This document has been updated to correct a factual error on p.16. The error relates to the amount Central paid for the Midlands franchise. The figure should read £2,000 not £4m as stated in the original.

The Tender Process for a Public Service Publisher*

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1 Introduction

In this note, I aim to identify the key issues that arise in any tender process for a Public Service Publisher (PSP). Four issues have been identified by Ofcom as being of particular relevance:

1. The process and criteria for evaluation and selection.
2. The degree of specification of requirements—in advance of the tender and in any contract.
3. Ensuring effective incentives for fulfilling the contract once awarded.
4. The process for re-tendering.

I deal with each of these issues in the following sections. My conclusions are broadly as follows:

- There are in general three mechanisms for selecting the PSP operator: a beauty contest, an auction and negotiation.

*This paper has benefited from comments provided on an earlier draft by Ofcom. The views expressed are mine.

- Each mechanism has its advantages and disadvantages. One approach, therefore, is to combine them into a three-stage process. An initial beauty contest allows innovative proposals; subsequent negotiation with short-listed candidates encourages information sharing; a final auction delivers value-for-money.

- A key issue for any the tendering process is encouraging participation by as large and diverse a group of organizations as possible. The important factors will be: the cost of preparing a proposal; asymmetries between potential bidders; and the format of the process.

- The contract design and the tender process are largely independent, with one exception. The final proposals submitted by bidders should be based on terms and conditions that are verifiable, and hence contractible.

- The objectives and goals ("mission") of the PSP is likely to be more important than the financial incentives offered by the contract, especially when the PSP is not-for-profit.

- Re-tendering of the PSP contract raises two issues: does the incumbent's advantage leads to inefficiency? and does the prospect of losing the contract cause the incumbent to under-invest?

- The first issue can be dealt with by favouring either the incumbent or the entrant (or neither) in the re-tendering process. The second issue can be dealt with by giving the incumbent extra investment incentives. Which approach is used is determined by whether the incumbent's investment is transferable and/or observable. For example, if investment is transferable and non-observable, then the incumbent should be favoured in the re-tendering process, and be given additional investment incentives in the second half of the contract.

2 The Tender Process

There are broadly three ways for a buyer to purchase a service or good from suppliers:

1. A *beauty contest*: ask the suppliers to describe what they will supply, sometimes including an amount of funding, and then choose between the descriptions.

2. An *auction*: announce the characteristics of the good or service that the buyer wants, and then ask suppliers to bid (i.e., announce prices) for supplying the good.

3. *Negotiation*: choose an individual supplier, and bargain with that supplier about the characteristics of the good to be supplied, and the price to be paid.

While these three procurement processes are often considered separately, in practice, any given procurement process may well include some aspect of each. A procurement process may start with a *request for information* (RFI) that asks potential suppliers to indicate their ability to provide the goods or services in question, with suggested specifications for the goods. Based on the RFIs, the buyer may select some suppliers to receive a *request for proposals* (RFPs), which asks for specific details on services and prices to be paid. Finally, the buyer may choose to negotiate with one or more suppliers based on their RFPs. In this case, then, procurement starts with a beauty contest based on RFIs, involves an auction in RFPs, and concludes with negotiation.

A number of questions arise from this classification:

1. What does the buyer want to achieve?

2. What are the important design issues for the mechanisms?

3. Which mechanism performs best in what circumstances?

The buyer may have a number of different objectives that it wants to achieve when allocating the right to deliver a service. The following list is not exhaustive:

1. Achieving efficient operation of the entire market, once the contract has been awarded.

2. Ensuring provision of publicly desirable services.

3. Encouraging innovation and new ideas and approaches in service provision.

4. Minimizing the cost of attaining a given level of service.

5. Awarding the contract to the bidder that values it the most.

6. Awarding the contract efficiently i.e., so that the total surplus of all involved parties—the buyer, consumers, other organizations that operate in the same or related markets, etc.—is maximized.

7. Awarding the contract in a transparent way: given the bids or the plans of potential suppliers, the winner is chosen in an unambiguous manner.

8. Awarding the contract through a speedy and low-cost process.

These objectives are not mutually exclusive: the contract can be awarded both efficiently and in a transparent way. But in some cases, the objectives may be contradictory. For example, there is no reason why the organization that values being the PSP the most (say, because it would have a strong complementarity with other parts of its business) is the organization that can run the service efficiently.

In the rest of this section, I discuss beauty contests and auctions to highlight the key design issues. (The academic literature has little of practical use to say about negotiations.) I then compare the different mechanisms to assess when each will be preferred.

2.1 Beauty Contests

Beauty contests are very common in procurement of goods and services in both public and private sectors (for example, defence contracts). The public sector has also frequently used beauty contests for allocating rights to the private sector to produce goods and services: for example, use of third generation mobile telephony frequencies in Ireland; FM radio station licences in the UK; and railway networks. See Dykstra and van der Windt (2003) for an overview.

A wide variety of different forms of beauty contests have been used. The main differences between the forms lie in the various ways in which the process of the beauty contest is organized; which attributes are deemed important; and how attributes are

compared and evaluated. In some cases, the process consists of several phases—from pre-qualification, to the adjudication stage during which the final bids are submitted and judged (as for example in the case of a restricted tender). In other cases, the process is combined into a one-step procedure in which essentially anybody is allowed to participate (an open tender procedure). In addition, different elements can be taken into consideration to determine the beauty of the bids, so that contests may differ even when they deal with the same or similar products and services. These differences can be summarised by two main dimensions:

- the attributes on which the bids are judged: e.g., quality, price; and
- the score function applied in the contest: how different attributes are combined to give a comprehensive ranking.

Beauty contests can be divided into two main groups: *weighted* and *unweighted*. In weighted beauty contests, it is clear from the start how the various quality aspects and price are weighted: a formal algorithm gives weights to the price and quality attributes. In contrast, in an unweighted beauty contest the ways in which the various aspects of the bid are treated is not clear, at least not *ex ante* when potential suppliers submit their tenders. In other words, the bidders have to prepare their bids under uncertainty about how the elements are weighted in the contest.

