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Foreword

OECD Journal: Competition Law and Policy is a unique resource for competition experts in business, law, economics, consulting and academia. Drawing on the best of the recent work of the OECD Competition Committee, it provides insight into the thinking of competition law enforcers while focusing on the practical application of competition law and policy.

We regret that we are unable to take unsolicited contributions to this Journal. We welcome, however, feedback from our readers. Your views on how to improve the Journal can be sent to:

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CONCESSIONS

The OECD Competition Committee debated concessions in February 2006. Governments have long been engaged in providing goods or services to their citizens that could, in some form, be provided by the private sector. The trend over the past few decades, however, has been to transfer these functions, and the state-owned assets used to provide them, to private hands. The most common method, and the one usually preferred, is privatisation, or outright sale or transfer of ownership of the relevant assets to one or more private parties. Another method is concessions.

Concessions are often viewed as a substitute for privatisation when the latter is not feasible for political or legal reasons. Concessions are not substitutes for regulation. Where there is a need for regulation, as in a situation of natural monopoly, a regulatory regime may be created along with the concession.

CONCESSIONS

1. SYNTHESIS BY THE SECRETARIAT

SYNTHESIS

by the Secretariat

Considering the discussion at the roundtable, the delegates' written submissions and the Secretariat's background paper, several key points emerge:

- (1) *A concession is an alternative to privatisation as a means of transferring the responsibility for operating state-owned assets to private hands. It is often employed in a natural monopoly or infrastructure setting, where competition in the market is difficult or impossible. It is a form of providing competition for the market, which provides many of the same benefits for consumers.*

An accepted definition of a concession is: a grant to a private firm of the right to operate a defined infrastructure service and to receive revenues deriving from it. A concession could be granted to operate an airport, for example, or to provide water to a municipality. There could be many parameters to the concession, including specification of tariffs, of investment, of levels of service or of fees to be paid to the government. The agreement is of limited duration, typically from 5 to 30 years. Usually, a concessionaire pays a fee to the concession-granting authority and then makes investments and collects payments from users over time.

Governments enter into concession agreements for various reasons, among them to raise revenue and to achieve efficiencies by placing operation of the assets in private hands. Concessions are not a substitute for regulation, however, and they may be accompanied by the creation of an appropriate regulatory regime. Finally, in certain situations privatisation or concessioning may not be preferable to continued public provision. This may exist where the assets are natural monopolies, when the opportunity for cost reduction stemming from reductions in quality is high and there is no way to reward quality improvements.

- (2) *The design of a concession is a critical first stage in the process. It should be done in a way that maximises the opportunity for competition.*

Designing a concession is a highly complex undertaking, possibly involving many considerations. One of the most important is to ensure that post-award there is as much competition in the market as possible. This may require, for example, a vertical split – separating the operation of any natural monopoly component from other parts of the sector where competition is possible. It may require a horizontal split – creating more than one entity to operate in competitive segments of a market. Here there may exist tension between the goal of providing for competition post-award and the government's goal of realising maximum revenue from the concession. The preference should be for competition in these situations.

Another factor in the design is the length in time of a concession contract. A longer period – say, 30 years – would encourage the concessionaire to make necessary investments in the infrastructure at the beginning of the period, but that incentive diminishes near the end of the period. There has been some experimentation with shorter periods, especially in situations where there is considerable uncertainty about future market developments. A shorter period places the burden of that uncertainty on the government in the short run, but it will increase certainty in the competition for the subsequent concession.

Concessioning may take place in the context of a broader market reform, including the creation of a new sector regulator. It is important that the regulator, if there is to be one, be created before the concession is awarded, again to reduce uncertainty.

- (3) *The second stage in the process is the award of the concession. Again, it is a highly critical one. It is at this stage that competition **for** the market occurs.*

Economic literature points strongly toward auctions as the most effective means of awarding concessions. Designing the auction is critical, however. A faulty auction design will negate the potential benefits of the process. One important factor in this regard, of course, is to minimise the opportunity for collusion among bidders. Opportunities for signaling among bidders should be reduced, and the benefits of cheating against a cartel should be enhanced. Measures should also be taken to encourage entry, that is, to encourage the participation of as many bidders as possible. This can include wider advertisement of the auction, reducing the cost of bid preparation and reducing informational advantages of incumbents.

Other means of awarding concessions are negotiation, either with more than one applicant simultaneously or sequentially, and a “beauty contest,” or evaluation of competitors on the basis of pre-defined criteria, such as technical expertise, financial viability and network coverage. Experience has shown in some countries that government negotiators are sometimes disadvantaged as against their private sector counterparts, perhaps both because they lack important industry expertise and because their goals are more diffuse than those of the private sector, which focuses solely on maximising profits. Further, corruption is a distinct possibility in some countries. It should be frustrated as much as possible by, for example, a formal, transparent award process and vigorous enforcement of anti-corruption laws.

The award should minimise as much as possible the opportunity for renegotiation post-award by the winning bidder. Such renegotiations can negate the benefits of the competition at the award stage. The concessionaire may be in position to “hold up” the government in renegotiation if re-opening the award process is not feasible. Of course, since concession contracts are incomplete, that is, not all terms of the arrangement can be known at the time of the award, renegotiation may be inevitable to some extent.

- (4) *The competition agency should be involved in the concessioning process, preferably as early as possible through competition advocacy in the design and award stages.*

The competition agency has important expertise that can be applied early in the concessioning process. It can assist the concessioning agency in designing the structure of the concession to maximise post-award competition. It can advise on the award process, particularly in the selection of the most efficient means of award and on minimising the opportunities for collusion. If the process includes the creation of a regulatory regime, the agency can provide input there as well, for example on the most efficient type of price

regulation. Its cadre of expert micro economists may be unmatched elsewhere in government. It will not be sufficient for the agency merely to say, “Competition is good,” however. It must strive to acquire some technical expertise in the sector involved, both to give the agency credibility and to enhance the usefulness of its advice.

- (5) *Finally, the competition agency must vigorously enforce the competition law throughout the process.*

There should be no exemptions or exclusions from the competition law in sectors where there are concessions – the competition law should apply fully to them. The competition agency should of course be alert to the possibility for collusion at the award stage as well as post-award, in those parts of the sector where competition exists. Where the concessionaire is a monopolist the agency may have occasion to apply the abuse of dominance provisions of the competition law to its conduct, particularly where the conduct is exclusionary. Finally, the merger control law may apply, either to horizontal mergers between competing concessionaires or to vertical acquisitions by monopolist concessionaires that could have harmful effects in competitive markets.

CONCESSIONS

2. BACKGROUND NOTE

BACKGROUND NOTE

*by Sally Van Siclen**

1. Introduction

Over the past decades, governments have increasingly turned towards concessions as a way to raise funds and to improve services by applying private-sector expertise to investment, management and operation of infrastructure. Concessions have been extensively used in both developed and developing economies for infrastructure to provide socially significant services such as water, transport, telecommunications and electricity.

Citizen-consumers do not always perceive benefits from concessions. Particularly when the change is accompanied by reduced subsidy or correction of underinvestment, tariffs have sometimes increased after the introduction of a concession. Discontent with such tariff increases has been further fuelled when foreign multinationals are the concessionaire.

While concessions are not always capable of achieving stated government policy goals, increased focus on competitive conditions can improve the performance of the process. The purpose of this note is to discuss the main elements for the design of the concession allocation process and identify the competition problems that may arise during the term of a concession.¹ Improved focus on competition is one step towards better design.

The design and oversight of concession contracts is particularly complex. Reasons for this complexity include:

- Concession contracts necessarily do not cover all contingencies. They are “incomplete” in economics terms. Uncertainty about costs and revenues cannot be entirely resolved in advance. The uncertainty opens the contracts for renegotiation with its attendant negative consequences.
- Both concessionaires and governments can find it difficult to respect concession contracts over the term of the contract. Concessions typically involve large sunk investments that must be recovered over long periods, on the one hand, and governments are under pressure to maintain or improve services, on the other hand. Thus, there is a risk that governments behave opportunistically after concessionaires sink their costs and there is a risk that concessionaires behave opportunistically when governments have no immediate alternatives.
- Concession contracts often involve the creation of a privately operated monopoly which may, in itself, create competition problems. These may be reduced through a change in the structure of the concession or through ongoing price regulation. Introducing a regulatory structure before a concession auction can reduce uncertainty among bidders.
- The success or failure of competitive auctions to award a concession to the most efficient operator can depend on subtle variations in design. Transactions costs—the lemons problem,

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in which buyers cannot assess the value of the object for sale so the market does not exist—impede selling on a concession to a more efficient operator after a faulty auction awards it to an inefficient operator.

The award of a concession should take place within a broader regulatory reform of a sector. Such a reform should include clarifying the service objectives and revenue sources, thereby uncovering cross subsidies that must be addressed in the concession design. Reform also often should include addressing how the sector will be governed during the long period after the concession has been awarded: where competition would be feasible and desirable, what sector-specific laws and regulatory institutions need to be established, and the application of competition law.

Competition authorities take an interest in concessions because, through advocacy, authorities may promote the use of a more competitive allocation process which in turn may increase economic efficiency, one of the standard objectives of competition authorities. Authorities may also be able to influence auction design in a way that reduces the possibility of collusion. Competition authorities may also promote better concession design which in turn might reduce subsequent harm to the competitive process such as through denial of access to essential facilities. Further, concessions are used where market entry is not free (otherwise numbers would not be limited). Hence, a market in which a concession is used has already passed through an important screen for attracting competition authorities' interest.

A number of key points emerge. These include:

- The design of a concession or concessions is constrained by the regulatory regime that will apply to the concession, the potential for renegotiation of the concession contract, and the feasible way of awarding the concession or concessions.
- The key objectives in auction design are attracting bidders, preventing collusion, and ensuring the integrity of the auction. Auction theory shows that attracting an additional bidder makes the auction more competitive. Theory also shows that an auction with $N+1$ bidders will always provide a higher price than any negotiation and any feasible auction with N bidders. In other words, if just one more bidder can be attracted to an auction than can be attracted to a negotiation for the same object, then the auction is more competitive. Therefore, auctions are in general preferred over negotiations and beauty contests.
- Designing a successful auction that identifies the most efficient operator is difficult and requires expertise. The examples of successes and failures of auctions can offer some warnings, but are not a substitute for analysis of the actual situation.
- Renegotiation, whether due to contract incompleteness² or opportunism, can eliminate the benefits of a competitive allocation mechanism; essentially, the winner of an auction will be the best negotiator not necessarily the best infrastructure operator. In particular, renegotiation means that agreements made by competitive award are superseded by the terms agreed in bilateral, non-public negotiations between concessionaire and government. Strenuous efforts should be made to restrict renegotiation to situations where renegotiation is not opportunistic, that is, to situations where unexpected events, outside the control of the parties, have occurred.
- In sum, both an efficient allocation mechanism, such as a well-designed auction, and credible commitment to the resulting contract are necessary.

- Concessioneering is not a substitute for regulation. Where a concessionaire will have substantial market power, then a regulatory structure is likely needed. In any case, competition law should apply to concessionaires as well as to any auction to award a concession.

This note begins with a review of the **key economics literature** and a **review of empirical experience** with concessions. The remainder covers the main steps in putting a concession into place:

- **Award of the concession**—the design of the mechanism by which the concession is awarded, with an emphasis on competitive award mechanisms.
- **Performance of the concession**—the problem of renegotiation and an overview of the standard competition issues that might arise in concessioned sectors.
- **Design of the concession**—the main contract elements that are constrained by the award and performance of the concession.

2. Concessions: What they are and what is the experience

2.1 *The economics literature*

Two classic economic theory papers on concessions (also called “franchises” in the literature) are by Harold Demsetz in 1968 and Oliver E. Williamson in 1976. Demsetz pointed out that when competition in a market is infeasible, such as for a natural monopoly, it may be feasible to have competition for the right to supply a market. (In the background is a desire to move away from the inefficiencies engendered by regulation by substituting competition.) It might be possible to organise such competition for the market if inputs to supply the market were available to bidders at competitively determined prices and if there were no collusion so that the outcome of the competition was indeed competitive. If there is a single product, uniform pricing, all bidders have access to the same technology and can produce efficiently, and the number of bidders is sufficiently high, then the bidders would compete away any excess profits and the winning bid will be the minimum price that allows the firm to break even, i.e., earn normal profits. This is a good outcome in the sense of choosing an efficient supplier who will supply at average cost. However, there may be substantial welfare losses by not pricing at marginal cost. If there is more than one product then there is no best way to choose the winning bid. And, as will be explored later in this note, the winner of the competition may try to cheat on the quality provided and attempt to renegotiate the contract.

Williamson’s 1976 paper was a reaction to Demsetz. He explored further the idea that bidding for a concession or franchise could be a substitute for regulation.³ He identified difficulties that were glossed over by Demsetz, namely equipment durability and uncertainty, as the core issues for franchise bidding. Regarding incomplete long-term contracts (the type of greatest interest for concessions), Williamson made three main points. First, he felt that the initial award criterion would be artificial or obscure. Once there is more than one dimension to a bid, e.g., price and quality, or peak- off-peak prices and quality, the criterion by which a winner is chosen is arbitrary. Second, he felt that the steps needed to overcome contract execution problems—adjusting prices to reflect changing costs, specifying quality of service, stipulating monitoring and accounting procedures—converged franchise bidding toward regulation. Other contract execution concerns were that franchising agencies were unlikely to allow a winning bidder to fail. Quoting Eckstein, “publicly accountable decision makers ‘acquire political and psychological stakes in their own decisions and develop a justificatory rather than a critical attitude towards them.’” (1956, p. 223) Third, for there to be meaningful competition when the contract is re-bid, the incumbent—the winner the first time—must not gain substantial advantages. But this may be unlikely in practice as his study of CATV

showed. Williamson summarises thus, “The upshot is that franchise bidding for incomplete long-term contracts is a much more dubious undertaking than Demsetz’ discussion suggests.”

