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BIDDING FOR CONCESSIONS

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Abstract

Privatisation of infrastructure ventures in sectors such as energy, telecommunications, transport and water has become popular over the last decade. Often—for good or bad reasons—private firms are given monopoly franchises under some type of long-term concession agreement, for example "Build-Operate-Transfer" schemes. The article surveys the issues arising in designing concession contracts and in awarding them to private parties. It is crucial to define performance specifications as well as incentive and risk-sharing parameters comprehensively and consistently both to achieve efficient performance by the concessionaire and to minimise post-award re-negotiation. Concession award should as a rule be made competitively, unless special requirements of speed, innovation or excessive transaction costs argue otherwise. Typically, competitive concession award is made by first price sealed bids. There are strong arguments, however, to consider open auctions more seriously in a number of cases. Auctions may also be re-awarded by way of auction. However, somewhat arbitrary bid preferences may have to be set. Auctioneers for complex concession contracts should operate at arms-length for all interested parties, including politicians. It may be sensible to let independent agencies that regulate the concession scheme run the auction.

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1. Introduction

In recent years governments in over a hundred countries have tried to attract private firms and capital to manage infrastructure businesses such as telecommunications, water, natural gas and electricity systems as well as transport infrastructure (roads, ports, airports and railroads). Sometimes existing businesses have been privatised in countries such as Argentina, Bolivia, Chile, New Zealand and the United Kingdom. Other governments have tried to construct new facilities under private auspices without necessarily privatising existing assets as in China, Colombia, Indonesia and India.¹ In the United States, regulated utilities have subcontracted many power stations.

The exact nature of private participation in these businesses varies. Differing forms of private participation reflect varying risk-sharing arrangements between investors, consumers and taxpayers ("the government"). Essentially one may distinguish four main risks (operations, fee collection, financing and construction) which may be shifted to the private sector in all imaginable combinations and subdivisions. In some cases, private parties are allowed to operate a business but not to own it. Such is the case of the water system in Guinea (Conakry). Arrangements where private parties take only operating and collection risk have historically been widespread in the French water sector (*affermage*). In other cases, private parties also take on investment and financing risk as in the popular build-operate-transfer (BOT) model, under which a private company finances, constructs and operates a venture before turning it back to the government. A number of water treatment plants (e.g. Puerto Vallarta in Mexico) or independent power plants (most of them in the United States and the Philippines) have followed this approach. There are also build-lease-transfer (BLT) approaches, where the private sector constructs and finances, but the public sector operates (several Mexican power plants).

Regardless of the differences in approach a common concern surrounds most infrastructure privatizations. Many of the newly private businesses have monopoly power either because even with free entry into the industry only one firm would survive (natural monopoly) and/or because governments have given exclusive rights to the private companies (legal monopoly). When privatisation simply transforms a public monopoly into a private one, public concern over possible exploitation can be quite high. To get a good deal for taxpayers and consumers and to prevent private exploitation of monopoly power, it is often advocated that rights to infrastructure businesses be competitively auctioned to private parties. Sometimes auctions are on the basis of the lowest price for consumers (e.g. Buenos Aires and Manila water concessions and many independent power plants) or on the basis of the highest revenue for the fiscal authorities (e.g. many telecommunications ventures). Fundamentally, it should be noted that the very issue of designing and awarding concessions only arises if market entry is not free. For example, it makes no sense to define and award power generation concessions in a competitive power electricity system, for example, in Argentina.²

It is often argued that private rights be limited in time so that the government can either take over the business or re-auction it to the private sector. This is meant to enable the government to limit exploitation by private monopolists in the future as well. In this paper the transfer of property rights, which governments can limit in time, are called concessions.³ These time limits may either be fixed in advance (e.g. French water concessions) or they may be a function of the economic performance of the concession (e.g. Dartford toll tunnel in the United Kingdom) or they may be imposed by government discretion through termination without fault (e.g. French and British private water businesses) or any mix of such rules.

More broadly governments may wish to limit property rights so as to prevent pockets of private monopoly power from holding up system development. For example, governments may have rights of eminent domain to expropriate property owners who for some reason refuse to sell their property to make way for a road or some other right-of-way or let it be used that way.

Views about the best way to award concessions continue to be debated. Some would like to apply standard rules modelled on those for the procurement of equipment and civil works. In most countries these rules tend to require some form of competitive award procedure except for special cases. Others argue that concession contracts differ fundamentally from contracts for equipment and civil works, because they establish a long lasting relationship and are more than a one-off purchase. Analogies to marriage relations are sometimes used: "It is not the number of suitors and the size of the dowry that truly matters for a successful marriage". That analogy has been used by proponents of the traditional French system of concession award, which gave mayors full discretion in how to define and award, for example, municipal water concessions and exempted such awards from the normal rules governing other types of procurement. Yet another marriage rhyme from Germany might be used to illustrate the opposite position: "Drum prüfe wer sich ewig bindet, ob er nicht noch was bess'res findet" ("Whoever is about to make eternal vows, should test whether he cannot find a better partner").

Whatever one may think about the adequacy of such analogies, they go to the heart of the matter. The question is whether an auction can help obtain the best terms for a concession arrangement from the point of view of the conceding authority. If there are reasons to believe that substantial re-negotiations may be deemed necessary during the life of a concession the original bidding may be rendered close to meaningless. In that case it becomes most important to choose a trustworthy, reputable concessionaire and to negotiate well. In a way, the process of choosing a concessionaire would then look more like that of choosing an important employee. Competence, character and chemistry would be crucial. "Interviews" would be the method of choice for awarding the contract rather than an auction.

This paper reviews the key issues and provides a view on the relevance of auction theory for practical policy governing concession award. The debate is typically over

* what is to be awarded, i.e. the contract design;

- * whether competitive bidding or negotiation should be used to make the award;
- * how competitive bidding be structured; and
- * who conducts the auctions and who monitors the performance of concessionaires subsequently.

II. What to Award-Contract Design

Contract design is here interpreted in a broad sense. It covers all the specifications and incentives that govern a concession whether included in a specific concession contract or elsewhere in laws, regulations or the like. In some cases, particularly where concessions and related law as well as regulations are new, concession contracts may be rather thick documents running into hundreds of pages and several volumes, for example for the Buenos Aires water concession. In France, on the other hand, a long tradition with concessions has led to short documents which set concession-specific parameters. Many other rules governing the concession are contained in more general laws or the precedents developed by over a hundred years of relevant jurisprudence.

In essence, concession contracts set out (1) the performance obligations and rights of concessionaires and the (2) incentives and risks under which they would operate including pricing arrangements. The clarity with which these can be defined determines whether (3) there is likely to be re-negotiation after contract award, which may undermine the significance of the initial auction. The design of incentives and risk allocation will affect the intensity of competition initially and subsequently the sustainability of the original contract. Consider first the issue of specifying performance obligations.

Performance specifications

A key goal in drafting contracts is to ensure as best as possible that contracts are clear and comprehensive so as to reduce the likelihood of re-negotiation. At the same time contracts need to provide freedom to the concessionaire to come up with efficient and innovative solutions.

