The Conduct of Auctions for Broadcast Franchises

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I. INTRODUCTION

The allocation of broadcasting franchises has always been a central element in broadcasting regulation in Britain. Since the start of advertiser-financed television in 1953, a regulatory agency (the Independent Television Authority, renamed in 1972 the Independent Broadcasting Authority or IBA) has allocated franchises or licences to broadcast in a region after a comparative process in which applicants have outlined their programming plans, staffing proposals, financial intentions and other aspects of their projected activities. The regulatory agency has decided which competitor will be awarded the franchise without giving detailed reasons for the decisions adopted.

Franchises for certain regions have over some periods been highly profitable — in Lord Thomson of Fleet's memorable words, a 'licence to print money'.[1] The inequities of the system have encouraged the regulatory agency to introduce a complex system of cross-subsidies, whereby companies holding franchises for more prosperous regions subsidise less prosperous ones by paying a disproportionately large share of the IBA's costs for transmitting programmes or by contributing unequally to the costs of making programmes shown by the whole network. Not surprisingly, many have criticised the process whereby so valuable a right is allocated purely at the discretion of a regulatory body.[2] Unsuccessful competitors and those whose licences are not renewed have felt aggrieved at the lack of accountability and absence of clear criteria. These feelings have been aggravated by the fact that in some cases successful applicants have been widely judged to have failed to

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[1] See Sendall (1982, p. 150).

[2] For a fuller discussion of the existing process see Baldwin, Cave and Jones (1987). More generally see Briggs and Spicer (1986).

implement programming or other commitments made at the franchising stage.

One way of interpreting past franchising rounds is to regard them as competitions in which applicants vie with one another by offering attractive programming or other plans, in a context in which the price at which the franchise is awarded is constrained to equal zero. At the same time enforcement of any contract terms is made difficult both by the vagueness in which they are formulated and by the limited means available to the regulatory authority to penalise an incumbent failing to match its promises.

As with many aspects of British broadcasting, the franchise system is currently undergoing reforms. Following the recommendations in the Peacock report (1986), the British Government has undertaken a major review of broadcasting policy, leading to the publication in November 1988 of a White Paper entitled *Broadcasting in the 1990s: Competition, Choice and Quality*. The Government had already announced its plans for radio, which involve the creation of three new national advertiser-supported stations, contracts for which are to be allocated by competitive tendering (*Hansard*, 19 January 1988, cols. 647–649). The White Paper restated these intentions and also confirmed widespread speculation that ITV contracts for the period following 1992 would be subject to some kind of auction. An auction or tendering process would also be used to allocate new terrestrial channels and local franchises using cable or microwave transmission.[3]

The proponents of the auctioning of franchises believe that a more competitive and transparent form of allocating franchises will both improve efficiency in the industry and transfer any monopoly profits arising within it to the government. The auction proposals have attracted a substantial amount of comment, but little of it relates to the detailed issues likely to arise in the conduct of such auctions. Some of these are considered below. They include: (i) the form of the auction; (ii) the optimal allocation of risks between buyers (those seeking the franchise) and the seller (the government or regulatory agency); (iii) the problems which arise from the auctioning of many franchises at once; and (iv) the incorporation of other criteria than price in the selection process. The paper also includes some information on experience with auctioning natural resource exploitation rights. The basic results used are derived from recent analysis by economists of auction and bidding processes.[4]

II. THE FORM OF THE AUCTION

The value of a broadcast franchise to a company depends upon the difference

[3] White Paper, paras. 8.4, 6.20, 6.21, 6.34.

[4] For recent surveys, see Milgrom (1985) or McAfee and McMillan (1987).

between its revenues and costs over the franchise period. For a station financed by advertising, the former depend upon the quantity and quality of the audience. Costs depend on the type of programmes produced or bought (which may be subject to a regulatory restraint) and on the price at which the company acquires them. Companies will make their own cost estimates and will project revenues on the basis of such factors as the expected growth of consumers' expenditure and the expected penetration of new media. This circumstance makes the auction a 'common value' one (in the sense that competitors are projecting the same underlying economic variables) rather than a 'private values' one (such as the auctioning of a family heirloom, valued quite differently by the bidders). The distinction is an important one because in the common value case a bidder can seek to draw inferences from other bidders' valuations of what is a resource with the same underlying potential for all of them; whereas in the private values case differences in bid can be attributed to differences in tastes.