Riordian and Sappington (1987) is of less direct interest to policy-makers as they abstract from the complications that Williamson pointed out to be empirically relevant. That is, they assume that consumer preferences are known, quality is not an issue, bidding is not repeated, government and concessionaire can costly commit to the contract, and there is no cost of writing complex contracts. That being said, they find that, under conditions of risk-neutral bidders with private information about production costs, the optimal franchise bidding scheme is for the government to offer a menu of contracts. Each contract defines maximum prices and net transfer payments (production subsidy less franchise fee) as functions of the firm’s reported marginal product cost. The winner is the bidder who bids the highest ranked contract. The winner will have the lowest expected costs but prices will exceed marginal cost. Having more bidders increases the franchise fee and reduces the winner’s profits.

The empirical tradition is somewhat longer. Edwin Chadwick, a reformer in early 19th century Britain, proposed franchising the funeral industry. In 1907 the following comment was made about contract incompleteness and renegotiation in concessions:

“Regulation does not end with the formulation and adoption of a satisfactory contract, in itself a considerable task....It is a current fallacy and the common practice in American public life to assume that a constitution or a statute or a charter, once properly drawn up by intelligent citizens and adopted by an awakened public, is self-executing and that the duty of good citizens ends with the successful enactment of some such well matured plan. But repeated experience has demonstrated—what should have been always apparent—the absolute futility of such a course, and the disastrous consequences of reliance upon a written document for the purposes of living administration. As with a constitution, a statute, or a charter, so with a franchise. It has been found that such an agreement is not self-enforcing....[Moreover, the] administration may ignore or fail to enforce compliance with those essential parts of a contract entrusted to its executive authority; and legal proceedings...are frequency unavoidable long before the time of the franchise has expired.” (Fisher, 1907, pp. 39-40 quoted in Williamson 1976 p. 91)

Governments introduce concessions to increase the efficiency of infrastructure by applying private sector expertise in investment, management and operation, as well as to raise cash. Concessions may change who—government, concessionaire, users—bears risk and uncertainty and may provide incentives for efficiency. But concessions are incomplete contracts (i.e., not all contingencies are provided for in the contract) and it is difficult for governments and private companies to commit to those contracts (renegotiation is relatively common). Concessions are a source of popular discontent in developing countries as citizen-consumers have felt abused by foreign multinationals. “The failure of users to benefit from a significant share of those efficiency gains [from private as compared with government enterprises] has been, to a large extent, the source of their discontent with the infrastructure reform programs in developing countries [citations omitted]” [Guasch, p. 1]

2.2 *What is a concession?*

“A concession grants a private firm the right to operate a defined infrastructure service and to receive revenues deriving from it,” in the words of one expert. It might be the right to operate a water system or a cable television system in a municipality, or to use a part of the electromagnetic spectrum. Concessions vary according to their risk allocations and incentives, investment and service responsibilities, and how tariffs are set. Usually, a concessionaire pays a fee to the concession-granting authority, and then incurs investment expenditures and collects payments directly from users over

time. At the end of the concession period, there could be compensation for investments that have not been fully amortised. There could be provisions regarding early termination and non-compliance with the agreed terms.

Concessions differ from privatisation in three main respects. First, the physical assets remain owned by the state, even though the use of the assets and the operation of the enterprise are transferred to the concessionaire. Second, concession contracts are of limited duration, typically 15-30 years. Third, the government typically retains closer oversight of concessions.

Box 1. Types of Concessions

Concessions can take a number of basic forms, but in practice form a continuum.

- Lease and-operate (or *affermage*), “under which the private contractor is responsible at its own risk for provision of the service, including operating and maintaining the infrastructure, typically against payment of a lease fee.”
- concession *stricto sensu*, “the private contractor is also responsible for building and financing new investments. At the end of the concession term, the sector assets are returned to the state (or municipality).

The term BOT (build-operate-transfer) is often used to refer to greenfield concessions, and ROT is sometimes used to describe concessions in which investments entail primarily rehabilitation (hence the “R”) rather than construction. BOO (build-own-operate) is a similar scheme, but does not involve transfer of the assets.

- Divestiture, “the transfer to the private sector of the ownership of existing assets and the responsibility for future expansion and upkeep.”

Source: Pierre Guislain and Michel Kerf (1995), “Concessions – The Way to privatise Infrastructure Sector Monopolies,” Note no. 59, Public Policy for the Private Sector, World Bank

2.3 Why use concessions? What is the experience?

Concessions are often viewed as a substitute for privatisation when it is not feasible for political or legal reasons. Concessions are generally followed by regulation but, under certain circumstances, substitute for regulation. There is empirical support for substantial efficiency gains from concessioning, but the experience has been marred by substantial renegotiation which can dissipate the gains. These issues are reviewed briefly below.

Arguments for concessioning over state provision are that (1) if awarded via a competitive process then the more efficient operator will be chosen, (2) the process facilitates regulatory oversight by revealing some potential providers’ private information, (3) the regulation that becomes feasible because of the concessioning and auctioning process can increase cost efficiency over time. Regarding efficient choice of operator, it can be difficult to design an appropriate concession and a competitive process—the topic of a section of this note. Regarding information revelation, an auction provides companies an incentive to apply their experience gained elsewhere and in other activities, to determine what profits they could extract from an activity, and to bid accordingly. The bids reveal information about what the bidder thinks is feasible. Further, during the consultations as part of the process of designing the concession, information can be exchanged to help design the subsequent regulation. The third point refers to the difficulty of imposing a hard budget and quality constraint on government or government-owned companies—which implies that efficiency is not promoted—in contrast with the efficiency-promoting application of, e.g., price-cap regulation, combined with the hard budget constraint of a privately owned company.

Arguments for continued state provision are that (1) concessions require complex design and monitoring systems, (2) it is difficult to enforce contracts and to limit contract renegotiation—a notion that includes both lower-than-contracted service quality and higher-than-contracted tariff increases—and (3) there are insufficient incentives to invest or perform maintenance near the end of the contract. Regarding the first point, a specific concern arises where there are significant externalities or universal service requirements, and these cannot be effectively monitored by a regulator. Then state control may be necessary because a concessionaire will have incentives not to provide costly but unmonitored services. The second and third points are addressed later in this note.

One formulation, by Shleifer (1998), for choosing between public and private provision is: Public provision is superior to private provision only when: (1) the opportunity for cost reduction stemming from decreasing quality—in a way that cannot be proven to an arbitrator—is high; (2) the probability of product or process innovation is limited; (3) gaining a reputation as an efficient service provider is unimportant; and (4) competition is weak and consumer choice is ineffective.

Concessions can also be substitutes for regulation. Demsetz and others had the idea that concessions could displace on-going, inefficiency-provoking, cumbersome rate-of-return regulation of natural monopolies with the market discipline of a competitive auction for a concession. Williamson's critiques and subsequent experience cast doubt on that idea, at least in many circumstances. However, some short-term concessions in use do have the flavour of Demsetz competition. (See e.g. the box on Norwegian regional air transport.) Nevertheless, much of the debate now focuses on state provision versus concession versus privatisation, with acknowledgement that on-going regulation may be needed.

Increased efficiency is a fundamental reason for concessioning. For example, in Latin America and the Caribbean, which have had twenty years experience with concessions, This experience has been studied.⁴ There, efficiency gains of concessioned firms show significant *annual* gains, ranging from 1–9 percent.

Studies of the Latin American efficiency gains from concessions are summarised in Estache, Guasch, and Trujillo (2003). In electricity, the rate of productivity change is 1 per cent per annum across 39 firms in a dozen countries. For railways, average annual total factor productivity growth has been 5.3% (freight) and 9.8% (passengers) in Argentina. In Brazil, the average annual TFP growth has been 8.4% for the first two years of a concession in Brazil (the 8.4% rate contrasts with the 5.5% rate before the sectoral reform). For ports, between 1996–9 Mexican ports improved efficiency by 2.8 to 3.3% per year. For water, Argentina had TFP efficiency gains of 3.7% to 6.1% per year, depending on the province. Regrettably, there does not appear to be a broader study of post-concessioning efficiency gains. Against these efficiency gains must be set the one-time transactions costs. Transaction costs for concession-type projects—for development activity, negotiations, and the like—are estimated to range from 3 to 5 percent of total project value where concession arrangements are reasonably well understood, but exceed 10 percent of project cost where the concept is new. (Klein, So and Shin 1996)

The intent of the regulatory reforms and the concessions was to give concessionaires incentives to make these efficiency gains and then to require some of these gains to be shared with users in the form of lower tariffs. However, the “weak or absent correlation between these efficiency gains and lower tariffs and the perceived profitability of the private operators, often secured through the additional benefits captured through renegotiation, have been at the core of the increasing dissatisfaction among users.” A late 2001 Latinobarometro survey found that 63% of people in 17 Latin American and Caribbean countries believed that the privatisation of state companies had not been beneficial. (Guasch, pp 11–12, citations omitted). And, on the other side, profitability was also not very high. One study of 34 concessions in nine Latin American countries found that concessionaires, on average,

made losses. The authors warn that the figures may not be reliable due to possible errors of official revenue figures and possible biasing of intra-firm transactions. (Sirtaine, Pinglo, Guasch and Foster 2005)

Despite over three-quarters of concessions between the mid-1980s and 2000 in Latin America being awarded by competitive auctions, about 30% were renegotiated (with much higher incidences in some sectors) an average of just over two years after the concessions were awarded. On average, users lost and concessionaires gained in these renegotiations.

Box 2. Example of Concession of Zambian Railways

Zambian Railways is state-owned and has no rail-based competitors. A restructuring project began in 1992, followed in 1997 by a management contract with a foreign rail company. It was concessioned in 2004 to a consortium including Spoornet, the South African railway. At least one observer found the process to be a resounding success:

“Years of state mismanagement, neglect and regional conflict ran the railroad off its rods. From 1975–1998, freight traffic decreased from 6 million tonnes annually to a mere 1.4 million tonnes. At the end of that period, the railroad was losing \$12 million a year and needed an estimated \$45 million for rehabilitation... Since 1998, when the transition process began, freight traffic has increased by 64%. The ending of wars in neighbouring states also means that the railroad is poised to regain its coveted links with Angola and Namibia....[F]reight traffic on the line has increased by 500,000 tonnes this year [2003] to 2.3 million tonnes — and there’s every indication that such growth will continue.”

But in November 2005, the Parliament resolved unanimously that the agreement for the concession of the railway be revised. MPs complained about loopholes, ignoring maintenance obligations, slower service, unemployment of former employees of the railway, and more. One was quoted as saying, “It is vital that we renegotiate this agreement by terminating it.”

Sources: 10 October 2003, Issue 3, SADC Barometer, “Privatising Zambia’s Railway.” Published by the South African Institute of International Affairs; 24 November 2005 “Revision of Zambia Railways Concession” Times of Zambia (www.times.co.zm)

Moving beyond the Latin American data on concessions, a remarkably candid assessment of concessions in Thailand (Nikomborirak 2004) highlights other problematical aspects of poor design of concessions. First, designing a concession specifically to circumvent domestic law suggests an absence of broad, durable political support. Second, there appeared to be a lack of commitment to the concession contract by both concessionaire and government. According to the report, the concessionaire did not truthfully share profits per the agreement and the government sold a second telecommunications concession in violation of the contract with the first concessionaire. Third, a non-competitive allocation process yields a worse outcome than a competitive process: the negotiated telecommunications concession provides for a concession payment of 16% to 21% of line revenue whereas the contract that was the outcome of a bidding process provides for the payment of 43.1% to 44.5% of line revenue. Finally, there is a need for a predictable regulatory regime.

This introduction has served to highlight the main competition issues raised by concessions. The first set of issues centre on the allocation and agreement of a concession contract. These are discussed in the next section on auctions, allocation by negotiations, and the problems of renegotiation. The second set of issues centre on competition during the term of the concession. These issues are not fundamentally different due to the presence of a concessionaire. They include exclusion of rivals by denying access to facilities and abusive pricing. They are discussed in section four.

3. Allocating concessions

3.1 Auctions

Auctions are used to choose who shall operate a concession because they can identify the most efficient operator. The idea is that the highest bidder will be the person/company who places the highest value on the concession, and that will, on average, be the person who can operate it most efficiently. (In this paragraph and many that follow, we abstract away from the complication that bidders might already own substitutes or complements.) But poor auction design can thwart this line of reasoning, and sometimes the auctioneer does not desire the most efficient operator. Also, where the objective is to provide the best mix of coverage or other aspects of “quality” and price, then it may be difficult to identify which bid was “highest.” That is, the choice among a number of weighting systems to incorporate multiple dimensions—e.g., coverage, quality and price—is arbitrary where economic efficiency is the objective of the auction.

The extensive auction theory literature provides insights into auction design, but the focus has not been on features of the real world, e.g., collusion and bidding costs, that have important effects on the participation, competitiveness, and outcomes of auctions. For policymakers, auction theory provides two main lessons:

- The best kind of auction for selling an object or a concession depends on the specific circumstances. (Examples of circumstances that matter include bidders’ risk aversion and whether the private information other bidders have about an object is relevant for how much a bidder values it—in the extreme, whether they would all value the object the same if they all had the same information. A key feature of auctions is asymmetric information—different bidders have different information and some may have better—more accurate—information than others.) This is described in more detail just below.
- Extrapolation from the better-analysed single good auction case to the multiple goods auction is difficult and error-prone. (The 3-G mobile phone licenses in European countries were examples of multiple good auctions. Arguably, a series of auctions with the same participants has features of multiple goods auctions.)

In practice, the effects of collusion and entry—i.e., attracting more independent bidders—are more important for designing auctions than details of risk aversion, the relationship of one bidder’s value of the contract to other bidders’ values, and the asymmetry of bidders’ information about the value of the contract. Collusion and entry are discussed below.

The various types of auctions have advantages and disadvantages.

Collusion is easier in an open auction since bidders can immediately detect cheating on a cartel agreement and punish it. On the other hand, whether the auctions are open or sealed-bid, if the same bidders face each other often, then detection of cheating can be done when the bids are opened and punishment can be meted out with a delay at the next auction. Collusion of another kind, when auctioneers are corrupt and share sealed-bid information with other bidders, transforms the sealed-bid auction into an open auction as bidders can learn about others’ bids and change their own.