Output targets. Some argue that, ideally, a conceding authority would define clear and unambiguous performance targets for service delivery by the concessionaire, but not to make rules on how to achieve them. This sounds right in principle wherever some form of price regulation governs the concession. Wherever prices are regulated there needs to be some regulation of service quality to prevent the concessionaire from reaping excess profits by skimping on quality. However, it is difficult to be clear and comprehensive in defining service targets.

Governments tend to be nervous about providing only very general performance obligations fearing that the concessionaire will do less than government deems necessary. An example occurred in the United Kingdom when a BOT contract for a prison was granted to a private company under the country's private finance initiative. It turned out that the winning company was successful, because it planned on housing several prisoners in a cell, whereas the government

wanted single occupancy, but had forgotten to specify this in the tender documents.

Investment obligations. More often governments like to specify obligations of the concessionaire not only in terms of type of service to be delivered, but also in terms of investments to be carried out in support of these objectives. They may require certain investments to be carried out or prescribe technical solutions etc. This carries obvious risks. When Argentine freight railways were privatised they were given certain investment targets. However, their market did not develop as planned rendering the investments foreseen in the contract superfluous.⁴

Some form of contract re-negotiation has often been necessary in cases such as the ones described above. Such re-negotiation could have been avoided with greater care in contract design. Often extensive consultations about specification design and clarification meetings with bidders are helpful to arrive at sound contracts.

Unverifiable quality. However, there are also reasons, why contract specifications may need to specify input requirements and not just performance. For example, where service quality cannot be adequately measured certain technical solutions may be prescribed to ensure some minimum standards. This has happened in the case of coal-fired power plants where, for example, the installation of scrubbers for sulphur extraction has been prescribed to deal with environmental standards, when emissions cannot be monitored effectively. The issue is in principle the same with any type of health, safety or environmental regulation governing any type of business.

Work obligations and hold-up issues. We also find investment obligations in concession-type contracts where there is no price regulation. For example, oil exploration leases often prescribe certain work programs. Alternatively, the right to explore all or part of a particular area has to be relinquished by the holder of the lease, if she is not actively exploring for fuels. In other cases, government may require that radio spectrum licenses be used or returned otherwise. These provisions appear to be aimed at the possibility that private parties bid for concessions so as to restrict supply or hold up development of an integrated system and thus exercise some level of market power.⁵ The possibility of hold-up problems is, of course, precisely the reason to give governments the right to interfere with property rights, i.e. the very reason for having concessions in the first place. The work obligations are in these cases ways of defining conditions for termination to cope with potential hold-ups.⁶

From contract award to financial closure. After contract award, financiers may insist on contract adjustments to render projects financeable. Completing financing arrangements before contract award tends to be prohibitively expensive. Careful contract design can make financing fairly easy. In the best of cases, certain highly standardised contracts in the heydays of independent power projects in the US, reached financial closure within a few weeks after contract award without material change to agreed terms. But in many other cases where contracts are not well designed, financial closure may take years to negotiate and the contract may be materially changed.

Incompleteness of contracts. All these cases create the possibility of future re-negotiations. Careful drafting is necessary to create contracts that are highly re-negotiation resistant and that contain mechanisms to adjust to changing circumstances without significantly undermining the original terms of the contract award. Unsurprisingly, in practice the definition of specifications is one of the most problematic, contentious and time-consuming aspects of many concession contracts. Even with the greatest care one may forget aspects of a problem and complete consideration of all possibilities (including genuine innovation by bidders) may be just too cumbersome and costly - not least in lawyers' time. Contracts are thus not likely to cover comprehensively all possible future occurrences.⁷

Incentive schemes

Incentive systems consist of cost-sharing and pricing arrangements as well as sets of special penalties or incentive payments in case certain performance standards have or have not been achieved. In addition, they comprise bonding devices, for example performance bonds, and insurance arrangements. The incentives are to be set and aligned such that the concessionaire manages the risks and opportunities she is facing in a way that is in the interests of the conceding authority. The following discussion just highlights a few major points related to the sustainability of contracts.

Risks outside the concessionaire's control. Risks that the concessionaire cannot control or assess better than its customer(s) should generally not be shifted to the concessionaire. When both concessionaire and customers are similarly able or unable to control or assess risks, then desirable cost-shifting depends on whether consumers or investors have the lower cost of risk-bearing. When uncontrollable risks are shifted to customers, away from the concessionaire, net costs to customers do not increase (assuming equal costs of risk-bearing for consumers and investors), but the likelihood of contract re-negotiation is reduced. For example, the cost of purchases over which the concessionaire has no control are generally passed through to the concessions customer(s) via the price adjustment formulae.

The principle is widely accepted, albeit the determination of what is or is not under a meaningful degree of control of the concessionaire can give rise to intensive negotiation. In practice, hybrid approaches are often used. For example, the risk of general price inflation may be passed to consumers. This makes sense when it is unclear to what extent the concessionaire can control costs. By passing through a general benchmark for cost increases, namely inflation, the concessionaire retains the incentive to beat the benchmark by making best efforts to control costs relative to the situation where the remuneration of the concessionaire is set by a rate of return applied to its cost-base (rate-base).⁸ At the same time the concessionaire need not ask for excessive risk premia that would be required if all cost risks were shifted to her under a fixed-price scheme. The properties of various pricing arrangements have been extensively discussed in the literature on regulated industries ranging from cost-plus type pricing to fixed-price contracts (see Armstrong, Cowan and Vickers, 1994; and Laffont and Tirole, 1993).

In an application of the general principle, Engel, Fischer and Galeovic (1996) have argued that, where demand risk cannot be controlled or assessed by concessionaires the latter should not be exposed to it. This could apply, for example, to traffic demand for certain toll roads or power demand when the concessionaire supplies a monopoly with its own competing power generation (the case of many independent power projects or BOTs). An optimal scheme would then not auction off the road or the power plant on the basis of the lowest toll or price of power but on the basis of the least present value of revenue. The concession would end when that level of revenue were reached. If contract re-negotiation would ever become necessary, it should be comparatively easy to determine the amount of revenues that have not yet been earned by the concessionaire and this would determine optimal compensation payments limiting the ability of negotiating partners to extract excessive payments during re-negotiations. This scheme is being applied to the Chilean road concession program. A similar scheme has de facto already been used in the case of the Dartford tunnel in the United Kingdom. The project was financed with debt only. Therefore, it was only natural to specify that the concession would end when the debt is repaid. The latter considerations did not play a major role in the design contrary to the Chile case as it remained open to what extent the concession would be debt-financed.

Cost-sharing and bidding intensity. A particular aspect relevant to competitive bidding is the relationship between pricing or cost-sharing rule and the intensity of expected competition (McAlfee and McMillan, 1988). At one extreme pure cost-plus rules render competition meaningless. If concessionaires face no possible exposure in the case of cost increases for whatever reason, then they would all bid low and later claim cost increases. As soon as concessionaires have to share a little in cost increases the most efficient firm would be selected in a competitive auction as it could make the lowest bid.