It is convenient at first to treat each contract as if it were auctioned independently.[5] Then it is possible to envisage a number of methods by which the auction might be conducted. These include (i) 'public' or 'oral' auctions in which the auctioneer successively announces prices until a buyer is found and (ii) 'sealed bid' tenders. Public auctions may be either English — in which prices are successively raised until only one bidder remains — or Dutch — in which the price is successively lowered until the object is bought by the first bidder. Sealed bid tenders award the object to the highest bidder either at the price offered by that bidder (a first-price tender) or — more rarely — at the price offered by the second highest bidder (a second-price tender).

In deciding how to auction a broadcasting contract, the regulatory agency will normally seek to devise a procedure which maximises revenue, subject to any constraints on the composition and quality of programmes. One of the major findings of auction theory is that in the private values case where bidders are risk-neutral, all four models yield the same price on average, and hence the method of auctioning makes no difference. (It may seem paradoxical that the first- and second-price auctions produce the same result on average, but clearly bidders' behaviour will be different in each case.) In addition, the more bidders there are, the higher the expected revenue, as bidders are led by the pressure of competition to bid right up to their own true valuation of the object on sale. With few bidders, by contrast, each company will bid the least it feels it can get away with.

However, as we have seen, broadcast franchises are not examples of the private values case. Bids are not determined exclusively by their makers' tastes but depend upon (possibly different) judgements about potential revenues and costs. This may lead to the phenomenon known as the 'winner's curse' whereby the highest bidder realises at once that he or she has placed a

[5] This assumption is relaxed below.

higher value on the franchise than anyone else, and may thus have overestimated its value. Logically, however, a sophisticated bidder must realise this danger and bid less aggressively, though as before and for the same reasons, the more bidders there are, the higher the expected price. The seller can reduce anxieties about the winner's curse by publicising any information available about the franchise. This reduces bidders' uncertainty and encourages them to bid closer to their true expected value than would be the case if they had poorer information and were more anxious about overbidding.

The key result from the common value model, *provided bidders are risk-neutral*, is that the various forms of auction produce different average levels of revenue, because they yield different information to each bidder about other bidders' valuations. The English auction yields the most information, and hence the highest expected revenue, because any bidder can observe all other bidders' behaviour. Next is the second-price tender, which exploits the valuation of at least one other bidder. Finally the first-price tender and Dutch auction furnish no information, and thus leave bidders most fearful of the winner's curse. When bidders are risk-averse, however, the ranking is less clear-cut. The English auction still yields more revenue than a second-price tender, and the equivalence of Dutch and first-price tenders is preserved. But the first-price tender may now yield higher revenue than an English auction.[6]

In any case, drawing conclusions about the form of the auction from theoretical considerations alone is not only difficult but also potentially misleading. The results are normally based on a given population of bidders, yet in practice the number of bidders will itself be affected by the views which interested parties form about the likely outcome. As we have noted, increasing the number of bidders increases expected revenue. If a method of auction is adopted with (other things equal) a lower expected revenue, more bidders may enter and restore that revenue to its original value.[7] In the absence of clear-cut theoretical results, it may be desirable for a regulatory agency choosing a procedure for franchise auctions to adopt the form which appears to be the norm for the auctioning of equivalent objects — on the argument that private sellers will have chosen the method which maximises revenue. This implies rejection of the Dutch auction and of second-price tenders, which are rarely used. It is also noticeable that whereas private values auctions (for example, of works of art) or auctions involving many lots of roughly equivalent quality (for example, farmers' markets) are frequently oral, common value idiosyncratic objects (such as government contracts or rights to exploit natural resources) are usually sold by sealed tender. There

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[6] Risk aversion introduces considerable complexities. For instance, buyers may prefer a procedure (e.g. a first-price tender) which yields a higher expected revenue to the seller, to another (e.g. a second-price auction) if their payment is more certain in the former than in the latter case; see Matthews (1987).

