intervention in these markets, including involvement for non-economic reasons.

Industry Economics

Broadcasting refers to a diverse range of radio and television services for entertainment, educational and informational purposes. As such the industry is distinct from live arts and education and from non-electronic media such as cinemas, books magazines and newspapers. It is also distinct from electronic information technology and communication services such as telephony and computing. However the degree of complementarity and substitution between these latter activities and broadcasting is a crucial conditioning factor in the operation of the broadcasting sector and its evolution over time.

The industry can also be characterised, in principle, as embracing a sequence from program production and program selection for networks and local stations through program delivery to funding of this process. Interest could also extend to the input industries for program production, transmission and reception eg from drama schools to television receivers, and into advertising markets. But it is program delivery and funding issues that have been the distinctive focus in the field, and which are considered further here.

Technology and Program Delivery

In the post-war era the dominant technology for broadcasting program delivery has been terrestrial transmission via an airwave signal sent from a broadcasting station transmitter to receivers owned by listeners and viewers. The technical quality of the transmission depends upon the frequency spectrum occupied, strength of signal transmitted, and topography and distance to the receiver.

An alternative to terrestrial delivery is cable, using telephone lines or dedicated separate cable networks. Signals are sent along the cables from stations to receivers. With cable, geography does not affect signals, multi-channel capacity is immense and two-way transmission is possible. The cost of physical roll-out of a cable network, however, is large relative to terrestrial transmission which depends only on transmitters and “translators” (which boost signals in large areas or difficult terrain).

Since the advent of the space age a third delivery platform has been provided by satellite, which provides powerful transmitters (“transponders”) in geo-stationary orbit above the earth, which can distribute signals over a very wide “footprint” on the earth’s surface. Stations up-link programs to the satellites for downlink delivery to receivers’ antennae or dishes. For satellite, distance is no obstacle and it does not affect costs at all within the footprint area.

Other options such as micro-wave delivery and video-cassette players could be added to round out a more detailed exposition, as could the potential for delivery through personal computers. However these have been lesser components of the sector to date

There are therefore various technical delivery options, each with different implications for the cost, quality and control of transmission, the extent of the market and the degree of direct competition. Combinations of the delivery systems are quite feasible eg satellite to stations for terrestrial or cable transmission. The technology of the industry is clearly complex, evolving and predictably influential in the economic outcomes to be observed.

Important economic choices are nevertheless still very much available to program suppliers within the possibilities offered by the technology, and the economic relationship with the viewer/listener is also left open within the technology. In particular, funding via advertisers, subscribers or public subvention can in principle be provided under each of the delivery systems, though with different cost consequences.

The merits of the delivery configurations are also subject to ongoing change. Most important in recent times have been broadcasting band spectrum re-allocation (eg opening UHF to television rather than using VHF only) and expansion (eg HDTV allowing more channels and/or better quality), microwave distribution of broadband services (MDS), Direct to Home satellite services, hybrid fibre coax cable (HFC), and copper-wire enhancement (eg digital subscriber line) technology.

These advances add dynamism and uncertainty to the competition between delivery systems. They also alter the role and requirements for government involvement. In particular the changes help most in overcoming frequency spectrum limits on terrestrial service supply, increasing opportunities for substitute and/or complementary service provision, and allowing increased direct user charging.

The dominant form of delivery has been terrestrial for many years, though cable television has also long been found in some countries such as the USA. Satellite is more recent and less evident though often linked to other local delivery. New cable technology (eg broadband) and its complementarity with telecommunications and computing services (“technology convergence”) has seen its role increase in significance in recent times.

Financing of Broadcasting

The three conventional sources of financing for broadcasting are advertiser payment, audience payment and government or community subvention. In the case of advertiser support, programs are supplied free of direct charge to the audience. The audience in turn is sold wholesale to advertisers who seek, by attachment of their messages to the programs, to inform or persuade consumers in regard to their products and services. The ultimate incidence of payment depends upon the extent to which advertising costs can be passed on in product prices to consumers of the advertised goods and services.

In the case of direct payment by audiences the incidence lies with individual viewers or listeners who determine for themselves their willingness to pay for the programs or program services, including under subscription arrangements. In this instance, broadcasting purchase is closest to purchase arrangements for standard commodities. Video hire similarly approximates these purchase characteristics.