When much of the cost is shared with the customer even not so efficient firms can make fairly low bids putting pressure on the most efficient firm and more risk averse firms will consider bidding. For example, if the cost (incl. desired profit) of the high cost firm are 200 and the cost of the low cost firm are 100, then under a fixed-price bid the low cost firm would win with a bid of 199, which just beats the high cost firm that bids 200. If the consumer were to share costs 50-50, then the winning bid would be 99 as the low cost firms just beats the high cost offer of half of 200, i.e. 100. Consumers would pay half the cost of the winning firm i.e. 50 plus the bid price of 99 yielding a total payment of 149 from the customer(s) to the concessionaire compared to the 199 otherwise.

In this sense a higher degree of cost-sharing renders competition more intense and beneficial to conceding authority and/or customer(s). This needs to be balanced against weaker incentives to control costs. Consequently, one would advocate fairly generous cost-sharing parameters for high risk, complex projects and fixed-price arrangements for "standard" ventures. For example, Eurotunnel issued the main construction tender with cost-sharing, whereas natural gas fired independent power plants might be bid on the basis of the lowest present value of revenue.

In practice, many companies tend to favour more cost-sharing and conceding

authorities tend to pursue arrangements close to fixed-price contracts. This is largely due to concerns about weak incentives for cost control on the side of the authorities and the corresponding desire to be able to shift costs to others on the side of the firms. Rarely is the effect on bidding intensity considered by governments. As for companies we should expect low cost firms to argue for approaches closer to fixed price rules and high-cost companies for more cost-plus ones.

Post-award contract adjustments and bonding mechanisms

Because even the best designed long-term concession contracts will usually have to be adjusted some time during their life, sound contracts contain mechanisms to deal with such adjustments. They may specify the conditions, under which re-negotiation may take place and principles on which it may be based. In particular, pricing arrangements may be reviewed if unforeseen shocks occur or otherwise at certain intervals, which may be fixed or determined by the parties to the contract. In this respect concession contracts are no different from utility regulation more broadly. For example, prices in French water concessions may be renegotiated when unforeseen events occur (improvement) or after a certain period of time, say 5 years. Utilities in the United Kingdom may see prices adjusted via so-called interim assessments following unforeseen shocks or during planned price reviews, for example every five years.

Service continuity and performance bonds. Re-negotiation occurs in a quasi-bilateral monopoly setting. Concessionaires can only negotiate with the government and governments may find it difficult to turn to alternate concessionaires. Governments will often be reluctant to terminate a concessionaire, because they are afraid that basic services will suffer, for example water supply may be interrupted. To deal with such concerns the concession arrangement can contain an obligation for the concessionaire to continue providing service until a new one has been chosen, for example in Colombia this obligation is contained in a general law governing inter alia concessions.

However, governments still worry whether concessionaires will in practice fulfill their obligations. Performance bonds have proven valuable to prevent partners from walking away from a contract. In this way, performance bonds limit bargaining options after contract award. A case in point is a recent dispute in a water concession in Latin America, where several partners in a concession consortium walked away from the concession, when difficulties with the conceding authorities became unbearable. But key players stayed in and tried to make it work, not least because of the risk that a rather substantial performance bond would be called.

Government guarantees. Concessionaires on the other hand try to bind conceding authorities by providing for international arbitration under conventions, which make arbitral awards enforceable. In addition, they may ask for special payment or performance guarantees to ensure that the relevant counter party is able to pay when required.

III. To Auction or Not to Auction?

To get the best deal should the contract be auctioned off or negotiated? Advocates of negotiation tend to argue that a formal competition may take too much time, that costs of preparing bids may be excessive and that innovation may be discouraged. Proponents of competitive bidding tend to argue that there are ways to address many of these concerns without sacrificing the bidding process. In addition, with competition the conceding authority may get a better deal and transparency of the process may be enhanced rendering a deal more sustainable politically. Additional considerations apply when considering whether to re-bid a concession, because of the incentives for investment and maintenance that the incumbent faces.

Speed

It is true, of course, that implementation times can be cut by immediately awarding contracts rather than going through a bidding process. Some of the early fast-track power projects in the Philippines are illustrative. Sizeable power projects were completed in less than a year. The resulting costs were a high, over 13 cents/kwh compared to 5-7 cents for later plants that were competitively bid. However, this was still much cheaper than the cost of not having the electricity available, which was estimated to exceed 50 cents/kwh.

But even if a key goal is speed, some preconditions should be fulfilled. One needs a list of reputable concessionaires to whom to turn. The project and contract have to be well defined. Some negotiation will be inevitable. Finally, one needs a fallback option in case the first chosen company drops out or is not suitable for some reason and also to make negotiation halfway meaningful. If alternatively one were to organise a quick competition among three or four reputable companies one might lose a little time, but not very much, unless one is prepared to heavily compromise on price by simply going to a company with a fairly open ended or generous contract. In that case one would essentially rely on the reputational interest of the company to limit price and obtain decent performance.

The costs of bidding

It is also true that the costs of preparing several bids may be prohibitively large relative to the contract amount. For example, competitive bidding for a very small water utilities supplying each just a few thousand customers may not justify the transaction costs of the process. One option is then to pool municipalities and have them auction a single larger concession. Such pooling, albeit normally without bidding is widely practised among French municipalities' water systems. A second widespread option to limit the costs of bidding is to limit the number of bidders through a short listing procedure. Often just about four bidders are selected among those technically and financially qualified. Alternatively one could

select, for example, the four bidders willing to offer the highest level of performance bonds and then turn to bid on the main bid criterion. That would ensure that the most confident and creditworthy parties participate in the final bid.

Finally, part of the costs of bid preparation may be shared by the consumers, who benefit from more intensive competition. Such sharing of bid costs of up to 50 per cent is generally allowed under the UK's private finance initiative and has been used in the case of Eurotunnel and Athens airport. The shared bid costs are included in the total costs to be recovered from consumers or the conceding authority. The argument is in the spirit of the one presented earlier, namely that cost-sharing may intensify bidding competition. In any case consumers eventually pay for bid costs through tariffs under any system, but they may benefit overall from more intensive competition. The main benefit from such cost-sharing is obtained in situations where the number of bidders is raised from one to two. In other cases, where a reasonable number of bidders is likely to bid anyway, the rationale for cost-sharing would basically be dependent on risk-aversion of the bidders and would lower their costs of risk-bearing.

All the foregoing options assume that overall the costs of bidding are outweighed by the gains from competition. It remains very hard to determine exactly whether that is likely to be the case. Better criteria to make such determinations would have high value.

Innovation

Private sector companies may present governments with unsolicited innovative proposals. They might, for example, propose a totally new type of project that nobody had thought about before or a new concept to solve a known problem. Competitive bidding schemes, which essentially specify a problem to be solved and desired performance standards can leave much freedom to the private sector to come up with new solutions. But sometimes new and helpful problem definitions may be found by firms and new ways of defining performance standards - often embedded in a specific project proposal.

If the conceding authority were to use such ideas to formulate a competitive tender, it would discourage private firms from developing them in the first place. It is, therefore, in governments' interest to protect the private firms' intellectual property embodied in unsolicited bids. The problem is, of course, to know whether the apparently good idea is really good and whether the deal proposed can be adequately negotiated by the conceding authority.