[7] This point is made in Hansen (1988).

may therefore be grounds for choosing the sealed tender route in the case of broadcast franchises.

This may well be related to the possibility of buyers colluding by forming a 'ring'. This means that they do not bid against one another at the auction but agree to divide amongst themselves any profits they later make after first buying the good on sale at a low price. One device against collusive behaviour is to set a reserve price. Indeed there is a case for setting a reserve price even in the absence of collusion, as it forces bidders to pay more than they might otherwise get away with. In the case of a broadcast franchise, a positive reserve price should be set even if the value of an unsold franchise is zero (if, for example, the spectrum would otherwise remain unused). In practice, of course, there is the prospect of re-auctioning the franchise or re-allocating the spectrum. But even in this case the reserve price should be set above the seller's own valuation of the franchise, by an amount which normally increases with the number of bidders.[8] But a reserve price is particularly important when there is a risk of collusion. At first sight, auctions for broadcasting franchises appear to offer little scope for collusive behaviour, both because of the relative freedom of entry and because they are unlikely to occur frequently and thus provide a framework in which bidders come to know and trust each other. The risk cannot be ignored, however, and may become acute if strict requirements are imposed on participants so that very few are allowed to bid. For instance, if only very large companies, or those with strong regional ties, were allowed to bid for franchises, then few might qualify and it would be easier for them to concert their bids. Although collusion occurs in auctions of all types, there is some theoretical basis for supposing that English auctions are more likely to favour cartel formation than sealed tenders.[9] This is a possible ground for preferring the latter.

Before leaving the simplest case, there is one further aspect of the auction process which has a bearing on the revenue. Suppose the seller can break potential bidders down into identifiable classes, characterised by different costs. Suppose for instance that either incumbents or what the Independent Broadcasting Authority (1988, p. 30) calls publisher-contractors — those not intending to establish production facilities of their own — have lower costs than other bidders. Then the agency can discriminate between classes of bidders by stating a willingness to accept a *lower* bid from a non-incumbent or non-publisher-contractor if it falls within a given range of the highest bid by an incumbent or publisher-contractor. The aim of this device is to extract the benefit of the cost advantage to the cheaper producer for the agency, as the low-cost producer, aware of its handicap, will have to bid higher than would otherwise be the case in order to secure the licence. Of course if the

[8] The more bidders there are, the more likely the valuation of at least one of them will lie above any given reserve price.

[9] See Robinson (1985).

handicap is set too high, the result will be inefficient. The procedure may in any case be hard to justify on equity grounds, and be impracticable for that reason.

III. RISK-SHARING CONTRACTS

In practice, bidders for franchises are not likely to be risk-neutral. Because advertising revenues are so closely linked to general economic conditions, broadcast companies may face a high cost of capital and thus discount their net cash flows at high interest rates. We have seen that the degree of risk aversion may influence the ranking of forms of auction. The government may also be able to increase its expected revenues from the franchises by assuming some of the risks itself. Not only does this reduce the residual risk facing the buyer, but it also reduces the differences in buyers' willingness to pay and therefore intensifies bidding.

The natural way to do so is by combining an auction with a 'royalty' payment.[10] This is frequently done in natural resource auctions. It can be achieved equally simply for broadcasting franchises by combining an auction with a pre-specified rate of levy on advertising revenue. The possibilities range from the very simple to the quite complex. The former includes either setting a flat-rate levy and inviting bidders to compete for the franchise subject to that levy[11] or setting a fixed price — which could be zero — for a franchise and inviting bidders to compete in terms of the levy rate they are expected to pay. A more complicated variant would have levy rates which vary on different tranches of advertising revenue — as marginal rates of income tax vary.

The best alternative will depend in part upon the relative degrees of risk aversion exhibited by the government and the franchise competitors. However, even in the case where the government is risk-neutral, it will be efficient for the franchise holder to bear some risk as otherwise all incentive to increase revenue will disappear. A marginal levy rate of 100 per cent is unlikely to be efficient! Where broadcast franchises of different size and profitability are being auctioned, it will prove hard to devise a uniform system which generates a satisfactory sharing of risk across a range of cases and which is not excessively complicated. Some forms of compromise may be unavoidable.