An important practical issue in beauty contest design, then, is how to overcome the ambiguity that is inherent in evaluating proposals. An obvious solution is to describe precisely in advance how proposals will be scored. This would mean specifying which attributes are relevant; the scoring system for each attribute; the weight attached to each attribute; and the method for combining the scores and weights to give a final evaluation of each proposal.

In the appendix (see section A), I discuss in more detail these steps. The brief discussion there illustrates the difficulty inherent in this simple approach to reducing the uncertainty in a beauty contest. In a beauty contest, the bidding parties are usually informed better about the relevant properties of the service than the awarding authority.

In fact, I shall argue in section 2.3 below that beauty contests are most likely to be used in situations in which it is not possible or desirable to have such a precise evaluation scheme in advance. An important characteristic of beauty contests is the extent to which they induce the more informed parties, the suppliers, to reveal information that it valuable to the buyer. (This is an issue, of course, for all of the mechanisms that I discuss.) As a result, it is often better to compare concrete bids *ex post* than to devise a rigid and formal assessment procedure *ex ante*. (On the other hand, a benefit of a formal assessment procedure is that it disciplines the awarding authority, making it more difficult to favour any one bidder.) In short, some degree of ambiguity is inevitable with a beauty contest.

Two further issues need to be mentioned. The first concerns the question of whether the proposed beauty of a proposal is also fixed in a contract. If a proposal wins because of certain aspects in the proposal, then these aspects have also to be fixed in a contract with the winning organization. Hence it is inadvisable to score a proposal on attributes that cannot afterwards be verified (and hence are not contractible). I return to this point later in section 4.

Secondly, in some cases it may make sense to have a first qualification phase in which a limited number of firms are selected, before the full contest takes place. This two-phase procedure may have advantages over a one-stage procedure if organizations are requested to provide a very detailed plan. Knowing that there are a limited number of competitors, firms have higher chances winning the contest and therefore better incentives to put in a lot of effort in writing the proposal, i.e., limiting the number of competitors may increase the quality of the proposals. Moreover, a two-stage procedure may also restrict the time it takes to evaluate the different proposals.

2.2 Auctions

In a standard auction, the issue of *what* is bought and sold is taken as given. For example, in auctions for mobile spectrum licences, the frequencies, bandwidth and duration of the licence are explicitly stated. In addition, licence terms may contain explicit conditions

relating to quality.[1] Instead, the emphasis is on *how* to buy and sell. For comprehensive surveys, see Klemperer (2002), Klemperer (2003), and Borgers and van Damme (2003), amongst others.

A huge volume of transactions is conducted through auctions, of one sort or another. Governments use auctions to sell treasury bills, foreign exchange, oil fields, and other assets. Government contracts are typically awarded by procurement auction (indeed, the Federal Acquisition Regulations (FAR) in the U.S. strongly favours the use of auctions in public sector procurement; as a result, the U.S. Department of Defense procures as much as thirty percent of its supplies through auction). Houses, cars, electrical equipment, agricultural produce and livestock, art and antiques are all sold by auction. And a variety of other situations (such as takeover battles between firms) can be viewed as auctions.

The problem usually considered in auction settings is the following. A seller of a unique item wants either to get the highest price for the item, or to ensure that the buyer who values the item the most, obtains the item. The first objective raises the question: what selling mechanism results in the highest expected price? If the seller knows what each interested buyer is willing to pay for the item, the problem is trivial: make a take-it-or-leave-it offer to the buyer with the highest willingness to pay. Of course, the seller rarely has the required information, and so may set the price too low—in which case it receives a lower price than it could possibly achieve; or may set the price too high, so that the item is not sold (when it could have been). The second objective raises similar questions: how to identify the buyer that values the item the most, when the buyers have little incentive to reveal the valuations truthfully?

While this set-up involves a single seller faced with many potential buyers, the core problem—of obtaining information from parties that have little incentive to reveal that information—is the same for a single buyer faced with many potential sellers. The now-extensive literature on auctions describes which auction format is most successful in a variety of circumstances. Section B contains a brief discussion highlighting some of the

[1] In the UK, for example, there were three types of 3G licence in the 3G auction. Licence A involved two paired blocks of spectrum of 15 MHz between 2110–2125 MHz and 1920–1935 MHz, plus 5 MHz of unpaired spectrum between 1915–1920 MHz. This licence was reserved for a new entrant. All licences require winners to roll out a network covering 80% of the UK population by 2007.

issues. Four main types of auctions are used and analyzed:

1. Ascending-bid (also known as the open, oral or English): the price is raised successively until only one bidder remains; that bidder wins the object at the final price.

2. Descending-bid (also known as the Dutch): the price is lowered successively until the first bidder announces that it is willing to pay the stated price. That bidder wins and pays that price.

3. First-price sealed bid: bidders independently submit a single bid without observing the bids of others. The object is sold to the highest bidder at that bidder's bid.

4. Second-price sealed bid (also known as the Vickrey): bidders independently submit a single bid without observing the bids of others. The object is sold to the highest bidder at a price equal to the second-highest bidder's bid.

A large amount of work has been devoted to understanding exactly when these four types of auction are equivalent, and when they are different. Suppose, for example, that bidders' valuations are private, in the sense that the valuation of any particular bidder is known only by that bidder, and no one else. Then the ascending-bid auction format is equivalent to the second-price sealed bid auction format; and the descending-bid format is equivalent to the first-price sealed bid format. Suppose further that the valuations of the bidders are independent of each other—how much any individual bidder values the object conveys no information about how much any other bidder's valuation.