Several basic options exist to combine incentives for firms to develop ideas with the benefits of competitive bidding. Chile's concession system allows the government to provide a bid premium for good ideas embodied in proposals. Subsequently the good idea may be announced in a tender to determine, which firm can best implement it. This method has been used in a Chilean toll road project. The method is close to another option, namely to hold a design competition prior to writing the concession tender. Formal design competitions are, of course, normal for architectural problems, but rare in concessions. Concession-type arrangements tend to be designed by the conceding authority with the help

of consultants and inputs from consultations with industry. The consultants may be competitively selected, but there are no cases where the design itself was selected through competition.

A promising avenue for combining incentives for innovation with elements of competition has long been part of Spanish administrative law and was also included in the BOT law of the Philippines. In both cases, when the conceding authority receives an innovative unsolicited proposal it announces the broad nature of the proposal. Potential competitors then have 90 days to come forward with an alternative proposal. The problem remains, the comparison of proposals generated in this way may be complicated and require a fair degree of discretion on the part of the evaluating authority.

De facto, in many bidding processes bidders learn about competing bids while they are being evaluated. Corrupt leaks are often expected by bidders. In such cases, special rules to protect innovative ideas contained in a bid will have little effect.

Transparency

Transparency of the award process and with it longer term political sustainability tend to be enhanced by competitive bidding that is conducted under clear rules. However, firms argue correctly that competitions are a sham and a waste when the rules of the game are not clearly defined. Bidders would not want to enter competitions where winning is a function of political discretion rather than a professional assessment of the merits of bids against published criteria.

Some firms advocate that conceding authorities resort to negotiated deals in situations where the rules of the game have not been made clear in credible ways. This would attract better industry interest and de facto constitute a better learning process for the conceding authority than an ill-conceived attempt to organise a bidding competition. There may be merit to the argument if the government chooses a reputable company to deal with. However, that may not happen. In any case, if the government really is intent on learning, it is hard to say why that could not take place in the context of designing a competition.

Transparency is another word for limiting government discretion. For long-term sustainability of projects firms should support transparency. However, some short-run profit opportunities may have to be sacrificed in the process. Insistence on transparent rules, in particular competitive award procedures, is thus a reasonable way of selecting both good governments and firms who are interested in the long term.

Bargaining strength

A key point of competitions is, of course, to improve the bargaining power of the conceding authority. Precisely by submitting to clear bidding rules instead of negotiating, the conceding authority is likely to elicit the best possible deals from firms. A fair amount of theory and evidence appears to support this view (Bulow and Klemperer, 1994; Kwoka, 1996 and Domberger et al., 1994).

What, *de facto*, weakens the power of bidding in the case of concessions is the fact that the choice of winners may require a fair amount of discretion. The more discretion is unavoidable, the weaker the case for bidding relative to negotiation becomes, and the more the competition will start looking like a form of competitive negotiation. The need for discretion arises from the difficulty of comparing and scoring bids. Bids for concessions tend to vary on many dimensions.

First, through a pre-qualification procedure, qualified reputable bidders need to be chosen. It may not be specific to a particular bidding but function like procedures to get on a pre-approved vendors list. While certain criteria can be specified such as technical experience and financial strength, there is also value in making discretionary judgements about future developments of a potential concessionaire. For example, among the interested bidders may be an experienced, financially strong public enterprise from another country. Its current strength may face major challenges if certain support mechanisms such as subsidies or special protectionist measures provided by its home government were to be withdrawn in the future, which in turn might raise the risk of relying on this company.

Second, the bids for concessions will vary on many dimensions, which need to be compared and weighed against each other. The more dimensions there are, the more discretion the evaluators have to determine a final ranking. This problem was mentioned before for the case of comparing unsolicited with rival bids. In a regular competition the problem of potentially excessive discretion can be reduced somewhat by using a two-stage bidding system. In the first stage technical bids are received. Following clarification with bidders, the various bids would be evaluated and a determination made on which of them meet the performance requirements of the tender. Ideally, significant technical differences among responsive bids could be valued, for example the cost that different technologies impose on the environment. The second round of bidding would then be just on the basis of a single quote on a single bid parameter, for example price or the level of subsidy - adjusted for any differences arising from valuations at the first stage of bidding. Discretion in such a system still exists, but evaluators do not know a crucial bid parameter until the end of stage two. Their leeway for abuse is thus reduced. In practice it may be crucial to have second stage bids opened publicly with auditors and bidders present.

But with the best of efforts there will remain cases where comparisons among bids are just very complex and where *de facto* some form of competitive negotiations will take place. Bid clarifications after bid submission may start to resemble negotiations or there may be actual parallel negotiations with several bidders. Alternatively there may just be one principal negotiation, but with a fallback so that the conceding authority can credibly threaten to terminate negotiations with a particular party and not be at the mercy of a single bidder. Sometimes the difficulties of comparing different complex concession proposals may be such that the conceding authority reverts to prescribing basic technical parameters, for example location and technology in the case of power projects. This has been the reaction of the Thai government recently to its difficulties with evaluating numerous heterogeneous offers for independent power generation.

One way of limiting the scope for contract abuse is the use of benchmarks for performance. Suppose it was easy to define a benchmark price for power, say 6 cents/kwh. Then one could simply use this as a maximum price in negotiations. However, this method will be highly imperfect in practice for most concession-type arrangements, because general benchmarks tend to be unreliable. Pakistan has tried it for power projects, but political debate of allegedly excessive profits under this scheme may undermine its viability.

Basic policy bias in favour of competition

Overall, it is, therefore, not entirely straightforward to decide whether to auction or negotiate a particular concession. When the conceding authority is a private company operating in a competitive market, then there will be strong disciplines on it to prevent abuse of discretion. Regulated monopolies and government authorities on the other hand are not subject to strong market disciplines. Their scope for misusing discretion is greater. It is, therefore, more important to bind the hands of such conceding authorities by imposing clear rules on the award process. By limiting discretion some flexibility may be sacrificed in the interest of sustainable deals.

As a result most governments have started to adopt guidelines, laws or regulations, which require competitive bidding as the favourite method of concession award.⁹ Yet, at the same time they allow for exceptions on well argued grounds of need for speed, excessive transaction costs and protection of intellectual property rights. Examples are the guidelines for the private finance initiative in the United Kingdom, similar guidelines in several Australian states, the concession or BOT laws of the Philippines, Hungary and Chile. In some cases, for example in Oman, negotiations are excluded as an option under the Sultan's privatisation decree. In others such as France, conceding authorities used to be entirely free to choose the method of award. However, partly in reaction to concerns over corruption there are now some basic rules in France that at least require conceding authorities to announce that they want to award a concession and thus provide interested firms with the opportunity to bid.

Re-bidding

The longer a concession lasts, the less the initial rounds of bidding will affect the overall terms of the concession over its full life. Those terms will be strongly affected by periodic re-negotiations or price reviews, which are not settled by competition under standard concessions (Williamson, 1976). It has been suggested that competition could be brought to bear on the issue by re-auctioning a concession periodically. This would greatly limit the potential for exercise of market power by concessionaires.¹⁰ Edwin Chadwick proposed this solution to the natural monopoly problem in 1859. Harold Demsetz resurrected the notion in 1968. Re-bidding for concession-type arrangements is consequently sometimes called a Chadwick-Demsetz auction. Indeed if contracts can be well written and re-bid-

ding is practical, the natural monopoly problem can be tackled effectively. Price regulation per se may no longer be necessary. In this view re-bidding may help with contract adjustment. Of course, re-bidding would also help re-award a concession that has been terminated to deal with a hold-up problem.