Entry by weaker bidders is promoted by sealed-bid auctions as compared with an open auction. Described in greater detail below, the intuition is that weaker bidders will drop out of an open auction, therefore realise they may as well not enter at all, but that they have a chance of winning a sealed-bid auction, so enter.

Box 3. Definitions: The Four Standard Types of Auctions

There are four standard types of auctions which are commonly used and well-studied:

- 1) **ascending-bid auction** (also called the open, oral or English auction) in which the price is raised until only one bidder is left, and that bidder wins at the final price
- 2) **descending-bid auction** in which the auctioneer begins with a very high price which is lowered until a bidder announces that he accepts the price, and that bidder wins at that price.
- 3) **first-price sealed-bid auction** in which each bidder submits a single bid, no bidder sees what the others bid, and the object is sold to the highest bidder at the price he has bid.
- 4) **second-price sealed bid auction** (also called a Vickery auction after its inventor) which works like the first-price sealed bid auction but the winner pays not what he bid but instead the amount of the second highest bid.

The value of winning the contract may depend only on the bidder's characteristics, like their own costs. This is called a **private value auction**.

Alternatively, the value of winning the contract may depend on factors affecting all bidders, such as consumers' willingness to pay and regulators' future behaviour. This is called a **common value auction**.

The four standard types have a surprising feature; they yield the same expected revenue under certain conditions. This is called the **revenue equivalence theorem**.⁵

Second-price sealed bid auctions have the advantage of duplicating the outcome of an ascending bid auction⁶ but without the cost of assembling bidders. They have the advantage, as compared with a first-price sealed bid auction, of allowing a simpler calculation since the rational bid is the bidder's own value and does not require any estimate of the number of other bidders and their values. But second-price sealed bid auctions can also give rise to political difficulties. In particular, they make public how much money was left on the table (the difference between the highest and second-highest bid). The extreme outcome occurred during New Zealand's radio spectrum auction, where the first bid was NZ\$100,000 and the second only NZ\$6. (McMillan 1994). There was political fallout when taxpayers saw that the state got only NZ\$6 when someone was willing to pay NZ\$100,000. First-price sealed bid auctions and open auctions are better in this regard, since the first price wins in the a first-price sealed bid and the first price is unknown in the second case (the bidder who wins pays the amount of the standing highest bid when the second-highest bidder drops out of the bidding, so taxpayers do not see what they missed by not selling the license at the highest bidder's valuation).

An important question is, In awarding a concession, what should the auction be about? Should bidders bid tariffs or a concession fee? (The problem of multiple criteria is addressed later in the section on non-auction award procedures.) Demsetz promoted bidding on tariffs, but experience since then has shown that this is a poor choice. Tariffs are difficult for both government and concessionaire to commit to because they need to change in response to changes in the environment, and the negotiations with the regulator during this process eliminates the efficiency effect of competitive auction. Therefore, the usual practice is to award on the basis of concession fee, when an auction is used.

Both theory and practice show that auction design does matter. Some argue that it does not, claiming that the winner of the auction can sell to more efficient owners to eliminate any inefficiencies in the allocation from the auction. That argument is incorrect because, in the case of licenses or concessions, there are substantial transactions costs. The existence of these costs violates a key assumption of the Coase Theorem on which that argument rests.⁷ *Inter alia*, since the value of the license or concession is not known to the buyers and sellers, some sales that increase efficiency will

not take place and those which do take place will be delayed. Empirical evidence supports this theory: While there is demand for nationwide wireless telephone networks in the United States, the fragmented licenses that were initially sold were not quickly consolidated into national networks. (Milgrom, p. 20.) Further, today three of the four carriers who operated airmail routes in the United States in 1930 have hubs in cities they served then. (The fourth has gone bankrupt. See the box on U.S. airmail routes.) In Norway, the incumbent continues to win auctions for regional air services at the fourth set of contracts (See the box on Norwegian air services). So, getting it right the first time matters.

Box 4. Key Elements in Auction Design

“My own experience in auction consulting teaches that clever new designs are only very occasionally among the main keys to an auction’s success. Much more often, the keys are to keep the costs of bidding low, encourage the right bidders to participate, ensure the integrity of the process, and take care that the winning bidder is someone who will pay or deliver as promised.” *Milgrom 2004, p. xii.*

“What really matters in practical auction design is robustness against collusion and attractiveness of entry—just as in ordinary industrial markets.” *Klemperer, p.131.*

3.1.1 Preventing bidder collusion

The three direct strategies for preventing bidder collusion are aimed at interrupting signalling (to impede bidders reaching an understanding), helping cheaters on a cartel to avoid detection, and helping cheaters to defer the cartel’s punishment. In addition, promoting entry—the subject of the next subsection—also discourages collusion both by increasing numbers and by obscuring identities—we all know the incumbents, but who might enter? Finally, collusion can be deterred by the credible threat of significant penalties. Sealed bid auctions are better than ascending bid auctions in this respect, since bidders cannot use their bids for signalling and cartelists cannot immediately detect a cheater and punish him.

The design of the auction affects signalling. Signalling allows bidders to identify what they wish to win, to threaten what they will do if thwarted, and thereby to reach an understanding of who will win what. Signalling can be done in a number of ways. For example, signalling can take place in the newspapers (“I’ll be satisfied with just two of the 12 blocks of frequency on offer,” “If the [five other bidders] behaved similarly it should be possible to get the frequencies on sensible terms,” but “[I] would bid for a third frequency block if one of [my] rivals did”). (Klemperer, p. 136 citing Crossland 2000) In the instance from which the quotations were taken, six firms won two licenses each at low cost. Moving toward a sealed-bid auction, so the retaliation could not be taken immediately, may have reduced the effectiveness of this signal.

Signalling can also be done in various ways during the bidding. Signals can even be contained in the bids, e.g., using the last digits in a bid amount to identify a lot in which the bidder is particularly interested. This actually occurred in some of the telecommunications license auctions in the United States. This form of signalling can be prevented by prohibiting bids not in round numbers or by the auctioneer specifying the bid increment. Another form of signalling used in the FCC auctions was withdrawing a bid after it had been made. I.e., a company would enter a high bid, then withdraw its bid. Where two bidders are bidding against each other in several markets, they can use withdrawals to propose a split. Rule changes limited withdrawals to two rounds.

Collusion may be interfered with if bidders’ identities are not revealed. If bidders know others’ identities, then they can retaliate and cooperate across auctions. Further, bidders can intimidate others. One study found that small bidders avoided bidding against large bidders in the FCC’s DEF auction in

1996-1977, and posited that they did this to avoid retaliation. If small bidders avoid large bidders, then it makes any collusion among large bidders easier to reach and more effective. (Cramton and Schwartz 2000)

Joint bidding arranged close to the auction date reduces competition without allowing potential entrants time to respond and compete against the cooperating bidders, thus has an economic effect like open collusion. This problem can be addressed by prohibiting joint bidding arrangements announced close to the auction date. (For those joint bidders who could not bid individually, joint bidding does not reduce competition. But it may be administratively difficult to quickly identify and separate these cases from anticompetitive joint bidders.)

Reserve prices can affect collusion. A high reserve price changes the calculation of a potential cartel: With a low reserve price the choice is between colluding to end the bidding early at a low price and bidding longer and higher. With a high reserve price, the first alternative—collusion—is relatively less attractive because the lowest collusive price—the reserve price—is higher. In the extreme, if there are valid suspicions of collusion or not enough bidders show up, it may be reasonable to cancel an auction. Such a policy would need to be pre-announced to limit strategic conduct.

In addition to the direct methods for making collusion more difficult—interrupting signalling, prohibiting joint bidding arrangements near the auction date and increasing reserve prices—effective competition law may deter collusion. Indeed, it may be possible that larger penalties can be available in concessioning when there is a requirement that the bidder affirm to the government that he has not participated in any collusion in the bidding process. If the same firms may also bid in future procurement or other concessions tenders, the threat of debarment from future government contracts may be effective deterrence. (OECD 2005)

3.1.2 Promoting entry by bidders

More bidders is better. More precisely, in private-value auctions generally and in many common-value auctions, an ascending auction with no reserve price and $N+1$ symmetric bidders is more profitable than “any auction that can realistically be run” with N bidders. “So it is typically worthwhile for a seller to devote more resources to expanding the market than to collecting the information and performing the calculations required to figure out the best mechanism.” (Klemperer p 27, citing result from Bulow and Klemperer 1996; see also the box on U.S. airmail below)

Promoting entry by bidders is aimed at encouraging weaker bidders—i.e., those less likely to win the auction—to participate actively. (Presumably those who feel they are likely to win do not need encouragement.) Sealed bid auctions are better than ascending auctions in this regard. The intuition goes as follows: Consider the ascending auction. Near the end of the bidding, only the strongest bidders will remain. The weaker bidders know this. If they are going to drop out of the bidding late, then they do better to not incur the bid preparation costs and not bid at all. By contrast, with a sealed-bid auction, weaker bidders may win at a price that the stronger bidder could have beaten, but did not because he traded-off the increased probability of losing against paying more. In a sealed-bid auction, the stronger bidder cannot change his bid once he sees the weaker bidders’ bids, as he can do in an open auction. A second line of intuition is based on bidding strategies in a sealed bid auction being less straightforward than in an open auction, and the conjecture that in practice bidders are not likely to have a common view on the distribution of the true value of a contract. This results in a weaker player being more likely to win in a sealed bid auction. (Klemperer p. 133)

More generally, auctions with lower bid preparation costs will attract more bidders. This can be accomplished by standardising auction procedures, including across time and jurisdictions. For some but not all aspects of auctions, this may involve a certain trade-off with designing auctions specific to

their circumstances. This may also be accomplished by packaging auctions. The Tunisian Competition Authority, for example, plays a role of reducing barriers and requirements so that they do not cause prices to rise or deter bidders. (See Sixth Global Forum on Competition, Tunisia.)

Box 5: Example of Entry in 3G Telecommunications Auctions

The Netherlands had five incumbent mobile-phone operators and sold five 3G licenses by ascending auction. Bidders were permitted to win at most one license each in order to promote competition in the 3G market. “Recognising their weak positions, the strongest potential new entrants made deals with incumbents, and Netherlands competition policy was as dysfunctional as its auction design, allowing firms such as Deutsche Telekom, DoCoMo, and Hutchinson, who were all strong established players in other markets than the Netherlands, to partner with the local incumbents.” In the end, only one potential entrant bid and it withdrew after receiving a threatening letter from an incumbent. The five incumbents won the five licenses, paying about 3 bn, far below the equivalent in the United Kingdom.

By contrast, Denmark’s auction was considered to be a success. Denmark had four incumbent mobile-phone operators and sold four 3G licenses by auction. Having watched the earlier 3G auctions, the decision was made to use a sealed bid in order to attract weaker bidders, promote new entrants and scare incumbents into bidding high. The government kept secret the number of actual bidders, as well as all bids other than the fourth highest. All winners paid the fourth highest bid, worth about 95 per capita. Among the winners was one new entrant. (Klemperer pp. 155-6, 163-4)

Also, bids can be encouraged by reducing the cost of providing the service, for example, by setting performance criteria that can be met by various means rather than specifying a particular technical solution. (See box 17 on Norwegian regional air services.).

It may be possible to “strengthen” weaker bidders. If the object is worth about the same to all bidders (“common value” in the literature), then a bidder with better information—such as the incumbent—can bid more aggressively than the others. The other bidders recognise that they will only win if they overestimate the value of the object by more than usual (the “winner’s curse”), so they bid unusually cautiously. The result is that the incumbent wins more frequently and at a lower price. Providing better information to all bidders may reduce the informational asymmetry and improve the outcome of the auction. Other methods of encouraging entry that are supported by economic theory are set-asides—allowing only e.g., small enterprises to bid on certain licenses and of course restricting re-sale—and bidding credits—requiring e.g. small enterprises to actually pay only a specified fraction of their bids. (Klemperer pp. 234-239) An example of a set-aside, though perhaps aimed more at restricting market power later, is prohibiting incumbents from bidding.

Box 6. Example of Excluding Incumbents: Los Angeles versus Chicago

In the 1995 auction for mobile phone broadband licenses in the United States, licenses were for specified regions. The value of the licenses was probably about the same for all bidders. The licenses were sold by an ascending “English” auction. Fixed-line operators in the same region as the licenses were advantaged over others because they had a database of potential customers, a well-known brand name, and familiarity with doing business locally. Los Angeles has a higher household income, higher growth rate and a less dispersed population. In Los Angeles, the incumbent was allowed to bid and the auction yielded \$26 per capita. In Chicago the incumbent was prohibited to bid and the auction yielded \$31 per capita, even though the characteristics of the population would have led one to think that the LA license would be worth more than the Chicago license. (Klemperer 2004, p. 107)

3.1.3 Repeated auctions

Repeated auctions, such as when a concession has come to the end of its term and is re-auctioned, present special problems because of the incumbent's advantages over the other bidders. If each bidder thinks he values the concession about the same as the other bidders do, but that they each have different information about the true value of the concession, then they will all know that the incumbent has better information and will either not bid or will bid a low price. Requiring information to be provided by the incumbent to all bidders is unlikely to solve the information asymmetry problem, and in any case the incumbent may have reputational advantages that cause outside bidders to shy away from bidding aggressively.

There is an obvious trade-off between duration of concession contracts and the repetition of auctions.

Repeated auctions can be part of an ingenious design to shift uncertainty. That is, they can be a way for government to bear more uncertainty and thus receive higher concession fees, on average. A recent Dutch railway concession does this.

Box 7. Example of Designing around Uncertainty in the Dutch Betuweroute Concession

The Dutch state granted a short-term rather than a long-term concession for the Betuweroute in order to bear itself the current significant uncertainty about market developments. (The state bears the uncertainty in the sense that the price of the long-term concession which will be auctioned at the end of the short-term concession will reflect what actually happens in the short-term.)