Subvention can take the form of voluntary donations by community members, as is common in community broadcasting or subsidy by governments based on the taxation power of governments. The tax payments may be from general taxation or from “hypothecated” taxes or charges enforced by government, such as earmarked state lottery revenues or broadcasting licence fees. State revenues often support public and community broadcasting, but can subsidise commercial activities too. The incidence of funding in this case is in accord with the incidence of the taxation source used for finance of broadcasting.

There are probably as many national funding structures for broadcasting as there are countries, but it is possible to distinguish two dominant models viz US and European. The US model is based on predominant reliance upon commercial or profit-oriented stations deriving revenue from advertiser funding. The European model is based on government funding of state-owned public broadcasting organisations. Common to both models has been a primary reliance upon terrestrial program delivery and the dominance of centralised structures for control of programming decisions whether through commercial networks or state authorities, and in both cases reflecting significant economies of scale and scope available in the industry. Common to all national structures is an extensive system of regulation.

Broadcasting Regulation

The general economics of regulation takes two distinct forms: positive and normative. The former seeks to explain what governments actually do. The latter reviews what governments should do. A positive theory of regulation would seem to have some particular salience in broadcasting. The theory emphasises self-interest in the demand and supply conditions for regulation, just as in other markets. This is immediate where the state operates broadcasting services directly or through state-funded statutory agencies, because casual observation would certainly indicate a common need to analyse the

conversion of broadcasting to serve as a communication or propaganda arm of the government, rather than such public broadcasting necessarily being focussed on any wider notion of serving the public interest beyond the interests of the ruling group.

Where a substantial commercial sector exists, casual observation would also indicate that there exists a significant capacity for private media interests to use their perceived ability to influence public attitudes to influence in turn the form and degree of media regulation. That said, most formal analysis of these positive approaches to regulation is conducted by political scientists rather than economists. Economics has focussed more on the normative approach to regulation, specifying what government should be doing if it is to serve the public interest.

Welfare Economics of Broadcasting Regulation

The basic proposition of neoclassical welfare economics is that market competition is pareto efficient. This means that competitive market processes will ensure that individual preferences, as expressed through the market, will be met at least resource cost to society. Qualifications to this conclusion arise from recognising that competitive markets sometimes fail to operate, or that preferences beyond those of individuals and those based on the existing distribution of income and wealth may be crucial.

In broadcasting, such common features of its economic structure as limited frequency spectrum for product supply, product supplied unpriced to the consumer, product demand derived from advertisers, and economies of scale and scope, combined with an output which is uniquely persuasive and pervasive, have all given rise in the past to concern over major market failure and market adequacy under free market provision.

Monopolisation has been seen as one likely problem arising from economies of scale and scope, spectrum access limitations and sometime low elasticity of substitution for alternative services and products. Asymmetric information has also commonly been seen as a likely source of further market failure, arising from advertiser-derived demand not reflecting program consumer demand intensity beyond the threshold decision to watch or listen.

Externalities and “merit” issues have been identified too, arising from the persuasive and pervasive nature of broadcasting, with profit-based decisions neglecting social costs of imported culture, violence and pornography and neglecting social benefits of children's' and educational programming and of presentation of political and community affairs, except to the limited extent compatible with commercial imperatives.

To that has been added disequilibrium and co-ordination issues arising from adoption of technology ahead of suitable standardisation eg Betacord vs VHS VCR technology, and reliance upon interconnected networks for program delivery, and reliance upon interconnected networks for program delivery.

Some or all of these market failures have been seen as so important in broadcasting that most countries around the world have intervened heavily in the industry and continue to do so.

Analysis of Market Failure

In relation to these various problems in the market for broadcasting services, economics has offered an especially distinctive insight into the matter of program diversity. In traditional broadcasting concern over program diversity arises from the fact that in the dominant frequencies (medium wave for sound and very high frequency for television), there could only be a limited number of channels allocated if interference was to be avoided. Further, within the available frequency space, competitive private provision under advertiser funding was likely to reduce program diversity further and neglect minority tastes.