The role of differing information and bidding biases. Re-bidding is a practical option, when assets are not specific to the concession. For example, garbage collection franchises may be re-auctioned periodically. If the incumbent loses, she can simply transfer assets (trucks and staff) to another purpose or sell them. Similarly, bus routes could be auctioned repeatedly. Studies suggest that auctioning of short garbage collection concessions is more economical than either allowing free entry (with garbage trucks chasing the same consumers) and long-lasting monopoly arrangements (Bartone, Leite, Triche, Schenteleib, 1991).

Problems arise when the concessionaire's assets are specific to the concession and are better understood by the incumbent than the challengers. For example water pipes cannot normally be dug out and used elsewhere economically. In this case special incentive problems arise, which complicate re-bidding. These have been best analysed by Laffont and Tirole (1993). Concession-specific assets may either be transferable to the winner of a re-bidding, for example the physical infrastructure, or they may just stay with the incumbent, for example managerial know-how about the concession. When assets are transferable any investment or improvement by the incumbent would benefit the new winner. The incumbent would thus have less of an interest to invest or maintain efficiently than if there was no re-bidding. On the other hand when assets are not transferable they would give the incumbent an absolute advantage during the re-bidding. In the former case the incumbent should be given a preference and in the latter a bias against her should be established in re-bidding. How these effects balance is an empirical matter.

In practice, one might speculate most assets can actually be transferred. Routinely new winners employ key staff of the incumbent and thus appropriate much of the human capital specific to the concession in addition to the physical ones. It might therefore be argued that a bias in favour of the incumbent might be advisable. In those cases where re-bidding of complex concessions occurs we do indeed observe such biases. In France, concessions have traditionally been awarded at the complete discretion of the conceding authority. De facto, this has meant that concessions were usually re-awarded to the incumbent.

In Argentina re-bidding is mandatory for the Buenos Aires 99-year electricity distribution concessions initially after fifteen years and then every ten years. Bidding is on the value of the concession assets, while the price remains as reviewed by the regulator. This is de facto a system with an infinite preference for the incumbent. The incumbent can always retain the concession by bidding an outrageous amount, which she pays to herself. More likely, of course, the incumbent will bid the amount she feels justified and if somebody wants to pay her more for quitting, so much the better. The benefits of the greater willingness to pay of the new winner are all appropriated by the concessionaire, not by the consumers, unless regulators decide to pass some benefits to consumers in reaction to a successful challenge to the incumbent.

A market for corporate control of concessions. The Argentine electricity

concession re-bidding scheme is similar to allowing take-over bids. In a sense the scheme makes take-over bids mandatory every ten years. Take-over bids would extract greater value for shareholders given a certain pricing policy.¹¹ They would benefit consumers if regulators were to take the successful bid as evidence that prices could be lowered more. This, of course, might dampen the enthusiasm of potential bidders. Nevertheless, the successful re-bid can provide extra information to the regulator. Even requiring that the concessionaire quote some shares on the capital market may help. Some evidence in this regard is provided by the dispute about retail power prices in the United Kingdom 1995. The electricity regulator, Stephen Littlechild, changed his opinion on future prices, because a hostile take-over bid prompted a defence revealing that the electricity distributor had a stronger financial position than the regulator was made to believe.

If the benefits of re-bidding can also be obtained by requiring concessions to be listed on the stock exchange (Mayer and Jenkinsen, 1997) and by allowing take-over bids, then it is hard to see how mandatory periodic re-bidding schemes of the Argentina power concession-type could improve on this. They may only be justified, if there were otherwise no effective take-over mechanism.

Re-bidding as a means to reduce regulatory discretion. Yet, there may still be a role for re-bidding. After all, one reason for allowing or requiring challenges to the ownership of a concession is to provide regulators with better information for price setting. As argued before, if the market for corporate control yields such information the regulators may use it to adjust prices. However, if it is at their discretion to do so, firms might be reluctant to stage take-overs and would figure in a discount anticipating regulatory reaction to the bid including a risk premium to take into account the degree of discretion of the regulator. There is nothing much one can do about firms taking into account likely responses by the regulator. In fact, it is good that they do, because they should be satisfied with the business even if the regulator passes part of the efficiency gains to the consumers.

However, it might be possible to reduce the risk premium for regulatory discretion by a formal system of re-bidding. To achieve this, one might organise the following re-bidding scheme. To ensure that creditor and investor interests are taken into account adequately one could value the company on the basis of its debt and stock market capitalisation. Bidding would first be on the net worth for the firm. If more than one bid is higher than some pre-determined price the bidding would switch to the lowest price to consumers.¹² A bias would be provided in favour of the incumbent, but not an infinite or discretionary one. Instead one could give, for example, a 10 per cent preference such that the new bidder only wins if she can underbid the incumbent by more than 10 per cent. Such systems are used in bidding for more traditional contracts for equipment and civil works and have also been used in radio-spectrum auctions in the United States. This scheme would thus eliminate a fair degree of discretion on the part of regulators. A scheme of this type has been discussed as an option in reform debates for the Chilean water system.

Re-bidding to strengthen reputational mechanisms and to limit government discretion. If one believes that concessions should be awarded competitively, then one should also re-award them competitively for the same reason, in particular to

limit discretion on the part of governments. The real issue is whether there should be a re-awarded in the first place. That, of course, is the very essence of concessions as property rights with special termination options for government.¹³ Termination is a threat to the concessionaire and should ideally be used to strengthen her incentives to behave well so that the threat may never be exercised. In this sense the design of termination and re-bidding options should be aimed at creating the strongest possible incentives for firms to develop and maintain reputation.

To achieve this governments or regulators should allow bids only from reputable companies. Some form of pre-qualification is thus likely to be required.¹⁴ Companies that are interested in bidding for concessions in the future thus have an interest in maintaining a good reputation. Such interest in reputation appears to be quite effective in reducing companies' incentives to re-negotiate concessions capriciously. Zupan (1989) finds in a study of 3000 cable TV franchises in the US that opportunistic re-negotiation appears to have taken place in only 60 cases.

Assessing a company's reputation is often a subjective judgement. When tasks are contracted out by firms operating in competitive markets the firm choosing the "concessionaire" has a fairly strong interest to judge reputation efficiently. However, where governments or regulated industries issue concessions such discipline may be absent. The issue is then first whether to allow government agencies to assess reputations. At one extreme procurement rules governing the US Department of Defence make it almost impossible to take reputation into account. At the other extreme French mayors have almost unlimited discretion to evaluate concessionaires. What would be required is a mechanism that can take "soft" information into account better, as rating agencies do when they evaluate capital market participants.