Ideally it should not be necessary for the agency awarding a franchise to make revenue forecasts in order to determine which competitor has bid the most. Thus a situation should be avoided in which bidders are entitled to

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[10] For a detailed analysis, see Riley (1988).

[11] If the levy rate is set high, the winning bid for some franchises might be negative. The process would then be akin to bidding for the minimum subsidy to maintain a country bus route.

specify individually both the percentage levy and the lump sum which they are prepared to pay. This would require the agency to forecast revenue in order to identify the successful bidder.

A combination of auction and levy, though desirable from a risk-sharing point of view, may have a distorting effect when competitors have different programme formats. Consider, for example, competition between some bidders for a television channel proposing advertiser-financed 'light' programming and others offering a premium subscription service. If bidders in the latter category incurred annual programme costs £200 million in excess of those in the former category (a plausible rough estimate) then if the levy rate were 33 per cent, they would require annual revenues £300 million greater to justify an equal bid. A risk-sharing contract of a simple kind thus provides an incentive for cheap programming, unless it involves some element of discrimination.

IV. OVERBIDDING AND CONTRACT ENFORCEMENT

There is another element of uncertainty in the auction process, of perhaps even greater significance; this concerns the regulator's willingness to enforce the auctioned contract. It is generally recognised that the agency's ability to set procedures for the auction gives it the potential to appropriate much of the monopoly profit available, as it chooses a procedure calculated to achieve this end. But this power depends on the agency's ability to convince bidders that it will behave as stated — to commit itself to the auction's rules. Otherwise, second-guessing by bidders may undermine the agency's capacity to organise the auction in the interest of maximising revenue.

The same point applies even more forcefully to the implementation of the terms of the contract. Unless bidders are convinced that they will be held to the terms of the contract, their bidding behaviour will be distorted. In particular, they will be tempted to pursue the strategy of bidding high and then seeking to negotiate the terms down once the contract has been won.[12] This will both be inefficient, as the contract may go to a high-cost producer, and reduce actual revenues. If it is to be avoided, the agency must structure the payment terms in such a way as to enforce compliance even if the contractor's profit expectations are not realised.[13] This will enable it credibly to commit itself to requiring implementation of the auction contract.

The risks for the contractor can also be varied by altering the duration of

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[12] This is one of the major criticisms of the present system, in which the regulatory agency has so far demonstrated limited capacity to deal with contractors who fail to honour their commitments.

[13] This may involve payment in advance, performance bonds, etc. The key point is that if bidders are to believe that the regulator will enforce contract compliance, some credible means of enforcement is necessary, which will operate when the contract is being implemented and the regulator is in some way 'committed' to a particular bidder.

the contract. The longer the duration, the higher the risk. Foreign experience suggests that new media take some time in establishing themselves. (Cable television in Britain is going through this stage at present.) Some fade into obscurity while others, after a time lag, diffuse quickly throughout the economy. Thus projections of the penetration levels of new satellite television services are fairly uniform in predicting low take-up initially, but then diverge quite widely. As a consequence, the longer the duration of any franchise, the greater the dispersion of possible net revenues. This factor argues in favour of short duration to reduce uncertainty. The argument is further strengthened if restrictions are imposed on the transfer of ownership of franchises. Such restrictions increase investors' risk by closing off one avenue for eliminating inefficient management.

Other considerations favour longer contract periods. If contractors are to make their own programmes, then the Independent Broadcasting Authority (1988, pp. 31–32, footnote 11) believes that programme production lead times in a public service broadcasting system require franchises of a minimum of eight years. It is reasonable to suppose that the period would be shorter with publisher-contractors and greater reliance on independent producers. Indeed one way of promoting independent production would be to reduce contract length.

Balancing these considerations is complex and difficult. If the object of the auction process is to raise revenue and increase efficiency, the task is to find a combination of risk-sharing rules and contract length which maintains the credibility of contract enforcement. This may imply shorter contracts in a period when the market is developing rapidly. The greater flexibility thus created may be an advantage in itself.