A celebrated result in auction theory, known as the Revenue Equivalence Theorem, shows that all these standard auction formats result in the same average price paid by the buyers. There are two key properties shared by all these formats. First, they all award the object to the bidder with the highest valuation (since in these formats, this bidder bids the highest and so wins). Secondly, they all ensure that a bidder with a zero valuation gains zero surplus from the auction. These two facts pin down what is paid (in expectation) in the different auctions. For a more detailed, but still simple proof, see

Appendix A in Klemperer (1999). So the seller who wants to maximize its (expected) price should not care which auction format is used. Much work has been devoted to relaxing the assumptions of independent private values, to examine the role played by information in determining bidders' behaviour and outcomes across different auction formats.

In practical terms, however, it seems that higher-order informational issues are of less importance than more familiar concerns about entry and collusion, and analysing the merits of mergers or other changes to market structure. Klemperer (2002), for example, explicitly states that:

> "What really matters in good auction design are the same issues that any industry regulator would recognise as key concerns: discouraging collusive, entry-deterring and predatory behaviour. In short, good auction design is mostly good elementary economics.
>
> By contrast, most of the extensive auction literature ... is of second-order importance for *practical* auction design." (emphasis in original)

Klemperer argues that ascending and uniform-price auctions[2] are both vulnerable to collusion, and very likely to deter entry into an auction. This concern lay behind the initial format chosen for the UK 3G mobile licences—an 'Anglo-Dutch' auction. In this format, the price of a single object rises continuously until two bidders remain (the English stage), after which the two survivors make sealed-bids (required to be no lower than the current price level) and the winner pays the second-highest bid (the Dutch stage). Sealed bids do better at promoting entry because they give entrants a better chance of winning against strong incumbents. But they do not allow bidders to gather information during the course of the auction on the business plans of rivals, by observing who is staying in or leaving as the price rises. The Anglo-Dutch format (although not used in the end) offers a compromise by allowing for both features.

[2]In a uniform-price auction, each bidder submits a sealed bid stating what price it would pay for different quantities of a homogeneous good, e.g., electricity. The good is then sold at the single price determined by the lowest winning bid.

2.3 Comparison of the Three Mechanisms

In this section, I consider which of the three mechanisms—beauty contests, auctions and negotiation—performs best in what circumstances. What 'best' means depends, of course, on the buyer's objectives.

In the literature comparing beauty contests and auctions, the latter typically comes out as the best allocating mechanism: auctions appear to be efficient, clear and fast and, in addition, if well-designed, achieve a good (if not first-best) price for the buyer. For example, Binmore and Klemperer (2002) point out that an auction is more likely to allocate resources to those who can use them most valuably. Governments can do this only imperfectly through the assessment of competing business plans; a more reliable mechanism "forces businessmen to put their 'money where their mouths are' when they make their bids" (p. C76). By doing this, an auction extracts information from participants, allowing the government to make a more informed decision about the allocation. Moreover, beauty contests are typically time-consuming, requiring large amount of administrators' time to process and evaluate alternative proposals. Thirdly, a beauty contest is, typically, less transparent than an auction, leading to the possibility of favouritism by the agency selecting the supplier, or outright corruption. Fourthly, an auction may generate additional revenue for a government, which can then reduce distortionary taxes elsewhere in the economy. Finally—a point not made by Binmore and Klemperer (2002)—economists have relatively little to say about beauty contests. If a beauty contest is to be used, then the choice of supplier should be made in accordance with the preferences of the buyer. Since preferences are taken as given by economists, there is little more advice to offer.[3]

Similarly, the standard analysis indicates that competition (in the form of an auction) outperforms negotiation. More explicitly, the competitive process does a better job of revealing the organization that can provide the services more efficiently; and ensure that the services are provided at lower cost. In order to see why this is the case, it is helpful to view the funding of PSB as a procurement exercise, in which the identity and the

[3]See, however, Laffont and Tirole (1993) for analysis of situations in which the procurer operates on behalf of a principal, and may not act in the principal's interests.

public service broadcaster and the amount of funding it is awarded is to be determined. The exercise can be conducted in one of two ways: either by negotiation with a single organization (such as the BBC); or by allocating the role to the organization that declares that it can perform the role for the lowest amount of funding. Bulow and Klemperer (1996) show that a seller of an object can typically do better by attracting one more bidder into an auction, than it can be restricting the number of buyers and negotiating with the smaller number.[4] Their result suggests that the value of negotiating skill is small relative to the value of additional competition.

These comparisons apply, however, only to standard situations in which the good or service traded is fixed and whose characteristics and quality are known in advance by all. In many situations, however, the services that are being procured are complex and difficult to describe *ex ante*. In other situations, there is considerable scope for different approaches by suppliers, and the buyer wants explicitly to elicit imaginative proposals for projects. Fixing the terms fully beforehand may limit the amount of innovation in the proposals for supplying the service.

Bajari et al. (2003) test Bulow and Klemperer's theoretical prediction that competition is better than negotiation using data on private sector contracts (the building construction industry in Northern California from 1995-2001). They present three findings. First, more complicated projects are more likely to be awarded by negotiation than by auction. Secondly, auctions are used more when contractors have more idle capacity (i.e., there are more potential bidders). Thirdly, negotiated projects tend to be awarded to larger, more experienced contractors. Their work suggests a number of potential limitations to the use of auctions. Auctions perform poorly when projects are complex, contractual design is incomplete and there are few available bidders. And so they find that in the private sector, more complicated projects are more likely to be awarded by negotiation than by auction.

The principal observation made by Bajari et al. (2003) is that in a sealed-bid auction

[4]To be exact: a seller with no bargaining power who can run only an English auction with no reserve price among $N+1$ symmetric bidders will earn more in expectation than a seller with all the bargaining power, including the ability to make binding commitments.

(the type typically used in building construction procurement), the principle piece of information that the buyer receives from the sellers is the bid. In negotiations, however, the buyer usually discusses the project in detail with the seller before the contract is signed. Sellers might have important information about appropriate construction practices and current materials prices that buyers can use when drafting the plans and specifications. The more complex the project, the more important is communication and co-ordination between the buyer and seller. They conclude that auctions stifle communication between buyers and the sellers, preventing the buyer from using the contractor's expertise when designing the project.