IV. How to Auction

Once it is decided to use an auction to award or re-award a concession, the issue arises what auction mechanism one should use. Mechanisms may differ on various dimensions. This section will consider the choice between first and second price auctions as well as sealed bid and open formats. Then the issue of sequential vs. simultaneous auctions is introduced.

First price versus second price auctions and sealed versus open bids

Auction formats. Standard auction design for concessions is a first-price sealed bid auction. Bidders submit sealed envelopes containing their offer. Bidding may have one or two stages. In stage one the technical parameters of the bids are made comparable. In stage two only the main offer on the core bid parameter is submitted. This may be a price, a level of subsidy, a payment for net worth or any other appropriate parameter. In the following the discussion simply talks about price. Alternatively the complete bid may be submitted in a single stage. The envelopes are opened, bids are made public and the highest bidder wins. Under

one-stage bidding it may not be immediately obvious who has won, because bids first have to be compared and evaluated on all relevant dimensions. These approaches parallel those for bidding for civil works and equipment contracts.

However, recently some other auction methods have been tried and some problems arising under sealed bid auctions have given rise to reconsideration of their merit. In New Zealand second price sealed bids were used to auction licenses for radio spectrum. Under a second price auction the process of bid submission and opening is like under a first price sealed bid auction, but the winner pays only the value offered by the second highest bid.

Design of the radio spectrum auctions in the United States was much inspired by economic theorists. The very idea of auctioning spectrum was floated decades ago by Ronald Coase. The auction design was developed by the Federal Communication Commission (FCC) with the help of game theorists. Open ascending bid auctions were used, much like in auctions for antiques and many other goods. In open auctions bids are made technically comparable. Then the real bidding starts. In multiple bidding rounds bidders raise their bids in response to others until only one bid, the winner, is left over. The winner pays the last price that she offered. The choice of auction method is affected by arguments about

- * political sustainability of the outcome,
- * robustness of firms' bidding strategies, and
- * options for collusion among firms.

All these elements combine in determining whether a particular auction design yields value, how that value may be distributed among bidders, consumers and the government and whether the deal will last.

Political sustainability. Bidding for concession-type arrangements is often among a few players only and price offers can differ dramatically. Winning bids for concession-type arrangements have often been several hundred million dollars higher than the second highest one, for example in case of the Mexican railway auctions (North-east concession) or the Peruvian phone system privatization. Such hugely differing bids tend to render second price sealed bid auctions politically unsustainable. In one extreme case in New Zealand's radio spectrum auctions the first bid was NZ\$ 100,000, the second only NZ\$ 6. This outcome created obvious political problems under the second price rule.

Open bidding processes, on the other hand, do not reveal what the winning bidder might have been willing to pay. Bidding stops when the winner offers just a little more than the second highest bidder. De facto, the winner thus pays more or less the second highest price but nobody sees how much more could have been obtained. This would tend to reduce political complications unless information about willingness to pay were leaked by staff of the winning bidder.

From the point of view of political sustainability sealed bid second price auctions are clearly dangerous when there are only a few bidders as is typical for concessions. If there were many bidders the likelihood of big differences arising between the first and second bid would be much lower, but the transaction costs of the process might be prohibitive. First price sealed bid auctions and open auctions can both yield reasonable sustainability, because in one case the first price wins and in the other the first price is not known.

Guessing competitor strategy. Under first price auctions bidders need to assess what the likely bid of their rivals might be. The better they guess that, the less of a premium they need to bid so as to win. If their guess is perfect, they can bid just above the second price like in an open auction and still win. For example, some bidders take multiple envelopes to the bid opening. If they find out they are the only bidder or if their most dangerous competitors do not show up, then they will hand over the low bid envelope.

The more risk averse bidders are, the more likely they will bid "too high" just to make sure they win. Under second price auctions they just bid what they think the concession is worth and do not need to care about others' valuations. They can thus focus on valuing their own bid. Consequently first price auctions render bidding more complex for bidders thereby increasing the risk that clever firms rather than efficient ones win. At the same time government revenue should go up under sealed bid first price auctions relative to sealed bid second price ones if bidders are risk-averse.¹⁵

Guessing the right value to bid - the winner's curse. In the case of a standard equipment contract the bidders may more or less know what their own costs are and can then calculate the best offer. In many concessions bidders may need to value the right to the concession, which depends not just on their own skill but on factors affecting all bidders, for example the willingness-to-pay of consumers and the future behaviour of regulators. Cases where the bid value depends only on characteristics of the bidder are called private value auctions. Cases where the value depends on factors that affect all bidders are called common value auctions.

Different bidders have differing information and abilities to value a concession. The outcome could, therefore, be that the most optimistic bidder rather than the most efficient will win the auction, which would lead to failure of the winner, pressures for re-negotiation and excessive costs. This is called the winner's curse.¹⁶

Consequently, bidders need to assume in their bids that they may be over-optimistic and adjust their bids downwards. To make sure they do not lose they have to assume that they are in fact the most optimistic bidder and discount the bid accordingly. If they do not they will not survive for long in an industry based on common value auctions. Inexperienced bidders often fall prey to the winner's curse, which is a well established phenomenon in experimental settings. Oil companies, on the other hand face the winner's curse when bidding for exploration or production licenses. Many oil companies have been able to survive through a mix of prudent bidding and, of course, on the basis of superior geological assessment i.e. private value aspects of oil mining licenses.

When governments select serious, experienced long-term players to bid for concessions, these will adjust their bid prices conservatively so as not to fall prey to the winner's curse. They all might bid more aggressively, if they had better information about the value of the concession. Open bidding gives them some better information, because in open bidding they see what others are willing to bid. If a pessimistic bidder thus sees that everybody is still bidding when she thought of quitting, she might continue to bid. On the other hand when most bidders start to drop out of the bidding it is time to revise one's valuation down-

ward. For prudent experienced bidders the winning bid should on average go up under open bidding and the likelihood of an overoptimistic bid should be reduced. Thus governments should expect better and more sustainable deals on average. For this reason the Federal communications Commission of the United States chose an open bidding process for auctioning rights to use various bands of the radio spectrum.

In general, governments should provide as much relevant information to bidders as possible so as to render bidding more aggressive. Sometimes more information may reveal weaknesses in a concession proposal and would thus unequivocally reduce bid prices. But in such cases the winner would have had to re-negotiate anyway later on.

Collusion. First price auctions may be a little better protected against collusion by bidders than open auctions. Suppose there is a bidding cartel among some of the bidders. In an open auction they can see when one of them breaks ranks and bids more aggressively than agreed. Other members of the cartel can then immediately retaliate by also bidding more aggressively. The fear of such retaliation strengthens discipline in the cartel. In sealed bid auctions, retaliation can only occur if there is repeated bidding for concessions with similar players involved. That is, of course, often the case, currently most clearly in water concessions. It is thus not clear that sealed bid auction really constitute better protection against cartels than open auctions in such cases.

In addition, a number of sealed bid auctions are, de facto, open. Widespread corrupt practices make it possible for bidders to learn about competitor bids before bid award. They can then adjust their own bids accordingly. Such practices can best be guarded against under two-stage bidding. The price envelope is then handed in on the day of bid opening. Deadlines tend to be set. Bidders try to hand over the envelope just before the deadline so as to reduce the possibility that the envelope might secretly be tampered with and to make use of any information that may transpire until the last moment. Bids are then opened publicly with auditors present who ensure that those who open the bid read it out correctly and do not suppress or distort any relevant information.