V. AUCTIONING MANY FRANCHISES

The discussion so far has assumed that a single franchise is to be auctioned. In reality three radio franchises and perhaps many television franchises (corresponding to the different ITV regions) may be available for auction at the same time. This raises a number of issues. First, is it better to auction the franchises simultaneously or sequentially? Second, how can restrictions on multiple ownership of stations best be achieved?

The literature discussing auctions where many similar items are sold together suggests that auctioning them one after another gives bidders additional scope for strategic behaviour.[14] On one hand, earlier bids convey information about bidders' valuations of similar objects, and thus reduce anxiety about the winner's curse. On the other hand, a bidder may underbid in early auctions in order to give false information to competitors, and then acquire later lots at a lower price. Depending on circumstances, either of

[14] See Hausch (1986).

these effects may dominate. Generally, however, the greater the anxiety about the winner's curse, the more likely that a sequential auction will yield higher revenue.

When a simultaneous auction occurs, there is a risk that a bidder may acquire more units then he or she wants or can afford. In broadcasting franchises the opposite problem may also apply, as there is likely to be an additional constraint on franchise ownership: in the limit each company may be allowed to hold one franchise only, although it may bid for several. This may lead to the following problem: if a company makes the highest bid for several franchises, which should it be awarded? One solution is to award the company them all, but require it to divest itself of any franchises in excess of one, perhaps by forced sale to the next highest bidder. Such a provision would clearly affect the behaviour of a company making multiple applications.

An alternative is to ask multiple bidders to express an order of preference, and then to allocate the most preferred franchise to any bidder who makes the highest bid in two or more auctions. However, this may make the outcome sensitive to the order in which the franchises are considered, and may even lead to inefficient matching of franchises and bidders. As before, pre-announcement of the detailed arrangements will on one hand reduce uncertainty and hence encourage competitors to bid more aggressively, and on the other hand leave more scope for strategic manipulation by bidders — the outcome which the seller seeks to avoid.

VI. DIVERSITY AND QUALITY TESTS

In broadcasting franchises, a major complication is introduced by the perceived need to impose limitations on the type of programming provided. Thus the proposed national radio stations will be expected to offer a diverse programme service rather than confine themselves to broadcasting only one type of music, for example; this implies that the licences will not be allocated on financial grounds alone, since applications will also be tested against the proposed diversity requirement. It is also likely that some form of quality or diversity constraint will be built into any tendering process for ITV franchises.

It is widely acknowledged that specifying quality constraints is extremely difficult, but there are further issues concerning the procedure for assimilating quality or diversity criteria within an auction process. Three methods suggest themselves: (i) to hold a standard auction with entry restricted to those who can demonstrate the capacity and the will to attain certain quality standards; or (ii) to allow competitors to offer their own combinations of price and 'quality', from which the agency makes a choice;[15]

[15] This procedure has been called a 'menu auction'; see Bernheim and Whinston (1986).

or (iii) to establish a fixed price and choose from amongst applicants on the basis of 'quality'.

The first method is most straightforward, and may be appropriate where the regulatory authority is confident of its judgement of the appropriate quality standard. But there may be a problem when competing franchises are being auctioned and diversity is being sought across as well as within stations. It is well known that when small numbers of stations compete for the same audience, there is a tendency for their programme content to become similar, as each seeks a share of the mass market (Steiner (1952)). In the case of the radio franchises, there is a risk that each station will have diverse programming, but programmes of the same type will be matched against each other. One way round this is to auction the franchises sequentially. In the first auction, competitors can offer any range of programming, satisfying the general diversity constraint. In the second auction, competitors could additionally bind themselves not to replicate the programming of the winner of the first auction — and so on for the third.

The second method is to allow bidders to specify their own price–'quality' combination and for the regulator to make a choice from among those on offer. The successful candidate's offer would then be embodied in a contract. This procedure has the advantage of harnessing companies' own revenue expectations and knowledge of programming costs to identify the trade-off between price and 'quality'. It would be appropriate in cases where the agency is unsure about the optimal combination, and considers cost information relevant to its choice.