This observation is supported by theoretical analysis in Manelli and Vincent (1995), who consider how a buyer should set about buying a good of service, the quality of which it cannot observe in advance and which cannot easily be verified *ex post*. (Some aspects of the quality of the service may be verifiable—the key is that at least some aspects cannot be verified.) The central trade-off in their analysis is the benefit to the buyer of increased competition between sellers allowed by an auction, versus the cost of self-selection induced by competition. For the latter, the problem is that price competition may ensure that only the lowest quality service is provided by sellers.

In their model, sellers differ in the quality of service that they can offer. High-quality sellers have high costs and so need to be paid more than low-quality sellers with low costs. Manelli and Vincent (1995) consider two procurement mechanisms. The first is a standard (second-price) auction. The second is a 'sequential offer' mechanism, in which a seller is chosen at random and the buyer makes a take-it-or-leave-it price offer. If the price is accepted by the seller, then trade occurs. If the price is rejected by the seller, then the buyer chooses another seller at random and makes another take-it-or-leave-it price offer. This continues until trade occurs.

Manelli and Vincent (1995) derive the intuitive condition that, if (and only if) the buyer values quality more than the sellers,[5], then the buyer prefers to use the 'sequential offer' mechanism i.e., to negotiate with sellers. But if (and only if) the buyer values

[5]To be precise, the necessary and sufficient condition is that the buyer values *marginal* quality more than the sellers.

quality less than the sellers, then the buyer prefers to use an auction. This analysis simplifies the situation considerably, of course. Quality has a single dimension, and the buyer knows perfectly what a high quality service looks like—it just does not know which seller can supply the high quality service. Nevertheless, it develops clearly the point that an auction is the best mechanism only when (unknown) quality is relatively unimportant.

Finally, it should be noted that, while auctions are usually proclaimed to be fast and simple allocation mechanisms, in contrast to beauty contests which are cumbersome and bureaucratic, reality is more complicated than this. It often takes a substantial amount of time to design an auction to ensure a desirable outcome. For example, the UK 3G mobile licence auction was two years in the planning and took over seven weeks to run.

2.4 Summary

Each mechanism has its relative strengths. Beauty contests are good when the buyer wants to elicit innovative proposals from sellers. Auctions are effective at revealing sellers' valuations for providing a given (level or type of) service. Negotiation allows detailed information sharing between a buyer and seller about complex projects. All three mechanisms have clear weaknesses. Beauty contests by nature have uncertain outcomes and the process lacks transparency. The competition inherent in auctions leads to adverse selection of lower-quality sellers. Negotiation allows an informed seller to benefit from its privileged information at the expense of the buyer.

The key question is: can the benefits of the mechanisms be combined? Is there a way to combine the mechanisms, perhaps across different stages of the tender process, to gain from competition, encourage innovation, and share information with sellers?

There have been a few attempts to combine incentives for firms to develop ideas with the benefits of competitive bidding. Chile's concession system allows the government to offer a bid premium for good ideas in proposals and then to announce an idea in a tender to determine which firm can best implement it. This method has been used in a Chilean toll road project. A similar option is to hold a design competition before writing the concession tender. Though common for architectural problems, formal design competitions are rare

in other settings. Concession-type arrangements tend to be designed by the conceding authority with the help of consultants and inputs from industry. Other examples include Spanish administrative law and the build-operate-transfer (BOT) law of the Philippines. When the conceding authority receives an innovative unsolicited proposal, it announces the broad nature of the proposal, then gives potential competitors ninety days to come forward with an alternative proposal. But even then, comparing proposals is complicated and requires much discretion by the evaluating authority. And bidders often learn, or fear leaks, about competing bids while the bids are being evaluated. In such cases special rules to protect innovative ideas in a bid will have little effect.

To be more concrete, I shall briefly discuss one possible, three-stage format:

- Stage 1—a beauty contest: invite outline proposals.

  At this stage, only broad parameters are described. For example, the current hypothetical tender document for a PSP makes general statements about characteristics, means of distribution, target audiences etc.; but detail about schedules, genres, funding is not specified. The objective of this stage is to allow potential providers to submit innovative proposals.

- Stage 2—negotiation: detailed discussion with short-listed organizations.

  The outcome of the beauty contest is a short-list of perhaps three of four organizations who credibly could be the operator of the PSP. In this intermediate stage, each short-listed candidate develops in more detail, through discussions with Ofcom and others, their precise proposal for the PSP.

- Stage 3—auction: each short-listed organization bids for an amount of funding required to operate the PSP.

  At this stage, the candidates are committed to operating the PSP in accordance with the detailed proposal developed in the intermediate stage. Hence, if they win the final stage auction, they enter into a contract to operate the PSP on the terms agreed from the intermediate stage, at the amount of funding determined in the final stage.

(Work by Cripps and Ireland (1994) suggests that the order of these stages may not matter too much. But their analysis is limited to a special case involving just two, symmetric bidders.)

This is clearly just an outline scheme, and there are many details to be filled in. For example, what format should the auction take in the final stage? (I say more on this in the next section.) Should the detailed proposals from stage 2 be made known to all bidders in the final stage auction? What happens if one of the short-listed candidates drops out during the detailed negotiations? How can the regulator commit credibly not to renegotiate with the winner of the final stage auction? What criteria should be used for the beauty contest; for example, how should the innovativeness of a proposer's ideas be balanced against their experience in broadcasting?