The reason for this is that stations based on advertising revenue will seek to maximise their audience (and thereby their revenue). Stations will therefore duplicate program types as long as the audience share obtained is greater than that from other programs. Hence a number of stations may compete by sharing a market for one type of program (such as crime dramas) and still do better in audience numbers than by providing programs of other types (such as arts and culture). In economics this point is an application of the Principle of Minimum Differentiation, a principle also capable of explaining such associated phenomenon as why bank branches may cluster together, why airline schedules may be parallel, and why political parties may have convergent policy platforms.

The exact outcome in any particular case is dependent upon a number of factors including the definition of the alternatives, the distribution of consumer preferences, and the number of competitors. In broadcasting, if competition is limited by spectrum availability and if the size of audiences for some types of programs is highly concentrated, then duplication of these popular program types will result.

Expansion of channels through technical improvement (eg digital television) would seem to offer a solution to this issue. Yet this solution generates another problem under advertiser funding. It remains the preferences of the advertiser and not the consumer which determines program choice. The advertiser is interested in the maximum audience number and not their intensity of preference, and there is no mechanism in free-to-air broadcasting for the viewer or listener to express such intensity, unlike in conventional markets where such preference is indicated by willingness to pay the market price. The result is a reinforcement of the program duplication problem and “lowest common denominator” programs.

Another major element of market failure identified by the welfare economic approach to broadcasting was the social and political effects of broadcasting. These are potentially important given the extensive penetration of broadcasting in modern society and the key role these media play in informing and influencing social and political behaviour. The

market failure issue arises because these are effects which spillover to others beyond those contracting for the supply of broadcasting services, and they do so in ways important to society. Prominent effects of this kind that have been the subject of much public debate include: programs containing sex and violence; provision of local programs and of children's programs; and the presentation of news and current affairs.

Exactly what is optimal in these areas is hard to define, particularly given diversity of views on such hard to value and quantify impacts. But the basic welfare economics point is clear: such effects are regarded as important by many persons, but they will not be fully taken into account in commercial broadcasting decisions. This is not to say commercial broadcasters are unaware of these concerns. Rather it is to say that they will only be taken into account to the degree consistent with profit imperatives. The same presumption would apply to issues of the exercise of public responsibility by broadcasters occupying monopolistic positions in the industry and whether monopoly pricing is likely to ensue in the absence of regulation.

Closely related to issue of the pursuit of public responsibility in broadcasting is the further economic notion of "merit good". Externalities refer to non-market effects on persons other than those directly involved in any market transactions. Externalities should be evaluated in terms of the preferences of the additional individuals indirectly affected. Merit goods refer to the denial of the validity of some individual preferences and the imposition of some alternative (non-individualist) judgements about what should be provided. In broadcasting, the difference would be between wanting to prevent people from watching programs with explicit violence because it induces actual violence from some viewers (an externality), and wanting to restrict such programs because they are inherently immoral even if they do not affect behaviour (merit good).

The distinction between externality and merit good can be a fine one, but the importance of the class of issues seems clear. In areas such as the demand for more intellectual and cultural enrichment in broadcasting, there is a sequence of relevant questions: is there an under-supply of such programs due to frequency restriction or advertiser funding, or is the view that more is needed because of beneficial externalities affecting behaviour not recognised by private providers, or is there a view that such programming is intrinsically meritorious in the eyes of a group that would wish to see more provided for this reason alone?

A final application of the externality notion goes back to the frequency spectrum itself. A resource limited by nature, there is a problem in free market access because of its non-excludable but rival nature. In particular access unrestrained by private ownership and excludable pricing would lead to inevitable technical problems of signal interference between broadcasters. This spillover implies a further market failure of fundamental significance in creating viable service delivery of broadcasting services.

A related technical concern embraces introduction of new technology as well as access to existing technology. One issue here is that of industry technical standards where industry advantage ensues for adoption of common technical standards eg for inter-connection purposes or for reducing home reception costs eg multiple receivers.

Implications for Policy

In markets typified by limited frequency spectrum and advertiser funding of broadcasting, a clear prediction from welfare economics is of problems in sole reliance upon market provision. Specifically there is a need to reduce signal interference, increase program diversity, prevent private monopolies and enhance desirable social and political programming.