Some (including some members of the Peacock Committee (1986, p. 143, footnote 3)) have argued that such a procedure places the regulatory body in an impossible position. It is worth noting, however, that a similar procedure is applied in the choice of designs for major building, including public buildings. It may be especially appropriate if a broadcasting franchise is to be auctioned with an obligation to provide 'complementary programming', as Channel 4 is at present.

The third method involves fixing a price for the contract in advance, presumably on the basis of an expert assessment of the profit potential of each contract, and then choosing the 'best' applicant from those able to pay that price and to satisfy any other pre-specified criteria.[16] As against the first method (a straight price auction with an entrance qualification), the third method gives the agency more freedom of choice and the ability to trade off one quality attribute against another. Its success does, however, depend upon setting the price at an appropriate level. If set too high, programme standards will be below the desired level. If set too low, rents which the government could have captured will be dissipated in over-expenditure on programmes.

The alternatives combine flexibility and transparency in varying degrees.

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[16] This method is favoured by the IBA (1988, pp. 23–28, footnote 11).

The first option is the most transparent, but the quality standards have to be set in advance. The other two options allow greater scope for the agency to make nuanced judgements, balancing either quality against price or one aspect of quality against another. But flexibility in making judgements is only an advantage if the relevant criteria can be enforceably incorporated in the contract. If they cannot, then the extra flexibility is of no value, as the successful applicant can (and may be forced by stock market pressure to) avoid any vague obligations taken on in the competitive phase. If this is the case, a standard auction with an entry qualification is likely to be more remunerative for the regulator.

VII. AUCTIONS IN PRACTICE

Within the public sector most experience has been acquired with auctions of financial instruments, especially by the US Treasury, which allocates $14 billion of bills a week through a complicated discriminatory pricing procedure. But such repeated auctions of a homogeneous product have little to tell us about infrequent auctions of idiosyncratic objects such as broadcast franchises.

More relevant are either tenders for government contracts or auctions of drilling or production rights for natural resource deposits. These share the 'common value' property of broadcast franchises, and in drilling rights auctions as with broadcast franchises bidders will hold different expectations of their value. In many cases, however, the dispersion of possible outcomes will be quite different in the two cases. Some drilling rights have a high probability of zero or negative value (no deposits found) and a low probability of a high value (a major strike). Broadcast franchises on the other hand will yield revenues within a narrower range, but will be more sensitive to national economic conditions (over 90 per cent of the variance of television advertising revenue is explained by consumers' expenditure).

Some experiments with auctioning North Sea drilling rights were conducted by the Department of Energy in the early 1970s and 1980s. Thus in each of the fourth, eighth and ninth offshore licensing rounds, fifteen blocks (a small fraction of those on offer) were available for cash tender (Department of Energy (1988, pp. 82–83)). In the ninth round, thirteen blocks were awarded for £131 million. The auction procedure was not, however, repeated in the tenth round. A number of reasons have been put forward for this. In the first place, the tax regime in the North Sea should, if it worked perfectly, remove much of the rent or excess profit associated with oil or gas production, and reduce the value of production rights accordingly. Second, the Department of Energy has used its power to allocate blocks in order to achieve other ends. In particular, it has been eager to promote exploration of frontier areas, and it is believed that an applicant's chances of securing a 'high-value' block have been enhanced by a simultaneous request

for a more risky 'low-value' block. Thus the system enforces a form of cross-subsidy from production to exploration, rather as the IBA franchise system has enforced an implicit cross-subsidy from high-value 'popular' programming to low-value 'minority' programming. More generally, the discretionary system of awards has given the Department of Energy substantial leverage over companies' activities from one period to the next, and opportunities to promote other objectives which may not conform with the oil companies' direct interests.