A major issue for any procedure that uses an auction stage is: should the bidders be treated equally, or should there be some handicap system, according to the attractiveness of the detailed proposals? Of course, adding in extra dimensions to the bid means that the stage is no longer a "pure" auction, but becomes more like a beauty contest. There are three basic approaches. The first is to establish thresholds at stages 1 and 2; allow only proposals that meet these thresholds to enter stage 3; and then evaluate the proposals based on price only. A second approach is to use a 'scoring auction' i.e., a beauty contest, but with the price element emphasized, in which each bidder from stage 2 submits its price in stage 3, with the winner determined by a combination of the price and an evaluation of the proposal. A third option is to allow each bidder to offer several service/price combinations based on the stage 2 proposals, with the buyer choosing its preferred combination. This third option again involves combining price and non-price factors in stage 3. Recent work by Asker and Cantillon (2004) suggests that the scoring auction procedure is preferable to the first approach using quality thresholds. Little is known at present about how scoring auctions compare to menu auctions.

Clearly, further work is required to flesh out the details of this proposal. Nevertheless, this format makes some progress in combining the advantages of all three mechanisms that I have discussed. The first stage beauty contest allows and encourages innovative

proposals. The second stage negotiation permits information sharing between the buyer and potential provider; each candidate should have adequate incentives to share information, since by this stage, they have a reasonable chance of winning the contest. The third stage auction introduces some funding competition to ensure that the PSP services are provided by the more efficient organization at lower cost to licence-payers.

3 Entry

Whichever mechanism is used, the selection process will benefit from having a larger number of potential suppliers. If it is known that very few organizations will be submitting proposals, then incentives to submit innovative and creative suggestions for the PSP will be lessened. Similarly, if few candidates bid to run the PSP, then the eventual provider of PSP services may not be the most efficient, and the cost of running the PSP may be higher than it might have been.

A number of factors determine the degree of entry. The three most important are likely to be:

1. the cost of participating;
2. (perceived) asymmetries between participants; and
3. the format of the selection procedure.

The 1991 UK sale of television franchises is a prime example of how high costs of participation limit entry. (See section A in the appendix for further discussion.) The franchises were allocated using a first-price sealed-bid auction (subject to a quality threshold). In many regions, a number of bids were made and the franchise sold for reasonable amounts (between £9 and £16 per head of population in the region). In some regions, however, only one bid was made; and in these regions, the franchises were awarded at minimal prices—for example, there was a single bid of £2000 in the Midlands (by the incumbent, Central), which amounted to one-twentieth of a penny per head of population. The problem in these regions is that bidders were required to provide very detailed region-specific

programming plans. In some regions, the cost of doing this was prohibitively high for new entrants; the incumbents, realising this, could therefore afford to bid very low.

One solution to this problem is to reduce the cost of submitting a proposal at early stages of the selection procedure. This can be done by shifting the amount of detail required in a proposal until later stages, when remaining candidates have a higher probability of success in the contest.

The second factor is asymmetry between participants. This problem is particularly acute when one or more potential operators of the PSP are perceived by others as having an *ex ante* advantage—say, because of greater experience in providing public service broadcasting, or closer links with the body awarding the contract, or privileged arrangements with distributors. Note that the issue is not that it is undesirable for e.g., a more efficient organization to operate the PSP. The issue is that the (perceived) strength of a particular organization may deter entry to the selection process by other organizations. This in turn allows the advantaged or dominant organization to be less innovative, or bid for a larger amount of funding, than it would be if it faced competition from other bidders.

Particular organizations can be excluded from the selection procedure—the approach taken with the BBC. But even small asymmetries between participants can have large effects on outcomes, as documented in Bajari (1998) (procurement of public works), and Porter and Zona (1999) and Pesendorfer (2000) (school milk). As a particular example of this observation, Bulow et al. (1999) show (in the context of a standard ascending-price auction) that a small 'toe-hold' (stake in a company that is being acquired) gives the toe-holder a very large advantage over its rivals.[6] This theory is supported by empirical evidence that firms making takeover bids have a lower probability of facing a rival bidder if the firm has a large shareholding in the target company—see e.g., Betton and Eckbo (1995). This may have implications for e.g., the desirability of allowing Channel 4 to

[6]A company that owns a toe-hold has an incentive to bid aggressively, since it gains value on its toe-hold when a high price is paid. This increased aggression can cause rivals to bid less aggressively, in situations where a 'winner's curse' exists. The decreased aggression of rivals reduces the winner's curse for the toe-holder, leading it to bid more aggressively still. Anticipating these successive rounds of response by toe-holder and its rivals, rivals may prefer not to enter the bidding process.

compete for the PSP contract. Channel 4 has prior experience of running a public service channel, and may therefore be perceived by other organizations as having an intrinsic advantage, however small, in bidding for the PSP. If this is the case, then allowing Channel 4 to participate in the tender might depress entry by other organizations.

On the other hand, it is unlikely that excluding all organizations that may have a slight advantage will be desirable. The issue, then, is to encourage entry. One way to do this is through the choice of the format of the selection procedures. In a beauty contest, this would mean ensuring that any attribute specific to a dominant organization (such as 'experience') does not receive undue weight in the scoring process; or that new entrants are given some sort of preferred status. In an auction, a sealed-bid format may be preferred to an ascending-bid. Because an ascending auction is generally efficient, a potential competitor with even a slightly higher cost (or lower quality) than an incumbent will see no point in entering the auction. However, the same competitor might enter a sealed-bid auction which gives a weaker bidder a shot at winning. In negotiations, it is important to limit the bargaining power of a dominant organization. One way to do this is to ensure that at any negotiation stage, there are parallel negotiations with several potential (and credible) operators of the PSP. This has the disadvantage of weakening incentives for information sharing; but it insures the buyer against excessive bargaining power of any one organization.

4 Incentives for the PSP

Once the PSP contract has been awarded, the issue arises of how to ensure that the operator of the PSP delivers on the contract. The hypothetical tender document states explicitly that the PSP will "be obliged to report annually to Parliament on performance"; and that there will be a "mid-point review of performance, funding and purposes", with a break-point included in the contract. Hence the PSP contract contains incentives for good performance, of a particular stark type—early termination of the contract in the event of poor performance. A number of questions arise. In this section, I concentrate

on two:

1. does the need to monitor and incentivize performance during the contract affect the tender process in any way?

2. what is the optimal incentive contract for the PSP operator?