The policy response to these problems has in general involved a mix of the following instruments: access controls to existing technology and over introduction of new technology for broadcasting; fiscal subsidy for community and public broadcasting; regulation of ownership (vertical, horizontal and foreign); and regulation of program content, particularly advertising time, local content, children's programming, and of sex and violence. These responses broadly correspond in respective order to the free market problems identified above. But the assignment of instruments to these targets is not strict. Some readily serve multiple objectives. For example, foreign ownership restrictions may cater both to anti-monopoly objectives and to local content objectives.

In relation to the spectrum allocation issue, the standard policy approach for traditional terrestrial delivery is to issue licences to broadcasters in numbers that avoid signal interference. In doing so an "economic rent" is created, which reflects the economic value of the spectrum right in use. The rent will be greater the larger the market and the fewer the competitors. Licences are typically awarded by qualitative competition, financial tender or by lottery. The qualitative tender approach involves subjective discretion, auctions transfer rent from broadcasters to government but ignore externalities, and lottery is random. All mechanisms can be made subject to minimum capability entry requirements.

Over time, spectrum auction has become increasingly favoured. Where licences are issued by qualitative competition, resource rent taxation is increasingly discussed as a mechanism for government to access the rent. Where licences issued without full transfer of rent to government are on-sold, the resultant market price will reflect the value of rent and the new owners will tend to earn normal profit only, all else equal. Tradeable spectrum rights, however, do allow flexibility in responding to changing requirements for spectrum use over time, subject to the externalities caveat.

In relation to the program diversity objective, the issue is that some consumers who would be willing to meet costs of program remain with unmet needs under the traditional free-to-air broadcasting system. One partial solution to this, in turn, would be to allocate spectrum to one firm only, as this firm would then have an incentive to pursue complementary programming. Under advertiser funding this would mean successively broadcasting programs of each type from most popular through to least in order to reach the largest total audience consistent with the channels made available. Of course, this raises the issue of monopoly control. Alternatively, if the number of channels is increased sufficiently, profit seeking competitive firms will cater to every minority that advertisers can benefit by reaching. But in both cases a fundamental problem does remain, which is that advertisers still stand in an intermediate position between broadcasters and viewers or listeners.

Many governments have commonly responded to these dilemmas by extensive use of public broadcasting. Centralised state –funded broadcasting has indeed been more common in many countries than commercial broadcasting. And public broadcasters can readily pursue complementary or minority taste broadcasting to enhance program diversity and without concern for abuse of dominance through monopoly pricing in service provision. They can also be directed to take account of the social and political effects of broadcasting in their style of programming eg emphasis on current affairs or children’s programming.

The latter could also, in principle, be supported by direct subsidy of such programs on commercial media. But important economies of scale and scope would then be lost to public broadcasters retained for other purposes, so that such direct commercial subsidy tends to be limited.

A basic problem with public broadcasting is the “principal-agent” problem. Viewers and listeners (the principals) are unable to easily transmit their preferences to the public broadcaster (the agent), with a consequent ability for the public broadcasting management and staff to substitute their own preferences for that of the public. Direct accountability to government may allow voters’ preferences to more constrain broadcasters, but this then raises the issue of political control for partisan purposes in crucial areas such as news and current affairs. In many countries a “public broadcasting ethos” has arisen whereby arms-length arrangements are devised that seek to limit short-term political interference in editorial functions while still retaining public accountability for use of taxpayers’ monies.

In the cultural arena public broadcasters are often seen as flag-bearers for the higher acquired tastes, which some interpret as evidence of capture by special interests and others see as evidence of appropriate pursuit of diversity or merit programming. Nevertheless recent “contingent valuation” studies, which use survey methods to gauge willingness to pay for non-marketed commodities, have found strong support in Britain and Australia for the overall value of the public broadcasting services provided in those countries.

New Broadcasting Economics

The analysis so far has focussed on traditional free-to-air broadcasting. But in recent times the pace of technological change has been such as to transform the situation of broadcasting industries substantially. The industry is integral to the communications revolution of the modern era. The key effect of new spectrum management technology, and improvement in alternative delivery technologies, including cheap, high quality satellite and cable delivery, is that the traditional spectrum limits that underpinned past economics and policy are changed.