US experience of auctioning drilling rights on the Outer Continental Shelf (OCS) and contracts to harvest timber provides more evidence of how auctions on a larger scale work in practice.[17] Studies of such auctions have yielded ambiguous evidence on the propositions mentioned above — particularly of the ranking to be expected from different forms of auction. There is, however, evidence from OCS studies that despite a large range of bids, the successful competitor has earned a reasonable rate of return, suggesting that the 'winner's curse' has not been a major factor.[18]

VIII. CONCLUSIONS

The aims behind auctioning of broadcast franchises are twofold — to ensure that the broadcasting industry is as efficient as possible and to capture any rents or monopoly profits for the State. Broadly speaking, auctioning a franchise to the highest bidder should be capable of achieving both of these objectives, provided additional requirements are appropriately met; there are, however, some detailed lessons set out below concerning the nature of the auction.

(i) The government or agency must commit itself both to a chosen auction procedure and to enforcement of the contract terms (with whatever form of risk-sharing they embody).

(ii) The more information bidders have, the higher the expected revenue is likely to be. Information on certain aspects of broadcasting is copious. For example, data about audience characteristics and existing viewing patterns are readily available, and bidders will be in a good position to make cost estimates. They will also be able to make independent projections of the penetration of new media — though such estimates may vary. The critical factor may, however, be government intentions. The more the government discloses about its future broadcasting policy

[17] McAfee and McMillan (1987, pp. 726–731, footnote 5). The 1980 auction for drilling rights in the Gulf of Mexico yielded $2.8 billion.

[18] There has, however, been spectacular 'overbidding'. Thus Phillips Petroleum and Chevron USA bid $333 million to win offshore drilling rights near Point Arquello, California; their bid was over twice the next highest offer. Quoted in Mester (1988).

at the time of the auction, the greater its expected revenue. The key issues for disclosure are likely to be details of the government's policy on entry and the regulatory structure (if any) for splitting programme costs amongst franchise holders — the network system.

(iii) In principle the auction can be structured to reveal information. In some circumstances there are grounds for having a slight preference for English or second-price sealed bid auctions, over the more conventional first-price tender. Practice, however, seems to favour the sealed tender.

(iv) One possible exception to full disclosure is the treatment of information about the number of bidders in an auction with a quality test. Because expected revenue rises with the perceived number of bidders, it may be undesirable to disclose how many applicants have passed the quality test. Disclosure of a low number may reduce bid levels or even encourage collusion. (This obviously applies in the limit, when only one applicant is declared to be qualified.) The problem can be partly overcome by setting a reserve price above the value of the franchise in an alternative use.

(v) Because bidders are risk-averse, some kind of risk-sharing is desirable. A combination of levy and auction achieves this objective but at the cost of introducing a bias against expensive (high-revenue) programming. The optimal degree of risk-sharing is a matter of judgement. There is no obvious reason for it to differ across franchises, though it may be impracticable to calibrate a levy structure to achieve a uniform distribution of risk. The duration of the contract is also an important determinant of the risks it embodies, and should be chosen with this in mind.

(vi) If many franchises are auctioned simultaneously, careful thought has to be given to how restrictions on multiple ownership are to be enforced, as details of the procedure may affect the final allocation (and thus, by implication, the bidding).

(vii) In some cases (for example, the auctioning of a station with a distinctive programming remit) a 'menu auction' may be preferable, as it supplies additional information about the relevant trade-offs which may be useful to the regulatory agency.

How well do the tendering proposals in the White Paper follow these precepts? The White Paper makes it clear that in the cases of what is now called ITV (to be renamed Channel 3) and of the new UHF services (Channels 5 and possibly 6), the Government favours a two-stage procedure. The first stage is identification by the new regulatory body (the Independent Television Commission or ITC) of applicants deemed to have passed the quality threshold and to satisfy whatever ownership tests are to be imposed. In the second stage the ITC assigns each licence to the highest qualified bidder. In order to share risks, each licensee would have to pay a levy on advertising revenue at progressive rates. As far as duration is concerned, initially the

licence would be granted for ten years but be subject to review of performance by the new regulatory body, which may also be able to impose financial penalties. But the White Paper (paras. 6.17, 6.19–6.21) adds:

> It should be open to licensees however during the final years (perhaps the last four) of their licences, to apply for licence renewal for further 10 year terms. The licensee would have to satisfy the ITC that he was continuing to meet his programming obligations and otherwise sustaining a satisfactory performance.... The licensee would also have to pay a licence renewal fee which would be calculated on a formula based on the licensee's advertising, subscription and sponsorship revenue.