The first question is the simpler. The central result from the theory of procurement and incentive contracts is that there can be separation between the procurement process and the contract awarded to the winner of the competition: see Laffont and Tirole (1987) and Laffont and Tirole (1993). More precisely, when the procurement process and incentive contract are chosen optimally, the winner of the competition faces the same incentive contract as it would have if there had been no competition. Competition to win the procurement contract reduces the informational rents that the winner enjoys from its better information about e.g., its cost of quality of service. But it has no effect on the contract that provides incentives to the PSP. This separation simplifies considerably a pair of potentially complex problems. It allows each problem—selecting the best operator of the PSP, and offering that organization the correct performance incentives—to be treated independently.

There is one way, however, in which the need to provide incentives should affect the tender process. The terms of the PSP service that are eventually agreed with the winner of the procurement process must form the basis of the incentives offered to the PSP operator. As mentioned in section 2, if an organization wins the procurement contest because of certain proposals in its tender, then these aspects have also to be fixed in a contract with the winner. And this fact must be established at the outset of the tender process. If this does not occur, then organizations will simply engage in strategic behaviour in their proposals (e.g., over-claiming on quality or services that will be delivered), in an attempt to win the contest, but anticipating that they will not have to deliver. (Similar problems arise in auctions where bidders are not committed to paying their bids, e.g., if no deposits are required. As noted by Klemperer (2002), the U.S. spectrum auctions were plagued by bidders "winning" licences and subsequently defaulting on their commitments, often after

long delays.) In short, proposals made by an organization for the final tender evaluation must form part of the contract, and hence must be verifiable *ex post*.

The second question is how to provide incentives during the operation of the PSP. To fix ideas, I shall refer to 'quality' as a summary of the PSP's performance. (The performance will, typically, have many aspects to it; so it is something of a simplification to speak of a single measure like quality.) If quality is perfectly observable and verifiable, then the optimal contract is straightforward: monitor quality and terminate the contract if the PSP operator fails to meet the contracted level. In practice, the problem is more difficult: quality may be observable (Ofcom can watch the PSP's programmes; user panels can provide assessments); but it may be hard to verify in court in the event of a dispute between the PSP and the regulator.

There are, in general, two routes available to the regulator. The first is to allow the PSP to benefit from producing high-quality programming. The standard solution (see e.g., Laffont and Tirole (1993)) to regulating quality is to allow the regulated firm to earn extra profit from the higher sales that result if it keeps its quality high. In the case of the PSP, the equivalent is to allow the PSP to earn additional revenues, over-and-above the core funding that is specified in the contract, from outside sources (e.g., advertising, subscription, production co-funding and ancillary sales). Implicit in this scheme is the assumption that the firm's sales accurately reflect quality. This is a strong assumption in the case of the PSP, since the need for a PSP is based on the argument that market forces will not produce, by themselves, the socially optimal level of high quality public service programming. To the extent that additional revenues are correlated (albeit imperfectly) with social welfare, they can be used to provide incentives in the PSP contract. But if outside revenues are *negatively* correlated with social welfare and public service quality, then they should *not* be used as part of the incentives for the PSP.

The hypothetical tender document also constrains the incentives that can be offered to the PSP in this way. First, it rules out advertising and subscription as sources of revenue. As noted above, the extent to which this constraint reduces incentives depends on the correlation between advertising and subscription revenues, and the public service quality

of the programming. Secondly, it requires the PSP to be not-for-profit. Recent work by Besley and Ghatak (2004) suggests that financial incentives may be less important in such organizations. (See also Ma (2004) for a related analysis of incentives in health-care systems.) They argue that individuals in firms and organizations are typically *motivated*: they pursue goals because they perceive intrinsic benefits from doing so. Consequently, organizations with different objectives or missions attract different individuals to work for them. Besley and Ghatak (2004) quote Weisbrod (1998):

> "Non-profit organizations may act differently from private firms not only because of the constraint on distributing profit but also, perhaps, because the motivations and goals of managers and directors ... differ. If some non-profits attract managers whose goals are different from those managers in the proprietary sector, the two types of organizations will behave differently" (page 31).
>
> "Managers will ... sort themselves, each gravitating to the types of organizations that he or she finds least restrictive—most compatible with his or her personal preferences" (page 32).

Organizations with objectives that are not purely market-driven do not need to offer explicit monetary incentives to their workers, if they have been successful in employing workers with congruent motivations. This theoretical prediction is supported by empirical studies that suggest that in industries where both for-profits and not-for–profits are in operation, such as hospitals, the former sector make significantly higher use of performance-based bonus compensation relative to base salary for managers (see Besley and Ghatak (2004)). The issue then becomes: how successful are organizations in attracting the right workers? And what effect does the for-profit sector have on the success of not-for-profits' hiring?

Besley and Ghatak (2004)'s analysis highlights two concerns. The first is that financing of a not-for-profit by outside donors with different objectives can influence the goals of the not-for-profit; in turn, this can de-motivate motivated workers and managers in the not-for-profit and lead to lower productivity or quality. They therefore advocate endowment

financing of not-for-profits. In the case of the PSP, this means that the core funding specified in the PSP contract should form the major part of the PSP's financing. Secondly, there is a danger that government or regulators can influence the objectives of a not-for-profit in a way that is harmful for workers' incentives. The matching between workers and an organization depends, according to Besley and Ghatak (2004)'s analysis, on the congruence between the workers' goals and the organization's objective. Any modification of that objective risks demotivating existing workers, and jeopardizing recruitment of the right workers. (Besley and Ghatak (2004) cite concerns in 2001 over US federal support for faith-based programs—some conservatives worried that involvement with the government would cost churches intensity and integrity.) Hence Besley and Ghatak (2004) note the importance for incentives of committing to an objective for the not-for-profit, and protecting the not-for-profit from "mission drift".