Such safeguards were, for example, used in the recent bidding for an electricity concession in Gabon. When the government auctioneer opened the price envelopes he noticed that the government's preferred bidder was not the winner. The auctioneer then suspended bidding without announcing all the prices and consultations in government took place on what to do. Yet, later bidders were reconvened and the opening continued. Because, there was an impartial observer simultaneously reading the envelopes next to the government auctioneer, it could be ascertained that the final bid award was made correctly. Most likely the government came to the conclusion that deviation from the correct award process would harm its reputation and ability to finance the concession. Had there been fewer safeguards the outcome might well have been different.

While sealed bid auctions can thus be rendered somewhat collusion-proof, open auctions can also be "proofed" a bit. For example, in an open auction bidder identities may be kept secret. Bidders need not be in the same room and can bid

remotely. Reputable auditors can supervise the integrity of the process. However, it remains true that cartels can still retaliate a bit better against detectors than under sealed bid schemes.¹⁷

Reserve prices. When competition is weak, governments may use reserve prices to guard against collusive low bids. It is useful to keep reserve prices secret so that risk-averse bidders pay more rather than less. At the same time one needs to prevent arbitrary manipulation of secret reserve prices by corrupt auctioneers. One way is to deposit the reserve price in a sealed envelope with reputable auditors.

The use of reserve prices also tends to serve political aims, namely to convince the public that state assets are not sold below value. This sometimes runs counter to sound use of reserve prices. Particularly, when assets may fetch less than book value it is often difficult to set a reserve price below book value. But these cases are, of course, politically tough to handle under any circumstance.

Altogether it is thus not quite clear whether first price sealed auctions or open auctions are preferable. In the private sector we often see some form of competitive negotiation, which in principle operates like an open auction. For government procurement or procurement by regulated monopolies it may be desirable to limit the discretion involved in competitive negotiation. Broadly the following general arguments about the relative merits of open vs. sealed bids might then hold. When competition is strong with many and/or diverse bidders then open auctions might be preferable, because collusion is unlikely, anticipation of others' bidding strategy is unnecessary and the danger of winner's curse would be lowered. As discussed before, in such cases fixed price contracts are in principle relatively more desirable than cost-sharing contracts. However, particularly when the number of bidders is small, first price sealed bid auctions may be preferable to guard against collusion. At the same time, to stimulate bidding competition contracts should have relatively higher cost-sharing between concessionaire and customer(s). Sealed bids may also be preferable when bidders are risk averse and when bidders are very different from each other, because then sealed bids may increase the bids placed by the winner.

Simultaneous versus sequential auctions

For the radio spectrum auctions in the United States a simultaneous open auction was used. Bidders bid simultaneously on all areas where they wished to acquire a license to use a particular frequency. Areas were auctioned off simultaneously, because there can be major complementarities between them. For example, telecommunications firms might want to own licenses in adjacent areas, because this might reduce the costs of building out the infrastructure for wireless communication systems. If areas had been auctioned sequentially, bidders might have acquired one not knowing that strong bidders were going to take a valuable adjacent one. Had the winner known that she might have bid less for the first or not at all or for another area. By the same token, simultaneous auctions only make sense when they are open. It is of the essence that bidders are able to adjust bids in response to others. Therefore the issue does not arise if one wants a sealed bid format.

It is not clear that there are significant benefits to simultaneous auctions in most concessions. For example, in the case of the Mexican railway concessions it was discussed whether to use simultaneous auctions for the major three rail concessions. However, in this case bidders could not aggregate concessions, because any bidder could not win more than one concession. Bidders just needed to value each concession and bid what it was worth to them. So far simultaneous auctions for concession-type arrangements have not happened other than for United States spectrum auctions.

Simultaneous bids might make sense if airport slots were auctioned that have to be aggregated into routes. In such cases a simultaneous auction would allow the market to decide how to aggregate pieces of a system most efficiently. Once such pieces are auctioned, secondary markets bear the burden of improving on the aggregation of concessions or licenses. Good secondary markets would also solve the problem and do in any case carry the burden of re-aggregation after the initial auction. However, there may be problems to acquire certain essential licenses when some players do not want to sell as in the case of road construction when a potential seller of part of a right-of-way plays hold-up games. As mentioned before, hold-up issues may constitute the very reason for using concessions, i.e. property rights that may be terminated by government.

V. Who Auctions

When all is prepared the auction has to be implemented. Depending on the nature of the contract and the auction mechanism the auctioneer(s) may have more or less discretion. Discretion will play almost definitely a role in evaluating bids. It is already practice in several countries to institute special independent review panels in case of negotiated deals, for example under the British private finance initiative.

As discussed before much discretion remains even when evaluating fairly tightly structured competitive bids. The bids vary on so many dimensions that there is no measuring rod (metric) which allows a non-discretionary comparison among bids. Also, pre-qualification and short-listing may well involve some judgement when the reputation and character of the bidders matter and not only verifiable track record. It is thus important that the auctioneer (or panel of bid evaluators) are at arms-length from political pressures and from bidders' interests.

The independence debate. How the often elusive goal of independence may be achieved has been much studied, for example for the case of regulatory agencies (Smith and Klein, 1994). Design issues are: How many members does the evaluation panel have? Who appoints them? What organisation can they come from when getting onto the panel? Who may they work for afterwards? What is their tenure? Who approves their expenditure budget? Where do the funds come from? How much budgetary autonomy do they have? How well defined are the procedures governing the auction process? How public are the deliberations? What kind of consultation mechanisms with bidders or members of the public may be

in place? Will deliberations and evaluation be in written form? How public will the decisions and the reason for them be made? Will dissenting opinions be published? What kind of auditing mechanisms should be in place?

Typically, there is not too much debate about these matters when it comes to procurement of concessions. The independence of the "judges" is rarely discussed as much as the evaluation principles and the auction rules. However, in the case of concessions this is short-sighted given the degree of discretion involved and the political prominence of many of the businesses involved, for example water supply. Particularly, those who argue that reputation and character matter a lot and that therefore tightly defined contracts and bidding mechanisms are not the answer, should advocate the institution of "independent auctioneers" to avoid conflicts of interest.

The role of the regulator in auctions. Once one agrees on the need for independent auctioneers for concessions, the question arises why one should not use the regulator to conduct the auction, although not necessarily define the contract and auction format. The latter may still be done by the conceding authority. If auctions are essentially a mechanism to improve information for price review processes, then it would seem particularly appropriate to have the regulator conduct the auction.

Furthermore, as discussed before, concessions exist, because the conceding authority, say the government, wants to be able to terminate the concession under certain circumstances. In particular, the government may want to deal with hold-ups or may just be generally dissatisfied with performance, although it would be difficult to build an indisputable case in court. The concession format allows termination without fault either when the concession has a fixed term, which comes to an end or upon suitable notice of termination by the government. In a sense these powers are similar to those under fixed term labour contracts or "no-fault divorce" to come back to marriage analogies.