In particular, the concession of the Betuweroute from the harbour of Rotterdam to the German border, which is designated for freight transport, will be granted for the period of 2007-2009/2010, to a consortium. During this period, the uncertainty about the volume of freight is expected to be reduced. Later, a longer concession will be allocated by competitive auction. The price the Dutch government will get for the concession will reflect the expectations held in 2009/2010 about future e.g., freight demand and maintenance costs, and these expectations will be more precise because of the experience of operating the concession during 2007 to 2009. Conceivably, though this is not mentioned in the Dutch discussion, the members of the consortium, since they will have information advantages gained by being incumbents, could be required to bid separately for the second concession.

Source: Submission by the Netherlands to the Sixth Global Forum on Competition 2006.

Williamson (1976) argued that using recurrent short-term contracting allowed the expense of calculating contingencies to be avoided. Adaptations could be introduced at the contract renewals in response to what events had actually occurred. The Dutch Betuweroute concession seems to be an example of Williamson's theory put into practice.

3.1.4 Other auction issues

3.1.4.1 Auctions for multiple goods

The auction theory literature provides less guidance when there are auctions for multiple goods, or multiple auctions involving essentially the same players. While the practice is to extrapolate from the better analysed single good case to the multiple good case, that extrapolation is difficult and prone to error. Multi-unit auctions have been used to sell radio spectrum, electric power, Treasury bills and other objects. When the objects can be either substitutes or complements, auctions do not perform well. While for single-object auctions the objectives of higher revenue and allocation to the more

efficient owner are aligned, for multi-unit auctions these objectives must be traded-off. The two examples below give a flavour of the considerations in multiple goods auctions.

Box 8. Description of the US Radio Spectrum Auctions

The design of the 1994 Federal Communications Commission auctions to sell spectrum licenses for PCS⁸ has inspired a number of subsequent multi-unit auctions. This box describes the first of those auctions.

There was no off-the-shelf design for auctions of multiple objects with potentially highly interdependent values. (The value of one license depended on whether one already owned a substitute or a complementary license.) Among the difficulties was the fact that some potential bidders wanted nationwide licenses whereas others wanted regional licenses.

The basic design chosen was a simultaneous ascending auction. Ten licenses were offered in total, with the country being divided into several large regions. There was an auction for each license. At each round, each bidder would place bids. Bidders did not bid in every auction. At the end of each round, everybody could see each bid that had been made. Bidding increments were set by the FCC at each round. The idea was that bidders could put together their own optimal basket of licenses, taking into account the cost of the various licenses. Thus, at each round, each bidder could re-design its basket of licenses after surveying the current high bid for each license.

The rule for ending the auction, the closing rule, was that the bidding on all licenses ended when there was a round in which there were no bids on any license. The alternative rule that had been discussed was to close the bidding on each license when there had been a round in which there had been no bidding on that license. This alternative rule was not chosen because it meant that a bidder who thought he had won a particular license, but was outbid at the last moment, could not then bid for a substitute license if the bidder there had already closed. To keep the auction from going on for too long, there was a rule that serious bidders either had to have a high bid or place an acceptable new bid in each round. For the same reason, there was also a rule that bidders had to “be active” on a minimum percentage of the auctions for which they were eligible to bid. (Incumbent cellular licensees were barred from holding a PCS license in the same area.)

The auction closed after 47 rounds over 5 days. Fears that the process would be never-ending and too complex for the bidders proved to be unfounded.

Subsequent multi-unit licenses have been larger. From this small auction through March 1998, the FCC has held a total of 5,893 auctions. The rules have been changed as both bidders and the government have identified weaknesses. The FCC says, “Prior to [the 1993 law that gave the FCC authority to use competitive bidding], the Commission mainly relied upon comparative hearings and lotteries to select a single licensee from a pool of mutually exclusive applicants for a license. The Commission has found that spectrum auctions more effectively assign licenses than either comparative hearings or lotteries.”

Sources: Milgrom 2004, Cramton and Schwartz 2000, and FCC website fcc.gov/auctions

Box 9. Example of New Zealand Television Licenses

New Zealand sold licenses to deliver television broadcasts using simultaneous second-price sealed bid auctions. (Recall that in these auctions, the winner is the higher bidder but he pays the amount of the second-highest bid.) This kind of auction would work well only when the licenses are neither substitutes nor complements. But in the event, the licenses could be substitutes or complements, so bidders ran a risk of winning too few or too many licenses.⁹ The actual outcome suggests that the auction was inefficient because the bids show little connection between the demands expressed by bidders, the number of licenses they won or the prices they paid. Also, bidders could not guess each other's values. For example, it appears that neither Sky—who bid much higher than the others—nor Totalisator—who bid NZ\$401,000 for six licenses—made accurate guesses about their competitors' bidding strategies.

Table 1 Winning Bids on Nationwide UHF Lots: 8 MHz License Rights

Lot	Winning Bidder	High Bid (NZ\$)	Second Bid (NZ\$)
1	Sky Network TV	2,371,000	401,000
2	Sky Network TV	2,273,000	401,000
3	Sky Network TV	2,273,000	401,000
4	BCL	255,124	200,000
5	Sky Network TV	1,121,000	401,000
6	Totalisator Agency Board	401,000	100,000
7	United Christian Broadcast	685,200	401,000

Source: Hazlett (1998) cited in Milgrom, p. 12.

The auction could have been improved by having several rounds. The winner would be allowed the number of licenses desired (up to a limit set by antitrust concerns) at its winning bid, the second round would sell the right to choose next, and so on. Or the auction might have bids consisting of prices and quantities where the highest bidder got to fill its bid, then the second until all licenses were gone.

As this small sample has shown, auctions for multiple goods are difficult to design well. The tradeoffs are difficult to identify and much of the design work requires sophisticated modelling.

3.1.4.2 The problem of multiple criteria

Where there are multiple criteria, such as an objective to provide the best mix of coverage, quality and price, it may be difficult to identify which bid was “highest.” There can be a pre-announced formula that inputs all the bid variables and comes out with a single number, but such formulae—and any scoring to convert quality variables into values—are bound to be arbitrary in an economic welfare sense. It may be better to apply a filter of basic requirements and identify the winner on the basis of the bid among those companies whose bids fulfil those requirements. (See the box on the Swedish Beauty Contest for an example of filtering followed by an auction.) On the other hand, there is an intuitive argument—not yet fully explored in economic theory—that where bidders have different characteristics then multidimensional “scoring” can both increase bidders' profits and the government's value. (Klemperer p. 247)

The need to take into account multiple criteria is often cited as a reason to use a non-auction allocation mechanism. Government might want, for example, a combination of coverage commitment, price formula, and concession fee. But these multiple criteria must ultimately be translated into a single ranking, and then the highest ranking bidder wins the concession. In other words, there must be a formula which translated the different characteristics into a single ranking.

With complex concessions, it is reasonable for the concession designer to need to educate himself about the relevant characteristics, various technologies and tradeoffs. This can be accomplished during a public consultation period before any bidding takes place.

The issue is when that formula is arrived at. If it is arrived at *before* the bids are submitted, then one must ask why the formula cannot be publicly announced in advance and an auction be held on the basis of, say, the concession fee. Announcement in advance can also facilitate entry. A variation would be to publicly announce minima for the various dimensions and reject all bids not meeting those minima, then choose on the basis of concessions fees bid. Such an auction would seem to be as feasible as a beauty contest and would have the advantage of increased transparency to ensure that only relevant criteria go into the ranking.

If the formula is arrived at *after* the bids are submitted, it runs the risk of appearing to be arbitrary or to favour particular applicants, and of being prone to corruption.

Beyond the concern over corruption, the risk of collusion with the auctioneer would be lessened if the government advertised its objective requirements and the criteria by which bids or proposals would be evaluated since this should attract more bidders. But the risk of collusion by way of leaks from the evaluator would remain.

Even with the best of intentions, when comparisons among bids are very complex then the problem of dealing with multiple criteria may be unavoidable. And when bids are evaluated according to criteria that are either unclear or not pre-announced, even competitive auctions can take on some of the characteristics of negotiation.

Competition from incumbents

When companies are already present in a sector, there allocation of concessions can either strengthen or weaken competition. It may be advisable to disallow bidding from certain companies in order to promote competition from new entrants who enter via auctions or, alternatively, to prevent problems of discrimination by vertically integrated companies. These issues are discussed later under promoting entry by bidders and coverage of the competition law.

Collusion between the auctioneer and bidders

The common practice of public announcement of all bids received is aimed at uncovering collusion between auctioneer and bidders. This practice is intended to assure bidders that the auctioneer did not unfairly exclude their bid. Unfortunately, it also helps members of cartels to detect cheating.

Box 10. Example of Enhancing Transparency in Procurement in France

In discussion over revision of the French public procurement code (Code des Marchés Publics) an idea was put forward to increase the transparency of auctions. Rather than publicly announcing only the winning bid, all bids received for each public tender would be made public under this proposal. The idea was that stakeholders would be better able to monitor the process and ensure that it was fair. Most of the business community supported the idea, but the competition authority (Conseil de la Concurrence) had strong reservations. They argued that the transparency would discourage would-be cheaters on cartels from making competitive bids since they would be afraid of being found out and punished in a later tender. The competition authority further argued that, since the same firms bid time and time again in procurement auctions, having access to the losing bids as well would help the firms build up knowledge about how their competitors bid. The knowledge gained would facilitate tacit collusion.

Source: Jenny 2005

Unfortunately, the use of transparency in the bidding process to reveal unfairness and corruption conflicts with the aim of preventing collusion; transparency makes it easier for a bid-rigging conspiracy to detect and punish cheaters. Solutions are needed which advance both aims. For example, an inspector general or ombudsman could oversee the auctioneer and investigate complaints without necessarily revealing who bid what. Though how would concerns about capture or corruption at that level be satisfied? The optimal level of transparency would also depend on the relative effectiveness of deterrence through penalties for cartelisation and for corruption (more transparency would be in order if corruption is a larger problem than cartelisation).

Further, the auctioneer should be sufficiently independent to operate in the public interest. *Inter alia*, its incentives should be aligned with that of the public purse, it should have sufficient independent knowledge, and it should have the necessary controls to maintain confidentiality of bids.

Box 11. Rules of Thumb for Auctions

- Aim to interrupt signalling, help cheaters on a cartel to avoid detection, and help cheaters to defer the cartel's punishment. This can include using sealed bids, prohibiting bids not in round numbers, prohibiting joint bidding arrangements that are not announced sufficiently in advance of the auction date, and having a sufficiently high reserve price. Enforce the competition law effectively.
- Aim to increase participation. This can include wider advertisement of the auction, reducing the cost of bid preparation, and maybe reducing informational advantages of incumbents.
- Where the goods or concessions are complements or substitutes, design the auctions to take these interactions into account. To take a simple example, simultaneous English auctions (where bidders can continuously assess their likelihood of winning the various goods and continuously adjust their bids) can do that, whereas separate sealed bid auctions do not. Once a seal bid is made, a bidder cannot revise it when it finds it has won or lost the auction for a complement or a substitute.
- Include in the design rules for reassessing the design if there are too few bidders. For example, if three licenses to offer mobile telephony services are offered and only three bidders show up, then the auction will yield much lower revenues than if four or more bidders show up. If the pre-announced rules state that the auction will be postponed until steps are taken to increase participation, then the auction should attract more interest and avoid disappointing outcomes.
- Where the bidders have the same expected value for the object, then if one bidder has a small advantage over the others such as valuing the object slightly more or having slightly better information then this can radically change the revenue that can be raised by the auction. Under these conditions, a sealed bid auction will raise more revenues than an open auction. [Klemperer, p. 12-13 or 236-7] This can be relevant, for example, when a concession is being re-auctioned and the incumbent has advantages over the other bidders, such as having made sunk investments or knowing more about the actual conditions of the concession.
- Auctions need to take account of the environment in which they are held. Experiences elsewhere are informative, but they are not a substitute for analysis and for simulations. The services of an experienced auction designer may substantially improve the likelihood of a successful outcome and would help avoid mistakes.

3.1.5 Conclusion on auctions

A few examples of actual auctions can give a flavour of how design can be improved.

- Switzerland auctioned off four 3-G mobile licenses in 2000. Weaker bidders dropped out, at least one because of the ascending-bidding rules. The government allowed last-minute joint bidding. In the last week before the auction, the number of bidders shrank from nine to four. The licenses were sold at their reserve price, one-thirtieth of the per capita revenues raised in the British and German auctions for similar licenses. [Klemperer 2004, p. 109] Setting a higher reserve price, forbidding last-minute joint bids, and perhaps switching to a sealed bid auction are likely to have improved outcomes for the treasury.
- Turkey auctioned off two telecom licenses sequentially, declaring the reserve price for the second licence would equal the selling price of the first license. One company bid far more than the first license was worth if it would face competition from a second licensee. No one bid for the second license. [Ibid, p. 110]
- The US auctioned off spectrum in 1996-7 using simultaneous ascending auctions for a large number of lots. Most bids were in round thousands of dollars. Two companies were competing heatedly for lot number 378. One company over-bid the other, with bids of \$313,378 and \$62,378, for lots where the second company had seemed to be the undisputed high bidder. The second company quit bidding for lot 378. [Ibid. p 105 citing Cramton and Schwartz 2002] The obvious inference to make is that one company was signalling that he would punish the other in other auctions by bidding high prices if the second company would not drop out of the bidding for lot 378. Specifying sufficiently large bid increments can avoid this type of signalling.

Both experience and theory supports a few more rules of thumb to help authorities to anticipate and avoid some errors in how they design auctions.

3.2 Other allocation mechanisms

Three allocation mechanisms that do not involve auctions are simultaneous negotiations, negotiation with a single provider, and beauty contests. These are addressed after a short discussion on multiple criteria.

3.2.1 Negotiations

In a **simultaneous negotiation** procedure, also called competitive negotiation, several potential bidders are contacted by the government and invited to enter negotiations. During the negotiations, they develop alternatives that would meet the concession requirements. Then the bidders submit their final offers on the basis of the solutions identified during the negotiations. After the government selects the winner, further negotiations finalise the contract terms. This mechanism is permitted in, for example, Romania. This approach might be considered appropriate when project design is complex so that the buyer can use the information exchanged during negotiation with the potential sellers to better design the desired project. (Bajari et al 2004) *Inter alia* this approach allows various bidders' technical solutions to be incorporated into the final contract. On the other hand, it is not clear why learning about alternative technical solutions could not take place earlier and be reflected in the request for bids.