5 The Process for Re-Tendering

The second route for providing incentives for the PSP is through the threat of termination the contract, or, at the end of the contract, offering the contract to another organization. I consider the issues raised by re-tendering in this section. Most, if not all, of the issues that are raised are common to re-tendering of any procurement contract. Is it optimal to re-tender? In the re-tendering process, is there a problem with parity between the incumbent and new entrants? What are the incumbent's incentives to invest, given a probability of non-renewal?

The economics literature on this issue has emphasized two of these problems: the advantages of the incumbent operator in the re-tendering process; and the incumbent's investment incentives. The incumbent's advantage arises because capital (perhaps physical, but more importantly, human) is not easily *transferable* between organizations. If it were, then the incumbent's assets could simply be passed on to any new operator, and the incumbent would have no effective advantage. The problem of under-investment arises because investment is not *observable* (for example, it is difficult to monitor how much

training is given to develop human capital).

The implication for policy is to determine how much to favour the incumbent or the entrant during the re-tendering process; and how to provide incentives to the incumbent to invest during the period that it operates the contract. Laffont and Tirole (1993) provide the answers to both questions, which are summarized in table 1.

Nature of investment	**Retender bias**	**Extra investment incentives**
Transferable		
Observable	Equal treatment	No
Unobservable	Favour incumbent	Yes
Non-transferable	Favour entrant	No

Table 1: Bias and Investment Incentives in Re-tendering

At the re-tendering stage, either the incumbent can be favoured; or the entrant; or the two can be treated equally. If investment is transferable and observable—the ideal case—then it is clear that the two should be treated equally. If investment is transferable but not observable, then the best procedure is to favour the incumbent in the re-tendering process. This risks some inefficiency—the entrant may, after all, be able to operate the PSP at lower cost or higher quality. But it provides incentives for the incumbent to invest.

If investment is not transferable, then the entrant should be favoured in the re-tendering process. This result is more subtle. With non-transferable investment, the incumbent has an advantage in the re-tendering process: its investment allows it to operate the PSP more efficiently. Hence, if the two firms are treated equally in the re-tendering process, then for the entrant to win, it has to be very efficient. This narrows the amount of uncertainty about the entrant's efficiency, making it easier to regulate.[7] Consequently, the entrant should be favoured in the re-tendering process.

The favouring of the incumbent over the entrant need not be stated explicitly, if this raises difficulties for the regulator. In a beauty contest, for example, the incumbent could be favoured by attaching extra weight to the criterion of "experience". The entrant could

[7]More formally, it reduces the information asymmetry about the entrant's type, and hence the informational rent that has to be given to the entrant.

be similarly favoured by decreasing the weight on experience, or at the most extreme, by limiting outright the tenure of any one organization.

In addition, the regulator can attempt to give the incumbent extra incentives to invest in the latter half of the contract period, say by allowing more provision in the contract for expenditure on physical capital or training of employees. The objective is to counter any tendency towards under-investment by an incumbent that anticipates that it will be unsuccessful in the re-tender process. This is necessary, however, only in one case: where investment is transferable but unobservable. In this case, the incumbent realises that its investment can be appropriated and given to the entrant; and the regulator cannot simply monitor how much investment is being undertaken. In short, the under-investment incentive problem is at its greatest. In this case, the bias towards the incumbent in the re-tendering process should be supplemented by stronger investment incentives in the second half of the contract period. In all other cases, no additional investment incentives are needed.

6 Conclusions

In this note, I have discussed some of the issues that arise in the process for selecting the PSP operator; in providing that organization with incentives while it operates the PSP; and in the process for re-tendering. Of all of the questions that arise, the three most important are:

1. How can organizations be encouraged to participate in the (re-)tender process?

2. How can information, about both quality and cost of innovative public service programming, be elicited?

3. How can the operator be given the appropriate incentives? In particular, what is the right balance between financial incentives and motivation?

The analysis in this paper provides some initial answers to these important questions. For the PSP, these are:

1. Effective marketing of the PSP concept is needed to encourage entry to the bidding process for the first PSP contract. Ofcom needs to make clear and commit to its openness to bids from organizations with little or no previous experience of public service broadcasting. It could, for example, commit to short-listing an organization from outside of the traditional broadcasting sector. This may require more work at later stages of the procedure, to ensure that this bidder's proposal is viable. But the *ex ante* entry benefits could well outweigh these later costs.

2. A key challenge in the tender process is to encourage bidders to provide information about services and costs (particularly when that information is to be shared with other bidders)x. It is likely that Ofcom will have to commit to a fairly small number of short-listed candidates from whom the winner will be drawn. This limits the benefits from competition at the later stages of the process—a cost to be balanced against the benefits of increased information-sharing.

3. Ofcom has already committed to limiting the financial incentives available to the PSP, by ruling out advertising and subscription as sources of revenue. The governance structure of the PSP is likely to be an important aspect, since it will codify the objectives of the organization and hence be of prime importance in attracting management and employers with congruent goals. Ofcom may be particularly interested in the use of incentive contracts for the PSP managers. The analysis discussed in this paper suggests that low-powered incentives (i.e., where remuneration does not depend sharply on performance) are more appropriate for attracting motivated managers to the PSP.

Appendix

A Beauty Contests

The first step is to describe the attributes that will be considered in the evaluation. Usually, these attributes can only be described generically. *Structural attributes* refer primarily to characteristics of the bidder: to what extent can the organization guarantee that the bid made is upheld? Characteristics are, for instance, a proven track record, experience and expertise of the work force, certification, company finances, etc.. *Process attributes* refer primarily to characteristics of the implementation phase of the project for which is bid. Bidders submit detailed business plans with information on the proposed project: investment, commissioning ideas, organisational plans, roll out plans, speed of deployment, delivery time and so on. *Performance attributes* refer to characteristics of the product or service. Typical characteristics are types of services, technology used to supply services, reliability of service, speed of services etc.. The beauty contest can also allow bidders to suggest alternative quality aspects. In all cases, however, quality attributes and criteria must be measurable, in the sense that it must be possible to assess, at least in a qualitative sense, how well a particular proposal performs on a particular attribute.