Obviously, such contractual arrangements place major discretionary powers in the hands of governments. To guard against abuse it would, therefore again be desirable to render the conceding authority as independent as possible. However, it may not be advisable to mix the functions of regulator and conceding authority, because regulators may have to arbitrate in disputes between concessionaire and government. Alternatively, such disputes could be left to the courts and all powers over the concession could be left with the "regulator". For example, in the United States, the Federal Energy Regulatory Commission has both licensing and regulatory powers.

VI. Conclusion

The paper has reviewed issues arising in awarding concession-type arrangements. It discussed issues of contract design, whether contracts should be auctioned off, how auctions should be designed and who should conduct the auction.

Two key features characterise concession-type arrangements. First, they are

long-term contracts that require adjustment over time. Second, conceding authorities maintain rights to terminate the contract to prevent hold-up problems. As referred to throughout the discussion, economic theory has made contributions to various aspects of concession design and award. The core issues are how to ensure that both conceding authority and concessionaire adhere to the contract and behave in a reasonable spirit.

In a nutshell, to prevent unnecessary and capricious re-negotiation, concession contracts should contain well thought-out performance specifications, well balanced incentives and risk-sharing arrangements and strong bonding mechanisms leading the contractual parties to adhere to contract terms. When concessions are issued by government authorities or regulated monopolies, they should in principle be awarded through competitive bidding, except for cases where the need for speed is extreme or where the transaction costs are high relative to contract value. Normally, conceding authorities use sealed bid fixed price auctions, but there may be reasons to use open bids more often. Importantly, whatever the method of award, the awarding authorities will need to exercise significant discretion. Therefore, arrangements should be put in place, much more often than is currently the case, to ensure that the agencies managing the award process are at arms-length from all interested parties. Reasonably independent regulatory agencies could, for example, be charged with conducting the award.

Many aspects of concession contract award could benefit from further analysis. For example, it might help to provide better criteria on the exceptional cases when negotiated deals might be preferable to competitive bidding. It would also be useful to have a more complete investigation under which circumstances it might be preferable to use first price sealed bid auctions as opposed to open auctions to award concessions. Clearly, it would help if one could find better criteria on what kind of biases, if any, to incorporate in re-bidding processes.

Some fundamental issues have been neglected by theory. Both the design of reputational mechanisms and ways to limit discretion of conceding authorities are of great practical importance, but little guidance is available.

Finally, it would be interesting to see more work on which type of concessions, licenses or permits can be made tradable and how. For "standard" concessions this relates to the market for corporate control or the tradability of the concession title. More broadly, one could, for example, investigate whether and how rights-of-way may be traded. This discussion would be closely related to debates about tradable permits in general.

Fundamental to a study of concessions is adequate treatment of termination provisions and their exercise plus, of course, all the mechanisms to prevent termination from being exercised unnecessarily. In practice, when concessions are negotiated, termination is often the last thing negotiators dwell on. Issues such as finability of the deal tend to dominate, or the level and structure of prices, or quality parameters. Exaggerating slightly one might say that investment bankers care about being paid back, not about efficiency per se. In fact they generally like monopolies, i.e. exclusive rights. Lawyers tend to care a lot about details of the governing legal system and legal enforceability, but not that much about well-

designed incentives. Where practitioners' incentives are thus deficient in dealing with the core issue of concessions, more detached observers and theoreticians should have a better than average chance to make useful contributions.

Notes

- 1 It should also be noted that private regulated utilities in some countries have contracted out parts of their business to other private companies, most notably electric utilities in the USA which allowed independent power producers (IPPs) to supply new generating capacity.
- 2 Even in free entry systems permission to use rights of way or environmental clearances are awarded by government authorities. Such permissions, authorisations or licenses could theoretically be awarded in ways similar to concession contracts, for example prior to the entry new power plants. An example would be auctions of pollution rights.
- 3 In the economics literature the word "franchise" tends to be used for the concept.
- 4 In an Argentine gas pipeline BOT from the early 1980s, COGASCO, a certain method for extracting propane, butane and other gas liquids from the gas stream was prescribed. The private concessionaire found a more efficient way to extract liquids and was later accused of breach of contract inter alia for this reason.
- 5 Of course, an oil field may not be exploited because the company simply wanted to buy an option to explore later rather than trying to gain monopoly power.
- 6 Concessions are one way to grant rights to a "governmental" authority to terminate or suspend property rights. The notion of hold-up problems is central to an understanding of concessions. There are a number of cases when transactions have to happen in bilateral monopoly settings, where there is only one buyer and one seller, or in situation that approximate this state of affairs. In those cases, particularly when comparator prices from functioning markets are lacking, the transactions may be held up by parties trying to extract maximum rent. To prevent or reduce such wasteful bargaining it may be socially useful to allow limits to be imposed on bargaining - at the extreme the option of expropriation.
- 7 Transaction costs (development activity, negotiations, etc.) for concession-type projects tend to be quite high as it is. Where concession arrangements are reasonably well understood transaction costs may be in the order of 3-5% of total project value. In countries, where the concept is new, initial transaction costs may be above 10% of project cost (Klein et al., 1996).
- 8 In the beginning of the 20th century many concessions had no inflation indexation. When price levels began to rise in many countries, concessions required adjustments, which de facto often led to nationalisation of some type as private concessionaires went bankrupt given the contracted prices.
- 9 The association of national independent energy producers in the United States (NIEP) recommends competitive negotiations for award of independent power plants by regulated utilities (NIEP, 1991).
- 10 Recall that concessions are only needed when there are monopolies to be awarded. Otherwise free market entry should prevail.
- 11 For this to work the "concession" should be treated like a firm, i.e. its full balance-sheet (assets minus debt) should be bid for rather than only the assets. In fact, it may be best to think about the concession simply as a regulated firm, where government retains rights to re-take ownership or change ownership under certain conditions. This is also possible in regulated utilities in the US. Witness the municipalisation or de-municipalisation of water utilities.
- 12 Such a bidding scheme has been proposed by Eduardo Britan for water concessions in Chile inspired by a similar scheme for tollroad bidding.
- 13 Note that governments tend to have emergency rights to confiscate all sorts of property: e.g. houses, cars or food in times of war. One may again interpret this as a way of dealing with hold-up problems.
- 14 De facto this is also the case in other markets. Over a decade ago a large construction and housing company, Neue Heimat, went bankrupt. It was purchased by a private individual with neither relevant business experience nor any noteworthy wealth for 1 German mark. Creditors of Neue Heimat saw to it that this transaction was undone.
- 15 For more technical expositions of these points see McAfee and McMillan (1987), Milgrom (1989) and Riley (1989).

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- 16 If winners were to expect that they can get away with re-negotiation, then they would in any case have no incentive to bid responsibly. Such "lowballing" bidders - called "coyotes" in Mexico - would simply bid low in the hope of making up later in re-negotiation. As has been discussed already, for bidding to be meaningful, failure to comply with terms of the bid must impose costs on the bidder. The winner's curse thus seriously threatens the winner in a meaningful auction.
- 17 This is an instance, where some degree of in-transparency prevents collusion. While overall transparent rules are valuable, their detailed design needs to watch out for such instances.

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