Where there are no agency concerns with respect to the auctioneer, simultaneous negotiation is analogous to an open, or English, auction. An open auction is particularly prone to collusion when

there are few bidders and every bidder knows who else is bidding. Further, since competitive negotiation is not open to public scrutiny and involves discretion on the part of the government, it may be more prone to corruption.

Box 12. Example of Tendering Before Negotiating: French Water

There is evidence that preceding the negotiation stage with a public auction can improve outcomes. Open, publicly announced tenders for water concessions in France were relatively rare before 1993. Rather, the same concessionaire almost universally remained as manager of a local water company from one contract to another. In France, three large multinational companies, Vivendi Water, Suez-Ondéo and SAUR-Bouygues, have the largest market shares. They total about 90 %. Corruption scandals and unhappiness at the price of water led to the *loi Sapin* which, since 1993, has required an open tendering process for water management contracts before a second negotiation stage, and limited the length of contracts. A study of several hundred contract renegotiations found that the average length of contracts fell from 17 to 11 years, prices fell by 10%, despite the incumbent operator winning in 80-90% of cases.

Source: OECD Competition and Regulation in the Water Sector DAF/COMP(2004)20 citations omitted and Saussier (2005).

Negotiating with only a single potential provider at a time is worse than negotiating simultaneously with several providers. When the government must decide whether to accept the single negotiator's "best and final offer," the choice is not between this and the other negotiators' offers, as it is for competitive negotiation, but rather incurring the costs and delay of new negotiations with a new partner whose "best and final offer" is still unknown. The weaker bargaining position yields a worse outcome.

In comparison with negotiations, auctions do well. Auction theory shows that, under relatively innocuous assumptions, an auction with $N+1$ bidders will always provide a higher price than any negotiation with N bidders.¹⁰ In other words, if just one more bidder can be attracted to an auction than can be attracted to a negotiation for the same object, then the auction is more competitive.¹¹

In sum, negotiating simultaneously with several potential suppliers rather than using a competitive auction can strain anti-corruption and anti-discrimination systems. Auction theory shows that, under certain relatively innocuous conditions an auction raises more funds than simultaneous negotiations. However, where bid evaluation is complex, even auctions can take on some of the characteristics of competitive negotiation. See the Box on Oakland cable television franchising for an illustration.

3.2.2 Beauty contests

Beauty contests, like their namesake, are rather difficult to define. In one definition, it is a "procedure where criteria of evaluation include technical expertise, financial viability, network coverage, roll-out speed, etc. Such processes are not transparent, and are often prone to intense lobbying and political intervention." (Jehiel and Moldovanu 2003). In another, it is a procedure in which "there are measurable indicators set out against which applicants can be judged" and the concession fee does not vary (it is often zero but it can be any value). Proponents of beauty contests argue that they allow a focus on critical performance characteristics, such as coverage and speed of provision of that coverage, which encourages applicants to "excel" in those areas. Of course, commitments made in the beauty contest have the same difficulties of follow-up as commitment as those made in an auction.

Proponents of beauty contests argue that charging a low or zero concession fee promotes lower priced services later. This argument confuses sunk costs with fixed costs and assumes there will be no price regulation later. Regarding sunk costs, once the concession fee has been paid, it does not affect the price of services. (The cost of capital may increase if paying the fee significantly increases the likelihood of bankruptcy, this can in turn affect prices.) Sunk costs do affect the decision to enter a market, but it would be a foolish company indeed to bid a concession fee that it expects will result in losses. Second, if there were a concern that prices would be too high later, then regulation—with details announced before the auction so bidders can take the future rules into consideration in formulating their bids—can be introduced or perhaps the number of licenses could be increased.

Box 13. Example of Multiple Criteria and Renegotiation in Oakland Cable Television Franchising 1969

In June 1969 the City Council of the city of Oakland, California, adopted an ordinance setting out the main features for allocating a cable television franchise. City staff began discussions with prospective franchisees and community groups to gather information on costs, demand characteristics, and technical capabilities *inter alia* to define a standardised “basic service” so that bids would be comparable.

In April 1970, the five applicants were invited to bid. To summarise, the franchise winner should provide two systems, a basic system A with specified channels and a system B with unspecified special programming and unspecified other services. A subscriber would get access to system A by paying a connection fee and a monthly charge of amount “x.” Franchise duration was 15 years. The annual franchise fee to be paid to the city was specified. The connection charges were specified. Minimum technical specifications were stipulated. Minimum service quality was described generally. Minimum coverage of the city and schedule was specified. (All areas of the city were to be served after three years.) Proposals to increase the rates to subscribers could be made annually, but the city ordinance did not specify any indexing or other criteria. The basic bid was an amount x that would be charged subscribers each month for the first outlet that would enable them to receive the basic system A.

Bids received were \$1.70 from Focus Cable, \$3.48 from Cablecom-General and \$5.95 from TelePrompter Corporation. Focus informed the city at the time of its bid that a partner vital to its qualification as a bidder had withdrawn. Focus had submitted the lowest bid, was the only local bidder, and represented an ethnic minority, so the City was reluctant to reject the bid. Two weeks later, TelePrompter proposed to enter into a joint venture with Focus in which TelePrompter would end up with 80% of the capital. The City awarded the franchise to Focus in November 1970. Focus asked for and was granted a rate of \$4.45 per month for system B.

Focus then asked for the contract to be modified. After negotiation, the main changes were: lowering of technical capacity, increase of annual franchise fee, reduction of penalty for late construction by a factor of 20 or more, slower construction schedule, and a five-fold increase in monthly subscriber fee for additional connections.

In November 1974, 11 131 subscribers were connected. 10 361 had the extended service B and only 770 had the basic service A.

The Oakland experience leads to the following observations:

- The lack of consumer appeal of basic service A meant that the focus on the monthly fee for basic service A in the award process “resulted in a strained and perhaps bogus competition.”
- The actual relationship between cost and price is not clear. First, the bids for service A raise the question of whether there was an economically meaningful competition. Second, the price of service B was negotiated and not determined by a competitive mechanism. Third, vertical integration (TelePrompter supplied much of the equipment) and the city staff’s lack of auditing capability obscure true cost levels.
- An inference that Focus’ initial bid was only meant to get its foot in the door is supported by the low initial bid, timing and nature of Focus’ reorganisation, importance of its local bidder status, and its success in the contract renegotiation.
- The City was not in fact in a position to take over if the franchisee withdrew. There was no inexpensive way to value the assets, nor a plan to prevent service interruptions.

Source: Williamson 1976

Box 14. Example of Swedish Beauty Contest for UMTS Licenses

Sweden provides an example of a beauty contest for allocating UMTS licenses. The selection process had two steps. First, applicants were scrutinised on the basis of financial capability, technical capability, commercial feasibility and appropriate expertise and experience. Second, those who passed the first screen were judged on commitment concerning coverage and development rate.

The number of licenses was initially five, reduced to four. Two were reserved for new entrants and permitted them to also build GSM infrastructure.

Ten applications were received. Four applicants were screened out at the first stage. Among them was Telia, the largest and oldest of the established Swedish mobile operators, who was screened out because the selecting agency believed its proposal was technically infeasible.

One licensee—Orange—dropped out of the market in December 2002. At the end of 2003, the deadline for full coverage, coverage by the remaining three was in fact 67.5%, 74% and 66% respectively. (Bjuggren 2004, including cite to *Svenska Dagbladet* 28 March 2004) Clearly, renegotiation has been a problem, raising the question of the effectiveness of the screening and allocation process.

3.3 Commitment and renegotiation

Opportunistic renegotiation¹² eliminates the benefits of competitive auctions. If concessions are renegotiated soon after their award, then the initial auction becomes a bilateral negotiation between the auction winner and the government. The competitive benefits from the auction are lost. Governments often cannot reject renegotiation due to fear of political backlash and additional transactions costs of re-designing the concession, holding a new auction, and choosing a new concessionaire.

Box 15: Example of a Renegotiation: Lima Airport

“In early 2001 Lima’s airport was concessioned to a consortium, led by Frankfurt Airport operator, Bechtel, and a local partner, that submitted the highest bid. The criterion was the percentage of gross revenue that the operator would commit to turn over to the state. The winning bid offered the state 47 percent of gross revenue in addition to a commitment to invest more than US\$1 billion and construct a second landing strip by the 11th year of the 30-year concession.

“Although that appears to be a very attractive bid from the government’s perspective and as such was lauded, it also appears financially questionable. It means that from the residual 53 percent of gross revenue, the operator will be able to cover operating costs, amortise investments, and earn a fair rate of return on investments. Shortly after the award, the winning consortium began asking to renegotiate the contract. The operator has been delaying agreed upon investments, and the bickering from both sides has been a constant. The concession contract was renegotiated at the end of 2003, adjusting investment obligations and the percentage of the gross revenues to be given to the state each year.”

Source: Guasch (2004), p. 47

A study by Guasch (2004) of about 1,000 concession contracts awarded in Latin America and the Caribbean between the mid-1980s and 2000 provides the best empirical study of concession renegotiation. The results provide useful guidance about how to improve concession design to reduce the incidence of renegotiation. The contracts in the study include 17 countries and were fairly evenly

distributed among four infrastructure sectors: telecommunications, energy, transport, and water and sanitation. The most important results are listed below.

- Renegotiation occurred in 30% of all concessions. Renegotiation occurred in 55% of transport concessions and 74% of water and sanitation concessions.
- The average time between award and renegotiation was 2.2 years for concessions that were supposed to run 15-30 years.
- Renegotiation was more common when the concession was awarded through competitive bidding (46%) than awarded noncompetitively (8%), excluding telecoms concessions.
- 61% of renegotiations were initiated by the concessionaire whereas 26% were initiated by the government. However, the type of regulatory regime has a significant effect on these proportions. Under price-caps, the concessionaire initiates renegotiation 83% of the time, whereas under rate-of-return, the concessionaire initiates 26% and the government 34% of the time. (Figures do not total to 100% since sometimes both initiated the renegotiation.)
- Renegotiation was more likely when the contract was awarded on the basis of lowest proposed tariff (60%) rather than highest transfer fee (11%).
- Renegotiation was more likely when the contract had investment requirements (70%) rather than performance indicators (18%).
- Renegotiation was more likely under price-cap regulation (42%) than under rate-of-return regulation (13%), and when a regulatory agency was not in place (61%) than when one was in place (17%).
- Renegotiation was more likely when the regulatory framework was in the contract (40%) than in a decree (28%) or a law (17%).

Guasch also performed a probit analysis¹³ to estimate the effect of the various variables on the likelihood of renegotiation. That is, he looked at features like “the existence of regulatory body” and found that “the existence of regulatory body” had a large effect on whether contracts were renegotiated. He found that if there were a regulatory body then it greatly reduced the likelihood of renegotiation. He speculated that this was a proxy for better enforcement and that better enforcement would reduce claims for renegotiation. He found that the award criteria mattered; awarding tariffs on the basis of lowest tariff rather than highest fee significantly increased the likelihood of renegotiation. The type of regulation—price-cap versus rate-of-return—mattered a lot, with price-cap regulation leading to more renegotiation. The autonomy of a regulatory body was not robust to the specifications tested, i.e., these results should not be relied upon by policy makers. Investment obligations were seen as more likely to lead to renegotiation. Domestic concessionaires were seen as more likely to renegotiate. Macroeconomic shocks favoured renegotiation. Renegotiation was slightly more common after a change of government. Finally, an award process without competition, e.g., bilateral negotiation, led to fewer renegotiations. These findings are summarised in his table 6.15 reproduced below:

The main outcomes of the renegotiations were to “increase tariffs (62%), delays and decreases in investment obligations (69%), increases in the number of cost components with an automatic pass-through to tariffs (59 percent), and decreases in the annual fee paid by the operator to the government (31%). A small number of renegotiations, however, led to tariff decreases (19%), increases in the annual fee paid by the operator to the government (17%), and unfavourable changes for the operator of the asset base (22%).” (Guasch, p. 18)

Table 6.15 Marginal Effects of Significant Variables on the Probability of Renegotiation

Significant variables affecting the probability of renegotiation	Marginal effect on probability of renegotiation
Existence of regulatory body	20–40 percent
Award criteria	20–30 percent
Type of regulation	20–30 percent
Autonomy of regulatory body	10–30 percent
Investment obligations	10–20 percent
Nationality of concessionaire	10–20 percent
Extent of competition in award process	10–20 percent
Macroeconomic shocks (devaluations)	10–15 percent
Electoral cycles	3–5 percent
Award process	10–20 percent

Source: Guasch (2004).

Concessionaires' arguments for starting renegotiation were mainly that there was an imbalance in the financial equilibrium of the concession contract, i.e., they were not getting a fair rate of return on their investments. Governments' main arguments were "changes in government priorities in the sector, political concerns (often linked to the electoral cycle), dissatisfaction with the level and speed of sector development, and non-compliance by operator with agreed-upon terms." (Guasch p. 18)

Analysing these results can help to design future concessions that discourage renegotiation.

- The relatively low incidence of renegotiation in telecommunications and energy was attributed in part to these sectors being more competitive, thus providing the government with more alternative service providers and therefore reducing the bargaining power of the concessionaires. Low renegotiation in telecommunications was also attributed to more outright privatisation rather than concessions.
- The relatively low incidence of renegotiation of non-competitively awarded concessions was attributed to the surplus having already been extracted in the initial negotiations.
- The effect of different regulatory regimes on renegotiation was attributed to their different risk characteristics. Under price-cap, the concessionaire bears more risk than under rate-of-return.¹⁴ Also, the nature of the renegotiation was typically to change the treatment of cost components so that more were subject to automatic pass-through, thus reducing the concessionaire's risks.
- Using either a criterion that is likely to be modified soon, such as tariffs, or that is subject to manipulation and arbitrary decisions, such as technical proposals, to award a concession eliminates the effect of competitive auctioning. (The logic is as follows. The modification or arbitrariness means that promises made at the auction do not have to be kept in the future. Therefore, there is no cost to making promises which, if kept, would be costly. Hence, these promises cannot be used to identify the least cost provider. Hence, a competitive auction using these promises will not identify the least cost provider.)