The second step is to determine the weights attached to each attribute. There is little guidance on this issue in the literature.

The third step is to combine scores and weights to give a final evaluation for a proposal. Although in principle there are many aggregation schemes possible, in practice usually (quasi-)linear models are used. In this type of model, the total quality score of a proposal Q is calculated as

$$Q = \sum w_i Q_i,$$

where Q_i are the scores for the separate quality attributes and w_i are the weights of the quality attributes. Notice that in this model, all attributes can be traded off against one another. Lower scores on certain attributes can be offset by higher scores on other attributes. For example, a bidder who offers a low quality service but is very experienced can beat an inexperienced supplier offering a high quality service. Alternatively, if an

attribute is deemed essential, so that a minimum quality must be met, the simple linear model can be modified to

$$Q = \begin{cases} \sum w_i Q_i & \text{if } Q_i > \underline{Q_i}, \\ 0 & \text{otherwise.} \end{cases}$$

The quality assessment can then be combined with the price (i.e., amount of funding required by the proposal), using a score function. In most cases, the score function is also linear:

$$S = aQ + (1 - a)p.$$

In this expression, both quality Q and price p terms have a maximum of 100 points that can be scored. The number a (which is between 0 and 1) expresses the weight given to the quality term. If a is large, more weight is given to quality than to price; if $a = 1$, then only quality counts). If $a = 0$, then only price counts (and so the beauty contest essentially becomes an auction).

A few examples may help to illustrate how beauty contests have actually been organized.

- A EC procurement tender on research

  Number; qualitative award criteria; weighting (maximum points):

  1. overall quality, methodology and exhaustive nature of the analysis proposed for performance of the study; 20 points;
  2. proven track record in relation to the distribution sector and quality of human resources to be made available for the conduct of the study (studies, publications); 20 points;
  3. expertise in the field of statistical analysis; 20 points;
  4. level of knowledge of the legal framework and functioning of the internal market; 20 points;
  5. ability to cover the Member States of the European Union in a uniform and consistent manner; 20 points.

A bid with less than 10 points on any one of criteria is disqualified. In addition the bidder has to offer a price, for which he is prepared to conduct the research. The winning bid is the one with the highest number of points per Euro.

See http://ted.eur-op.eu.int/.

- Beauty contest for second GSM licence in Morocco

  In this Beauty Contest an explicit weight was set between quality on the one hand (the technical rating) and price on the other. Total score was sum of score for the total technical rating and the score for the price offered. The maximum number of points for the technical rating was 40. The highest price bid was set at 60 points. The valuations of the lower price bids were proportionately lower. So a bid 25 percent lower than the highest price bid received 45 points ((100-25%)*60). The winner is the one with the highest number of points. Given the heavy weight placed on the price element, this Beauty Contest comes close to being a sealed first bid auction.

  See http://www.itu.int/itudoc/itu-d/publicat/ma_ca_st.html.

- The 1993–2002 ITV franchises in the UK

  On 16 October 1991, the Independent Television Commission (ITC) awarded the 1993–2002 Channel-3 licences with a (first-price sealed-bid) auction; it was the first time that these licences were awarded in this way. (A franchise conferred to an ITV company the exclusive right to broadcast and sell advertising airtime in a defined geographical area.) The ITC considered both the bids and the proposed quality of programmes in awarding a franchise. For example, thirteen out of the forty applicants failed to pass the strict quality thresholds. Only half of the licences went to the applicants that had put in the highest cash bid. Two bidders passed the quality thresholds and were the highest bidders but lost their franchises because the ITC believed that their bids were so high that there would be not enough left to pay for their programming commitments.

  See Cabizza and De Fraja (1998).

B Auctions

Suppose that bidders' valuations are private and independent, as described in the main text. Consider an ascending auction. In such an auction, each buyer is willing to bid as long as the price is lower than the bidder's valuation (which is the highest price that a bidder is willing to pay for the object). Hence, bidding will continue until the second highest valuation is reached, so that the final price will be this second highest valuation. The seller thus does worse than with complete information—since in this case, the object would be sold at the highest valuation—but typically it does better than by making a take-it-or-leave-it offer. Moreover, as the number of bidders increases, the expected price received by the seller in this auction also increases. In the limit, with a very large number of bidders, the expected price received by the seller tends to the highest valuation. Finally, note that the bidder with the highest valuation wins the object (paying the second-highest valuation). Hence the auction is efficient—the individual who values the object the most, obtains the object.

As an alternative mechanism, the seller might consider negotiating with potential buyers. It may hope to learn buyers true valuations by observing their successive proposals in the negotiation. But, of course, buyers will anticipate in a negotiation that they will be closely watched. They will be very weary of giving too much away too early. Bids in an auction also give information away; but as long as the seller is committed to the auction mechanism, bidders know in advance how their bids are going to be used in the allocation process. Hence they do not have to worry about concealing information. Therefore, auctions encourage more information revelation by buyers—and it is exactly this information revelation that makes for a successful sale (i.e., one with either a high price, or that involves the buyer with the highest valuation). Furthermore, auctions may attract more interested parties than negotiation processes. Bulow and Klemperer (1996) have shown that, under certain assumptions, an auction without a reserve price, as long as it attracts at least one more bidder than a negotiation, achieves a higher expected price than even the best negotiation procedure.

A number of the conclusions from this standard setting do not carry over in more

complicated situations. For example, when bidders' valuations are not independent, but are in some way correlated, then the different auction formats will generally lead to different expected prices being paid. When valuations are not private, but have a common component, and are more complicated (having multiple dimensions, rather than just a single dimension), then there is no auction that can ensure efficiency. (See Dasgupta and Maskin (2000).) When multiple units are on offer in an auction, relatively little is known as yet as to how various formats perform and which is the best. In the words of Paul Klemperer: "Auction design is a matter of horses for courses, not one size fits all."

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