A number of comments can be made. The proposals are silent on the form of the auction, although a 'sealed bid' tender is implied. To the extent that the White Paper speaks of fixing *initial* levels of levy payment, it hints at the possibility of change which may introduce uncertainty in potential bidders' minds. It is also clear that the ITC will also have to structure the auctions carefully to take account of proposed ownership restrictions, which limit control of multiple licences. Finally, it is not made explicit what levy arrangements will apply to subscription or sponsorship revenue.

Perhaps the most discordant aspect of the detailed proposals is the arrangement for licence renewal after ten years without competitive tender. The argument in favour of such a provision is that it facilitates enforcement, especially towards the end of the contract period when the licensee may otherwise feel able to degrade the quality of the programmes with impunity. The disadvantages of the provision are twofold. First, it introduces uncertainty concerning the regulatory body's interpretation of the criteria justifying renewal, and this may reduce expected revenue. Second, in cases where the renewal criteria are satisfied, the provision eliminates the element of competition from the system and forces the regulatory body to take commercial decisions relating to the value of the licences, for which it is ill qualified. The provision will also increase the pay-off to 'capture' of the regulatory body by incumbents, yet the reduction of this risk is one of the chief benefits of the whole tendering process.

The detailed proposals in the White Paper may, however, be amended in the legislation. The balance of argument suggests that auctions have the potential for securing a more efficient and transparent allocation of broadcast licences than has been attained in the past. The major potential problems are those of overbidding and, by extension, of contract enforcement. The regulator's main task in setting the details of the auction should be to devise a way of averting these two dangers.

REFERENCES

Baldwin, R., Cave, M. and Jones, T. (1987), 'The regulation of independent local radio and its reform', *International Journal of Law and Economics*, December, pp. 177–191.

Bernheim, B. D. and Whinston, M. D. (1986), 'Menu auctions, resource allocation and economic influence', *Quarterly Journal of Economics*, February, pp. 1–22.

Briggs, A. and Spicer, J. (1986), *The Franchise Affair*, Century.

Department of Energy (1988), *Development of the Oil and Gas Resources of the United Kingdom*, ('Brown Book'), London: HMSO.
Hansen, R. G. (1988), 'Auctions with endogenous quantity', *Rand Journal of Economics*, Spring, pp. 44–58.
Hausch, D. B. (1986), 'Multi-object auctions: sequential vs. simultaneous sales', *Management Science*, December, pp. 1599–1610.
Home Office (1988), *Broadcasting in the 1990s: Competition, Choice and Quality*, Cm 517, London: HMSO.
IBA (1988), *Independent Television in the 1990s*, April.
McAfee, R. P. and McMillan, J. (1987), 'Auctions and bidding', *Journal of Economic Literature*, June, pp. 699–738.
Matthews, S. (1987), 'Comparing auctions for risk-averse buyers: a buyer's point of view', *Econometrica*, May, pp. 633–646.
Mester, L. J. (1988), 'Going, going, gone: setting prices with auctions', *Federal Reserve Bank of Philadelphia Bulletin*, March/April.
Milgrom, P. (1985), 'The economics of competitive bidding: a selective survey', in L. Hurwicz et al. (eds.), *Social Goals and Social Organization: Essays in Memory of Elisha Pazner*, Cambridge: Cambridge University Press.
Peacock Committee (1986), *Report of the Committee on Financing the BBC*, Cmnd 9824, London: HMSO.
Riley, J. (1988), '*Ex post* information in auctions', *Review of Economic Studies*, July, pp. 409–429.
Robinson, M. S. (1985), 'Collusion and the choice of auction', *Rand Journal of Economics*, Spring, pp. 141–145.
Sendall, B. (1982), *Independent Television in Britain*, vol. 1, 'Origin and Foundation 1946–62', London: Macmillan.
Steiner, P. O. (1952), 'Program patterns and preferences and the workability of competition in radio broadcasting', *Quarterly Journal of Economics*, pp. 194–223.