Box 16. Example of Renegotiation in U.S. Airmail Routes

A study of the allocation by competitive bidding of concessions to provide airmail services in the 1920s and 30s in the United States found that routes with more competition had lower prices, the bidding gave concessionaires incentives to expand demand for the service, but that incumbents gained advantages over other bidders even without franchise-specific investments.

Thirty-two routes were auctioned between 1925 and 1930. The Post Office specified a reserve price and quality standards and bidders bid the amount they would need to be compensated. Contracts were for four years. There was evidence of collusion in at least one auction and it was re-tendered. A series of rule changes, beginning in 1928, had the effect of not subjecting the winners in the initial auctions to further competition. Also, there was a practice of physically extending old routes rather than putting the extensions out to bid. Two routes were put out to bid after 1930. The contracts were awarded after the so-called “Spoils Conference” among the Postmaster General and the four major carriers. In reaction to the Spoils Conference, Congress began investigating the competitive bidding procedure. In February 1934, the new Postmaster General cancelled all route contracts. In May 1934, partly different routes were put out to bid with temporary, 3-month contracts. (The government forbade the participants in the Spoils Conference from participating in this second round of auctions. They therefore changed their names to some which are familiar today, and did participate.) These contracts were extended several times and the same contractors were in place in 1938 when the regulatory regime changed with the establishment of the Civil Aeronautics Board.

The study of these auctions found that more bidders participating in the auction lowered the price. By one measure, doubling the number of bidders lowered price by 30 percent.

The study also found that incumbents had advantages over entrants. In the second set of auctions, 11 routes had no incumbent and 21 had incumbents. In the 12 routes won by incumbents, they faced considerably less competition and the routes were considerably longer (perhaps reflecting that prior operating experience was more valuable on longer routes—in those days, navigation was visual and contractors had to establish their own emergency landing areas). Incumbents won at considerably higher prices. This plus other data suggests that incumbents had an advantage over entrants which was mainly that they could dissuade competitors from entering particular auctions.

As anecdotal support to the argument that subsequent trading will not overcome inefficient auction allocations, it is interesting to note that, “By the end of 1930 American Airlines had the southern transcontinental mail route with flights through Dallas, TWA had a mid-continent route with flights through St. Louis and United had a northern route with flights through Chicago. All three airlines have had hubs in those cities at the end of the 20th century.” (Eastern was the fourth re-named member of the Spoils Conference.)

Source: Wolfram 2004

Further lessons:

- If winners can default cheaply, they have effectively bid for an option to be a concessionaire. (After the winners had been declared in an Australian auction for satellite television licenses, two bidders defaulted on those bids they no longer wished to have. The government did not impose penalties for default. Example cited in Klemperer p. 110 reference deleted)
- If bankruptcy provides a way out of the commitment, then auctions favour bidders who are underfinanced over better-financed bidders who cannot default. Requiring bonds and penalising defaults may help.
- Another source of pressure to renegotiate is the failure to deliver affordable services to the poor. If subsidies, cross-subsidies and user charges do not provide the necessary revenues to cover costs, then either the concessionaire cannot deliver what has been promised or cannot do so sustainably. Then government is pressured by consumers who insist on better service

to renegotiate or to change concessionaire, or the concessionaire is pressured to renegotiate or terminate the contract.

- Where multiple criteria were used to choose the concessionaire, each criterion is open to renegotiation. Parties are likely to choose to renegotiate on the criterion where they are advantaged in the negotiation.

Renegotiation is not always opportunistic. The inherent incompleteness of concession contracts¹⁵ means that sometimes renegotiation is necessary. For a concession contract to be credible, renegotiation should be according to clear, pre-established criteria agreed by all parties to the contract. “A renegotiation rule should expose what changed unexpectedly. The public policy criteria for testing whether revision is needed must be pre-established and clearly defined. And any change to the contract that is warranted should be limited to the issue at hand: the entire contract should not be renegotiated.” (Crampes and Estache 1996)

Formal provision for renegotiation and bailout may encourage opportunistic renegotiation. Formal limitation on the use of renegotiation and bailout might help, but the credibility of these limitations relies on the credibility of the government. To the extent that international institutions or even governments of other countries are more credible, one strategy would be to use them to enforce renegotiation and bailout policies. Trade agreements between countries can address contract negotiation breakdowns involving foreign investors. Also, loans involving the World Bank or IMF may be backed by sovereign guarantees. (Jamison et al 2005)

Box 17. Example of Entry and Renegotiation: Norwegian Regional Air Transport

This example involves concessions in a market with well-known technology, relatively low entry costs, and fairly straightforward technical and economic regulation. It involves a government administration with a reputation for honesty and competence. And yet, the concessions have not resulted in much entry or much cost savings, and there remain issues of how to improve the contract design with respect to renegotiation and duration.

Service on certain regional air routes are a public service in Norway. Originally provided by a monopoly licensee, Widerøe, a SAS-owned subsidiary, it has been auctioned since 1996. Bids are the required subsidy for each route. The service must comply with pre-announced standards on frequency, seating capacity, aircraft category and maximum fares. Regional airports require short take-off and landing aircraft. Widerøe, who also operated regional air services on a commercial basis, procured the required aircraft meeting the seat capacity requirements, which are no longer in production, on the basis of the monopoly license. It is the only Scandinavian company with a fleet of these aircraft.

Auctioning of the PSO for three-year periods was introduced to conform with EU regulations (Council Regulation (EEC) No 2408/92 Article 4, on access for Community Air Carriers to intra-Community air services). The auctions are simultaneous sealed-bid. I.e., a bid states the amount of subsidy required for each route the bidder wishes to serve. For each route, the winner is the lowest subsidy. In the first auction, held in 1996 for the period 1997-2000, Widerøe won all the concessions. The service standards were amended to encourage more competition. At Widerøe's request, three routes were removed from the PSO and Widerøe began to operate them commercially. (Widerøe 2000) In the second auction, Widerøe won most concessions, apart from some coastal routes won by Coast Air. In the third auction, Widerøe won nine of the 15 routes against six other bidders. In the fourth auction, Widerøe won 11 routes, Coast Air won three and two others won one route each. The first auction significantly reduced the level of subsidies from the level under the single licensee system. The second auction substantially increased subsidies. The “headline” amounts of the subsidy over the contract periods were 1.0 bn NOK, 1.1 bn NOK, and 965 million NOK in the second, third, and fourth auctions respectively, but details—like the increase of 40 million NOK mentioned next and changing requirements on capacity—limit the comparability across auctions. In sum, auctioning has resulted in some entry and possibly lower subsidy.

The contract rules trade off risk-sharing and renegotiation. A carrier can cancel the contract with one year's notice. This shares risk between the concessionaire and the government, which reduces the overall cost of providing the air service. But it facilitates the following strategy: Bid low to win the contract. Gain experience in operating the route, so as to be better informed than rivals. Withdraw from the contract. Bid in the second auction against rivals with neither the specific operating experience nor the necessary aircraft, that is to say, bid high. Indeed, in July 2003 Widerøe announced a withdrawal from two routes. In the auction that followed, Widerøe won against two competitors. In the initial contract for 01.04.03 to 31.03.06, the subsidy for these two routes was 204 million NOK for the three years. In the replacement contract for the shorter period 07.07.04 to 31.03.07, the subsidy totals 246 million NOK.

Longer and staggered contracts may encourage entry. Three years may be too short for an entrant to recoup sunk costs. This problem is exacerbated by interim tenders for yet shorter terms that are held when a carrier cancels the contract. The Norwegian Competition Authority thinks that longer contracts may increase entry and thus increase competition, but notes that this would require a change in the relevant Council Regulation. The Authority also notes that staggering contracts may promote entry by easing the burden on small bidders to meet requirements to show a capacity to serve all routes on which they are bidding.

The auctions are simultaneous first-priced sealed bid. About half of the auctions are to serve city-pairs, many are city-triplets, and four auctions are larger sets—up to eight—of cities. Bids may be conditional, e.g., a bid could state a price for (1) Narvik-Bodø and a bid for (2) Narvik-Bodø if the bidder also won Røst-Bodø. The concessions seem to be designed to try to capture some of the value of serving related towns. One question is whether simultaneous open auctions would enable the auctioneer to capture more of the value of serving complementary routes, second, whether the additional organisational cost would outweigh any gains, and third, whether the switch from sealed to open bidding would discourage entry by weaker bidders or facilitate collusion. The net effect is unclear.

Sources:

OECD (2003), "Regulatory Reform in Norway: Marketisation of Government Services— State-Owned Enterprises"; various Invitations to Tender, Ministry of Transport and Communications (7 July 2005, 10 April 2002, 1 April 2000) and various press releases (Nr.: 135/05 date 02.11.05 "Regionale flyruter: Tildeling av enerett for drift av 16 ruteområde [Regional air routes: Award of sole right to operate on 16 route areas]" Nr.: 20/04 date 05.03.04 "Flyruter i Finnmark og Nord-Troms: Widerøe tildelt kontraktar," Nr. 96/99 Dato: 20.09.99 "Drift av regionale flyruter: Utvida og betre transporttilbod!", Nr.: 97/2002 date 28.08.02 "Ny tildeling av regionale flyruter: Eit godt tilbod for passasjerar og næringsliv i heile landet") on website odin.dep.no/sd; OECD 2004 Non-Commercial Service Obligations and Liberalisation DAFE/COMP(2004)19

The standard remedy to reduce opportunistic behaviour is to place it in a repeated context. The thinking goes that if a party recognises that it will be punished for opportunistic behaviour in the future, it will not engage in it today.¹⁶ However, the evidence from the Latin American study shows that concessions cannot always be put in a repeated context. When government is likely to change, e.g., by losing an election, then the government can behave opportunistically.¹⁷

Performance bonds and step-in rights can reduce incentives to renegotiate. **Performance bonds** (bank guarantees that indemnify the public party if the private operator fails to fulfil its obligations) are one way to prevent private partners from walking away from a contract, and they limit the bargaining options after the award. In a water concession in Latin America several partners in a consortium walked away from the concession when a dispute with the conceding authorities became unbearable. But key players stayed and tried to make the concession work, not least because of the risk that a large performance bond would be called. (Klein 1998b). The concession was abandoned in 1999. (Guasch p. 63) Nevertheless, Guasch recommends requiring a performance bond of not be less than (a) 2 percent of the total value of the contract and (b) 20 percent of the estimated annual revenue of the concession in its first year. (Guasch, p. 143)

Step-in rights allow government to take over the operation of a concession when the concessionaire is not performing according to specified standards. These provisions typically identify

the breaches of contracts that justify direct intervention by the authorities; they require that the authorities give notice to the private operator; they provide for a cure period, during which the concessionaire is allowed to take remedial actions; and they specify the maximum duration of the authorities' intervention, as well as the type of measures they can adopt. If, at the end of the intervention, the concessionaire is not in a position to resume its activities, the contract can be terminated with cause by the public party. The Côte d'Ivoire–Burkina Faso rail concession has step-in right provisions. It states that if the concessionaire does not maintain adequate safety standards for the maintenance of rail infrastructure, the state holding companies, after having organised a hearing for the concessionaire, can force the concessionaire to adopt necessary measures. If such measures are not adopted, notice must be given to the concessionaire. Fifteen days later, if the concessionaire has remained inactive, the state holding companies can complete the necessary works with risks and expenses borne by the concessionaire.

A concession contract can include an **obligation to continue providing service** until a new concessionaire has been chosen. This helps governments overcome their reluctance to terminate a concessionaire due to concerns that basic services, such as water supply, may be interrupted. In Colombia this obligation is imposed by a general law governing concessions. (Klein 1998b)

3.4 Conclusion on allocating concessions

To conclude, the allocation of a concession is vital; misallocation is costly and not correctable by selling on the concession. Competitive auctions can identify the most efficient operator. The idea is that the highest bidder will be the person/company who places the highest value on the concession, and that will, on average, be the person who can operate it most efficiently. But poor auction design can thwart this line of reasoning, and sometimes the auctioneer does not desire the most efficient operator. Also, where there are multiple criteria, it may be difficult to identify which bid was “highest.” Auctions can be designed to discourage collusion and encourage more bidders, which are important issues in practice.

Alternatives to auctions include simultaneous negotiations, sequential negotiations and beauty contests. Auctions will provide a better outcome than simultaneous negotiations, according to economic theory. Negotiations and beauty contests raise issues of perceptions of corruption, arbitrary scoring, and favouritism. But complex contracts necessarily entail some negotiations.

Contract renegotiation—beyond that necessary to respond to contingencies in the contract—can eliminate the advantages of competitive auctions. Essentially, the outcome is a bilateral negotiation between the concessionaire and the government. More concessionaires, a contract where the government bears more risk, raising the cost of opening renegotiations and provision for step-in rights or obligation to continue service can discourage the practice, but renegotiation is common.

4. Addressing competition problems arising during the term of concessions

Concessionaires usually have significant market power. The coverage and enforcement of the competition law and other, perhaps sector-specific, laws determines the extent to which they may exercise such market power. In addition, the concession contract or the more general concession law may also have specific competition provisions.

4.1 Coverage by the competition law

Coverage by a competition law enforced by an independent competition authority helps government commit to not renegotiate certain aspects of the concession. For example, if the

competition law has provisions regarding access to essential facilities, the concessionaire needs access to a facility qualifying as “essential,” and an independent competition authority actively enforces the competition law, then this helps to commit the government not to extract profits by mandating high access fees and provides a mechanism for relief if it nevertheless does so. Similarly, if the concession contract does not mention the access fees that a concessionaire may charge, an actively enforced competition law may place a cap on access fees. For example, an electricity generating concessionaire might be “held up” by high electricity transmission fees. The abuse of dominance provision in the competition law might limit the hold up.

But rather than rely on *ex post* law enforcement alone, it may be better also to reduce the incentives or ability of the concessionaire to engage in anticompetitive behaviour.