Some commentators see these changes as so great in fact that any special status accorded broadcasting in policy it is said to have disappeared. In particular, the diversity and charging options promise reduced supply delivery limitations and allow direct user payment systems – muting two distinctive elements of traditional broadcasting and rendering the industry more like other user-pay, supply-responsive industries. In these circumstances greater deregulation seems to some a natural policy response and even a consummation devoutly to be wished.

However, it must be made clear that substantial market failure considerations may continue to be present and hence raise ongoing public interest concerns. Thus, in relation to monopoly, while such concerns due to limited spectrum access and low substitution are reduced, new economies of scale and scope emerge as do new access issues for delivery platforms. Certainly the wave of communications industry mergers and acquisitions in the US in the latter 1990s was a focus of national concern, involving the giants of the industry. Private ownership or control of common carrier delivery platforms and of products that serve as industry standards also emerge as of concern.

On network access, the concern is that of common carriage. This refers to the fact that cable delivery itself has certain natural monopoly characteristics, eg substantial economies of scale in rollout of cable make it difficult to establish competition or, where a big enough market does exist for duplication, such duplication is an inefficient use of resources anyway given the capacity of modern cable.

On product standards, the issue is that laissez faire provides first- mover advantage to those who first develop new systems that then become industry standards for followers and for complementary products. Yet such “lock-in” can preclude adoption of superior subsequent or alternative technology. Premature introduction of new technology in the absence of appropriate product standardisation runs the risk of substantial consumer welfare loss (eg US early adoption of the NTSC colour system vs PAL later adopted elsewhere) just as does unnecessarily delayed adoption.

Similarly while user-pay technology reduces asymmetric information (and funding inequity) issues deriving from advertiser-funding, direct-pricing applies to what is still a non-rival commodity with low marginal cost. This raises a 'public good' problem for broadcasting service, in artificially limiting resource use. The issue is simply that once produced and transmitted extra viewers and listeners can be accommodated at almost zero additional resource cost. Pricing above such zero cost then excludes consumers who would have been quite willing to cover the costs (zero) of their receipt of the service. This is a fundamental allocative inefficiency.

Finally, while externality and merit concerns may be reduced in some areas if more specialised programming is more profitable (eg news coverage, arts channels), in others they can increase (eg pornography). Moreover all such service in a free-market will still source from profit motives for which no incentive exists to consider non-commercial perspectives or spillovers that diverge from the business bottom line.

Such market failure and market inadequacy concerns provide a necessary (albeit not sufficient) condition for collective intervention under public interest criteria of welfare economics and so the new technology and associated broadcasting industry economics do not dispose of such concerns in any easy way.

They do however alter the answers as to design of appropriate policy. For instance instead of rendering public broadcasting irrelevant because of the abundance of outlets, an alternative argument is that it is even more a core instrument catering to the evolving but identifiable public interest objectives in broadcasting. It is a light-handed intervention primarily based upon transparent public subsidy, not regulatory, mechanisms, and it can continue to provide countervailing power in situations of concern over monopolisation and concentration, and over alternative funding arrangements to both advertiser and user-pay methods, each of which has inefficiency properties, and over programming that allows for divergence of social from private cost and benefit and for promotion of recognised 'merit' objectives.

Alternative subsidy of commercial broadcasters cannot for the most part provide equivalent achievement of these objectives, because the crucial difference is the value derived from introducing into the free market broadcasting system an alternative system of ownership, funding and accountability. Ownership can indeed matter and in this case public ownership matters precisely because it can produce diversity, pricing and socially-responsive programming divergent from commercial imperatives. No matter how much programming the new abundance of technology produces for the broadcasting market, its private provision remains profit-derived. In this field an alternative may still be desirable.

Criticism is made that such public broadcasting will be provided inefficiently compared to commercial providers. And theoretical 'property rights' critiques may have merit in many applications. But for broadcasting though there is strong empirical evidence that public broadcasting can and does operate at lower unit costs of production than for commercial broadcasting.

Enthusiasm for economic liberalism and technological change can lead to a view that there is little the state can and should do, perhaps especially in this most globalised and changing of industries. This view does not withstand closer scrutiny.

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