One important set of circumstances are when the same company operates both an “essential facility” and competes against rivals who need access to that essential facility. For example, a company may both operate a port and use that port, along with its rivals, to compete in the shipping market. Such a firm has the ability and usually has an incentive to discriminate against its un-integrated rivals in a way that reduces consumer welfare and damages competition. In these circumstances, the OECD Recommendation of the Council concerning Structural Separation in Regulated Industries (2001) recommends that its Member countries “should carefully balance the benefits and costs of structural measures against the benefits and costs of behavioural measures.” The Recommendation goes on to say that, “This balancing should occur especially in the context of privatisation, liberalisation or regulatory reform.” Applied in the case of concessions, this would mean considering, during the design of the concession, the costs and benefits of prohibiting a concessionaire for a non-competitive activity from engaging in a complementary competitive activity.

Box 18. Example of a Competition Authority Screening Bidders, and Application to Telecommunications: Mexico

In Mexico, the concessioning authority is empowered to allocate concessions and oversee their operation. The competition authority (CFC) has powers to issue opinions on the competition aspects of concessions and even auctions. However, such opinions are non-bidding.

Further, the regulatory schemes established for the telecommunications sector and for rail transportation contemplate the need for a favourable opinion from the CFC on prospective concession holders, previous to the award of concessions or to authorise the transmission of concession-related rights. In assessing prospective auction participants, the CFC considers the implications of supply conditions and the participants’ market power.

In 2001, an affiliate of Telmex asked permission to offer long distance cellular service. The CFC, noting its previous determination that Telmex held a dominant position in the market for long distance services, concluded that permitting the affiliate to expand into that market could only worsen the situation. In the end, the telecoms regulator, COFETEL, decided to recommend approval of the application, but imposed conditions.

Sources: Submission by Mexico to Sixth Global Forum on Competition 2006 and OECD 2004

Another important set of circumstances are when the same company already owns or operates a substitute for the concession, and controlling both would allow it to engage in anticompetitive behaviour. Concessionaires may be able to cumulate concessions in a way to create market power. For example, if there are only a few ports along the same coastline, winning several operating concessions—or even just those for two adjacent ports—could enable a company to raise price or lower output or quality. This reduced competition can be countered by considering, during the design

phase, the costs and benefits of prohibiting a concessionaire from holding competing concessions. Against the lost benefits from competition may be weighed economies of scale or scope, to the extent they can be predicted. (The need to design concessions and auctions to allow the exploitation of complementarities was discussed above.)

One issue that can arise is the interaction of the competition law with laws more specific to concessions or with the concession contract. For example, care must be taken to ensure that there is no inadvertent weakening of competition law coverage. From an economic point of view, the allocation of a legal monopoly, such as a concession, by the government does not imply that anticompetitive conduct is less harmful. Indeed, legal entry barriers mean that such conduct can be more effective. The 2005 OECD Guiding Principles for Regulatory Quality and Performance says, in particular, “Eliminate sectoral gaps in coverage of competition law, unless evidence suggests that compelling public interests cannot be served in better ways. Competition law enforcement and sector regulation to promote competition and trade liberalisation should be co-ordinated to ensure consistency.” This issue was raised in the *Zambian port concession*, mentioned below. There, the concessionaire claimed exemption from the competition law on the basis that section 3(f) of the Competition and Fair Trading Act exempts all matters to which the government is a party from the application of the law, and that the government was party to the concession agreement. A Supreme Court ruling appeared to imply that the competition law is applicable to the concessionaire. (Sources: Fifth Global Forum on Competition, Zambia DAF/COMP/GF/WD(2005)21 and An Ex-Parte Application for the Grant of Leave to Apply for an Order of Mandamus Directed to the Zambia Privatisation Agency and the Zambia Competition Commission and the Minister of Finance available at <http://www.zamlia.ac.zm>.)

Box 19: Example of Merger of Concessionaires: Port Terminals in Argentina

In 1994, auctions for long-term concessions (18-25 years) were held for the six terminals at one of the ports of Buenos Aires, Puerto Nuevo. The government imposed conditions on the auctions to create a market structure that could sustain competition: bidders were allowed to bid for more than one terminal, but they had to express a preference and could be awarded only one. But this condition was not complied with. A bidder who bid highest for terminal 2 and second highest for terminal 1 appealed the award of terminal 1 to a rival bidder. To avoid delay as the case wended its way through the court system, the government agreed to allow the bidders to merge and then jointly awarded terminals 1 and 2.

In 2001 the Argentine Antitrust Commission approved the acquisition of terminal 4 by Maersk Sea Land, one of the world’s largest shipping companies. The Antitrust Commission found that Maersk would not be able to foreclose the market because terminal 4 had only a small share (8 percent) of the total capacity in Puerto Nuevo and there was a substitute port.

Source: Trujillo, Lourdes and Tomás Serebrisky (2003), “Market Power Ports: A Case Study of Postprivatisation Mergers,” Note no. 260 Public Policy for the Private Sector, World Bank, March.

Competition law enforcement plays an important role to ensure that the legal monopoly (or, in some cases, oligopoly) conferred by a concession does indeed fulfil its intended role of increasing efficiency for the benefit, at least in part, of users.

4.2 Regulation

Concessionaires are often subject to price regulation as a means to curb exploitation of significant market power. Exceptions to this general rule—concessioning unregulated monopolies—occur when raising revenue or protecting national champions takes precedence over economic efficiency or consumer welfare, or when regulation is not feasible. Concessionaires may also be subject to access regulation, i.e., to providing access to essential facilities to unintegrated rivals at regulated terms. The regulatory may also include a detailed description of any public service obligations such as the service to be provided, the obligation to supply, equal treatment of users, continuity of service, and so on.

Sector-specific laws and the institutions that enforce them can play an important positive or negative role. Regulators can be a faster, less expensive way to resolve access disputes and set tariffs than under the competition law. But of course they need to have positive attributes including professional capabilities, adequate resources, transparency of decision-making, have an appeals process, and independence from those they are regulating. (See the 2005 OECD Guiding Principles for Regulatory Quality and Performance.) For example, if a regulator also has commercial interests—as when one company is a regulator of a sector in which it is commercially active—its decisions will not reflect broader public policy interests.

Two types of regulation that are commonly applied are rate-of-return regulation and price-cap regulation. In the first type, the regulator assigns a value to certain assets necessary to perform the regulated services, sets a rate-of-return on those assets—often the market-determined rate-of-return on assets with similar risk characteristics—and sets prices that will allow sufficient revenue to cover both return on capital as well as costs that the regulator allows the concessionaire to pass through. In the second type, price-cap regulation, the regulator sets maximum prices on the services, often with automatic adjustments to account for changes in costs outside the control of the concessionaire and to account for expected feasible improvements in efficiency within the control of the concessionaire, and a pre-set review date. (Variations include setting a maximum price for a basket of services while possibly requiring certain relationship among individual prices, e.g., that the retail price for a service be at least a specified amount more expensive than wholesale access to facilities to provide the same service.) Rate of return regulation is seen as less risky, for the concessionaire, than price-cap regulation since, under the former type of regulation, the regulator should adjust prices to reflect cost changes and it does not under the latter type.¹⁸

Access regulation can be necessary when the concessionaire is permitted to also supply a vertically related market. In particular, the concessionaire may try to evade regulation of the natural monopoly by discriminating in favour of its own vertically integrated business, capturing unregulated profits in the vertically related market. Prohibiting vertical integration might be a solution, but at a potential cost of economies of scope. Further, the most efficient bidder may be a long established operator in the vertically related market—a mine with respect to a railway or a shipper with respect to a port, for example—who has particular insight into potential improvements in quality and efficiency, and excluding such a bidder would reduce overall efficiency. Further, where there are successive monopolists, such as a port and the sole railway to that port, it may be more efficient to put the two activities into the same concession. This raises barriers to entry, since now an entrant would need to enter both levels simultaneously, but this may have no practical impact—if entry were likely there would be no need for concessioning—and the vertical integration should reduce hold-up and inefficiencies from uncoordinated investments, schedules, and the like.

Box 20. Example of Abuse of Dominance in Access: Mpulungu Harbour

A 25-year concession to operate Mpulungu Harbour and Port in Zambia was granted by the Zambian cabinet in 1997. The concession agreement provides for review every 5 years, but anti-competitive conduct was not a ground under which it may be terminated.

In addition to being the port operator, the concessionaire is also the largest of seven shipping companies that use the port. Based on tonnage, its share is about 50% of the total. There are no feasible transport alternatives.

The Concession Agreement provides that the concessionaire has complete pricing freedom, but must provide access on the same terms as it does provides access to itself. While in principle the port is regulated by a ministry, the Supreme Court found that, “There has been no coherent exercise of supervisory power” by the ministry.

Investigations carried out by the Zambia Competition Commission revealed that the concessionaire was abusing his position as Port Operator by engaging in various conduct that harmed its rivals in the shipping market. The concessionaire was found to be unfairly allocating shipping space on the vessels using the port, unfairly dictating the type of cargo to be loaded—which has the effect of eliminating competition in lucrative markets for products in high demand—reserving port storage for his exclusive use, and engaging in other conduct. Also, two weeks after taking over the Port, the concessionaire increased tariffs by 46% without consultations and without notice.

The ZCC pursued voluntary compliance with the competition law.

Source: Fifth Global Forum on Competition, Zambia DAF/COMP/GF/WD(2005)21

5. Design of concessions

The design of a concession is constrained by the elements that have been discussed in connection with the award of the concession and the competition problems that can arise during the concession. This section will highlight some of the features that can be identified in advance and in general.

However, no checklist can be complete. A difficulty of concessioning is that each situation is different. The idiosyncratic physical, historical or political constraints must be taken into account. Vast underinvestment may mean continued substantial subsidies if tariffs are not to rise too rapidly for users’ budgetary comfort and it can mean an embarrassingly low “headline” concession fee. Political commitment to preserve jobs can mean that the concession must include provisions to that effect even if it makes the award process inefficient. A second political difficulty can be pressure to design a concession to get a large concession fee, sometimes by unwarranted exclusivity or duration, or by an overly-generous regulatory regime. With these caveats in mind, the following points should be considered in the design of a concession.

- **Number.** Where competition is feasible, as in some telecommunications markets, in general more concessions will promote competition. True, more concessions will mean lower “headline” concession fees, and it can be difficult to explain that a lower fee today but lower tariffs tomorrow benefits consumer-taxpayers. If the number of likely bidders seems unusually low, then a re-examination of the auction rules and the concession design may be in order; efficient potential operators may be discouraged by poor design.
- **Exclusivity.** There are trade-offs involved in granting a unique concessionaire protection from entry by competitors. Non-exclusivity can allow competitive pressure from entrants, especially if the market were incorrectly labelled a natural monopoly or ceases to be one due to technological change. But exclusivity can be necessary if e.g., public service obligations are paid by cross-subsidy rather than from other sources. Exclusivity can also decrease the riskiness of a concession, with a follow-on effect on renegotiation and cost of capital.

- **Duration.** There is a trade-off when determining the duration of a concession. Long concessions create appropriate incentives for the concessionaire to make long-term investments including to invest in maintenance near the beginning of the concession. Short concessions exacerbate the problem of insufficient incentives to make investments near the end of a concession, as well as the problem of incumbents gaining advantages over other bidders in successive concessions. However, short concession allow for more frequent competitive tendering, which can facilitate entry and ensure that any benefits of increased competition are reflected more promptly. Short concessions also allow for uncertainty to be borne by the government rather than the concessionaires, which in general reduces the subsidies or increases the fees gained.
- **Horizontal scope.** Where a concession may have various breadths—one license or several to provide the same service, one port or several along the same coastline—and they are substitutes, then it would promote competition in the market to have different concessionaires in charge of substitute facilities. And having different concessionaires would promote competition for the markets if it reduced the cost of bidding. This may need to be traded off against economies of scale or scope, however. Where a concession could be broken in to parts that may be complements, such as telecommunications licences in over adjacent regions, then consideration should be given to whether fiat—the government defining the scope of the concessions—or market—auctions that allow bidders to price the complements—is likely to yield the more efficient outcome.
- **Vertical scope.** If competition up- or downstream is feasible, economies of scope are small, and effective access regulation is difficult, it may be more efficient to prohibit the concessionaire to also operate in the vertically related market. But this must be weighed against the effect this has on bidders for the concession, since the most efficient bidder may well be a company that has long operated in a vertically related market and has particular insight into potential improvements in quality and efficiency.
- Further, where there are **economies of scope** between activities where competition is not feasible, e.g., a port and the sole railway to that port, it may be more efficient to put the two activities into the same concession. This should reduce hold-up and inefficiencies from uncoordinated investments, schedules, and the like.
- **Competition Law.** The competition law should apply to the concession award process and to the concessionaire, as it does throughout an economy.
- **Regulatory structure.** An appropriate regulatory structure and agency should be in place in advance of the concession award in order to reduce uncertainty faced by potential concessionaires. Elements that can affect profitability such as universal service requirements, restrictions on increases in user tariffs, special “social” tariffs need to be specified, or the objective formula for their calculation, should be specified in advance so that potential concessionaires can calculate any bid or negotiation strategy. The agency should have sufficient autonomy and implementation capacity to ensure high-quality enforcement and to deter political opportunism. In addition, the tradeoffs between price-cap and rate-of-return regulation, including their different allocation of risk, should be considered.
- **Allocation mechanism.** The concession design must also take into account the allocation mechanism. For example, if an auction is to be used to award the concession, then all the dimensions over which competition will not take place must be specified or otherwise

prepared for, in order to reduce the scope for renegotiation. If an auction is not to be used, then the pre-design stage is even more important to avoid the appearance of favouritism or corruption in the choice of concessionaire. If the exclusion of a potential bidder is permissible, weigh carefully the consequences of such exclusion, bearing in mind the effect on subsequent market power and on the competitiveness of the auction—both directly and on the decision of weaker bidders whether to bid.

- **Disputes**¹⁹. Contracts should avoid ambiguity as much as possible. They should define the treatment of assets, evaluation of investments, outcome indicators, procedures and guidelines to adjust and review tariffs. They should include criteria and penalties for early termination, procedures for resolution of conflicts, and well-defined triggers for renegotiation. Consider imposing a significant fee for any renegotiation request, reimbursed if the renegotiation is decided in the operator's favour. Renegotiation should be as transparent as possible, perhaps using external, professional panels to assist regulators and governments in their analysis and decision-making, and with a timely, full public explanation of adjustments.
- Proper **regulatory accounting** of all assets and liabilities should be in place in order to reduce ambiguity about the regulatory treatment and allocation of cost, investments, asset base, revenues, transactions with related parties, management fees, and operational and financial variables.
- **Changes**. Bidders should be held to their submitted bids. The first tariffs review should be held only after a significant period, like five years, unless contract contingencies are triggered. Concession contracts should provide for significant compensation, including penalties, to concessionaires if government unilaterally changes the contract.

6. Conclusions

Competition authorities have important roles to play at a number of stages in concessioning.

- First, concessions are often awarded in the context of a broader regulatory reform of a sector. Such a reform often includes clarifying the service objectives and revenue sources, thereby uncovering cross subsidies that must be addressed in the concession design. Reform also often includes addressing how the sector will be governed during the long period after the concession has been awarded: where competition would be feasible and desirable, what sector-specific laws and regulatory institutions need to be established, and the application of competition law. Competition authorities can advocate for pro-efficiency and pro-competition regulatory reform at this stage.
- Second, competition authorities can advocate for more competitive design of the concession contract. They can identify provisions to encourage weaker bidders or discourage renegotiation, for example.
- Third, they can advocate for better design of the allocation mechanism. If concessions are allocated by auction, they can identify provisions to encourage more bidders and to discourage collusion. If not allocated by auction, they can promote a mechanism that would tend toward identifying the more efficient applicant.
- Fourth and fifth, during the auction and afterwards, during the term of the concession, they have a role to play as competition law enforcers to deter or prosecute collusion during auctions and to ensure that concessionaires do not abuse their dominance. During the

allocation process, they should have a role to exclude from bidding those companies who would gain significant market power if they were awarded the concession.

Competitive auctions are more likely to yield the most efficient provider and raise the most funds, all other things equal, under many conditions. But poor design undermines their effectiveness, and renegotiation eliminates their advantages.

Renegotiation may have its origins in the incompleteness of concession contracts or in opportunism. Concession contracts are necessarily incomplete because uncertainty about costs and revenues over decades cannot be entirely resolved in advance. Concessions present commitment problems since large sunk investments must be recovered over long periods, on the one hand, and governments are under pressure to maintain or improve services, on the other hand. However, renegotiation, whether due to contract incompleteness or opportunism, can eliminate the benefits of competitive bidding for concessions; essentially, with renegotiation, the winner of an auction will be the best negotiator, not the best infrastructure operator. In sum, both an efficient allocation mechanism—such as a well-designed auction—and institutional arrangements to ensure credible commitment to the resulting contract are necessary.

The competition issues that may arise during the term of a concession are not fundamentally different due to the presence of a concessionaire rather than an asset owner. They may include exclusion of rivals by denying access to facilities and abusive pricing. Effective enforcement of the competition law promotes concessions that fulfil their objectives both as regards efficiency and the tariffs users must pay.

Notes

1. This note limits the focus to concessions for infrastructure and leaves aside the significant topic of concessions for the exploitation of natural resources.
2. Contracts are incomplete when they are complex or do not specify what happens under all contingencies. Of course, all contracts are to some degree incomplete; courts and other means of arbitration are meant to “fill-in the gaps.”
3. Williamson’s seven factors that should be considered when deciding between franchising and regulation of a natural monopoly were: “(1) the costs of ascertaining and aggregating consumer preferences through direct solicitation; (2) the efficacy of scalar bidding; (3) the degree to which technology is well-developed; (4) demand uncertainty; (5) the degree to which incumbent suppliers acquire idiosyncratic skills; (6) the degree to which specialized, long-lived equipment is used; and (7) the susceptibility of the political process to opportunistic representations and the differential proclivity, among modes, to make them” [p. 75].
4. While Latin America constitutes only a fraction of the experience with concessions, experience with concessions began early there and the region has been the subject of a unique, comprehensive study by an economist at the World Bank.
5. Assume there is one unit of an indivisible good. Assume each of a given number of risk-neutral potential buyers of the object has a privately known signal that is drawn independently from a

common, strictly increasing, atomless distribution. Then any auction mechanism in which (1) the good always goes to the buyer with the highest signal and (2) any bidder with the lowest feasible signal expects zero surplus, yields the same expected revenue. (Klemperer, p. 17, who also notes that this is not the most general statement of the theorem) In a private value model, a bidder's value depends only on his own signal. In a pure common-value model, the actual value is the same for everybody but bidders have different private information, i.e., different signals.

Violating these conditions, e.g., risk-aversion on the part of bidders or information that is not independent, means that the different auctions no longer provide the same expected revenues.

6. The logic is as follows. An ascending bid auction ends when the bidder with the second-highest value drops out. He drops out when the bid is just higher than his valuation. So, the winner pays the second-highest valuation plus a little. If everyone bids their valuation in a second-price sealed bid auction, then the winner pays the second-highest valuation (by definition). But will a bidder bid his valuation? He will not bid more, of course. If he bids less, this lowers his likelihood of winning and does not lower the price he would pay if he won. If he loses to a bidder who bid less than his valuation, then he regrets his bid—if he had known, then he could have costlessly bid more, up to his valuation.
7. The Coase Theorem (1960) “asserts that an optimal allocation of resources can always be achieved through market forces, irrespective of the legal liability assignment, if information is perfect and transactions are costless.” (Tirole 1989) However, other authors have the view that the initial assignment of property rights does indeed constrain the feasible allocations achievable by bargaining. (Varian 1987)
8. PCS, Personal Communication Service, is the name for the 1900 MHz radio band used for digital mobile phone services in Canada and the United States.
9. This is not paradoxical. Assume three licenses are being sold and a bidder needs two of them to enter a market. If the bidder already has one licence, the remaining two are substitutes. If he does not yet have a license, two of them are complements.
10. One assumption, that bidders are symmetric, is less innocuous. With asymmetric bidders, optimal negotiation can yield a higher expected revenue than an auction with an extra bidder. Bulow and Klemperer (1996) have shown that, under certain assumptions, an auction with $N+1$ bidders will provide a higher price than any negotiation with N bidders. They also show that if a seller could negotiate with N bidders while reserving the right to hold an ascending auction with an additional bidder and without a reserve price, then the seller would always do better to skip the negotiations and go directly to the auction. The conditions are: bidders are risk-neutral, their value functions are symmetric, and their signals are independent, bidders' lowest possible valuations exceed the seller's cost of supply, and bidders with higher signals have higher valuations.
11. One empirical study on refuse collection estimates that competitive auctions yield cost savings of 20% as compared with negotiation. (Dornberger, Meadowcroft and Thompson 1986, “Competitive Tendering and Efficiency: The Case of Refuse Collection.” *Fiscal Studies* 7: 69–87, cited in Guasch)
12. Renegotiation refers here to a significant change in the original contract and financial impact. I.e., stipulated tariff adjustments for inflation do not count, nor do stipulated periodic tariff reviews or other adjustments due to contingencies such as devaluation contained in the contract count as renegotiation.
13. The term “probit” means “probability unit.” A probit analysis is used to analyse data where the dependent variable can have only two possible values. Here, either there was or there was not renegotiation. A probit analysis will discover which independent variables, e.g., the existence of a

regulatory body, are most important in influencing the dependent variable, e.g., renegotiation. The traditional linear regression model explains the dependent variable y in terms of the independent variables x in this way, $y = \alpha + \beta x + \varepsilon$. But the probit model explains the probability distribution of the variable y in this way: $\text{prob}(y=1)=f(x)$ where y can take the value 0 or 1. See Kennedy 2003.

14. Under rate-of-return regulation, the concessionaire can pass through to consumers changes in costs, though often with a lag or smoothing. By contrast, under price-cap regulation, the concessionaire cannot in general adjust its prices to reflect cost changes.
15. Concessions are incomplete contracts. For example, neither party knows, at the time of signing, precisely the cost of providing the promised service, the amount of the service that will be demanded at agreed tariffs, nor some of the other variables that affect the profitability of the contract. Further, it is costly to write all the contingencies into a contract. Third, it is costly to monitor and it may not be possible for an adjudicator such as a court to verify the actions and the contingencies contained in a contract. The result is that government and concessionaire may need to negotiate to take into account the contract's incompleteness.

Problems arise when the negotiations go far beyond the bounds of incorporating resolved uncertainty into the contract. Having made sunk investments (ranging from literally digging holes in the ground to preparing voter-consumers to expect the delivery of specific services), the negotiating strengths of the parties will have changed.

16. Following the logical argument forwards in time, opportunistic behaviour can be eliminated. The theory rests on there being no "final" concession or year (or on no given period being sufficiently likely to be the "final" one), on the opportunities for strategic behaviour occurring fairly soon after each other (or the interest rate by which future profits are discounted is fairly low), and the returns from persistent opportunistic behaviour being not too large relative to playing by the rules.

To provide a simple, imaginary example, assume that a widget company "W" often bids to be the operator of municipal widget concessions. Assume that the hundreds of municipalities share their experiences and that the concessions always last for, say, ten years. In 2005, "W" might consider opportunistically renegotiating its contract with municipality "M." But if "W" does that, then the other municipalities will learn about it. They will suspect that "W" will try the same thing with them, so they will be inclined to disqualify "W" from future auctions. If a sufficiently large number of municipalities do so, then the loss to "W" from no longer having those concessions that it could be expected to have won is larger than any gains "W" makes from its renegotiation with "M."

However, if we now assume that there are few competitors to "W" then the argument above breaks down. If disqualifying "W" meant that only two serious competitors remained, the other municipalities might not disqualify "W." Then "W" will find it profitable to engage in opportunistic renegotiation as just one additional way to exercise its market power.

17. Concern about renegotiation has led to the development of the "least present value of revenues" criterion by Engel, Fischer, and Galetovic (2001). This criterion is renegotiation-proof. Under this regime, the government sets maximum tariffs and a discount rate (fixed or variable). Bidders bid the present value of total revenue to be received, and the lowest bidder wins. Any revenue reduction is automatically compensated by extending the length of the concession. Once the winning LPVR is received, the concession ends. This approach is better used where service quality does not affect the level of demand. The uncertain duration can raise the cost of capital. This model has not been widely adopted.
18. But the two main types of regulation may not be as different as they appear at first glance. A well-known observation is that the expected return on capital under the two regimes should differ by a risk premium. The return on capital under price-cap regulation is influenced by two mechanisms. First,

investments under price-cap regulation need to earn at least a market rate to attract future investment. Second, governments face political questions when regulated firms earn much more than a market rate. These two influences mean that the return on capital under a price-cap regulation approaches that under a rate-of-return regime, plus a risk premium. As more cost elements are moved into a cost-pass through category under a price-cap regime, it approaches a rate-of-return regime. Similarly, as the review periods under a price-cap regime become shorter, it approaches a rate-of-return regime.

19. Much of the material in this and the following bullet points is from Guasch, pp. 19-21.

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CONCESSIONS

3. SUMMARY OF THE DISCUSSION

SUMMARY OF THE DISCUSSION

Committee Chairman, Frédéric Jenny, introduced Ms. Barbara Lee, Executive Director of the Jamaican Competition Authority, as Chair of the discussion.

Ms. Lee noted that the involvement of a national competition agency in the concession process can vary significantly across countries. The agency may be involved from the outset, in the fashioning of the process, or it may not become involved until after the concession is awarded, which was the case in Jamaica. She expressed the hope that this issue, as well as several others, would be explored in this roundtable. She complimented the delegations on the quality and quantity of their written submissions for the roundtable.

The Chair invited Ms. Sally Van Siclen from the Secretariat to summarise the background paper that she prepared for the discussion.

Two preliminary questions had been posed to the Secretariat: what is a concession, and why should I, a competition law enforcement official, care? An accepted definition of a concession is: a grant to a private firm of the right to operate a defined infrastructure service and to receive revenues deriving from it. A concession could be granted to operate an airport, for example, or to provide water to a municipality. There could be many parameters to the concession, including specification of tariffs, of investment, of levels of service, of fees to be paid to the government, or of the duration of the contract. The agreement may include the transfer of the relevant assets, and may also require that they be returned to the government at the end of the concession. There is another type of concession, incidentally: a concession for natural resource exploitation. That type of concession is beyond the scope of this discussion.

As for why a competition official should care about concessions, it is likely that the agency would inevitably become involved at some stage in the operation of the concession in the normal course of its law enforcement responsibilities. In general, it is better that the agency become involved sooner rather than later. The initial stage in the process could be when concessioning takes place as a part of broad reform of a sector. Fundamental issues relating to the industry and regulatory structure are addressed at this stage.

The second stage in the process is designing the concession itself. Questions that are addressed at this stage include: What should be concessioned? Should the assets be vertically or horizontally split? What is the term of the concession? How many concessions? The third stage in the process is the award of the concession. There are several ways of awarding concessions, including by auction, by simultaneous negotiations with more than one party, by sequential negotiations with a single party a time, or by what has been called a “beauty contest,” a more subjective evaluation of potential concessionaires on the basis of specified criteria. In general, the economics literature concludes that better outcomes result from competitive auctions rather than from negotiations or beauty contests.

The competition agency could provide useful input at all of these initial stages – by helping to ensure, through competition advocacy, that there is as much competition as possible in a newly

reformed sector; by helping to design the auction in a way that preserves competition, for example by advocating vertical splits in the assets, in order to minimise possible denial of access to essential facilities; and by assisting in the design of the concession process to ensure that there is as much competition as possible for the market.

Of course, perhaps the most important role of the competition agency in the concessioning process is to apply the competition law, both at the award stage, for example, to identify and punish collusion among bidders, and at the performance stage, for example, to sanction and prevent abuse of dominance.

The Chair then introduced the first of two principal discussants, Mr. Alberto Heimler, Director of Research and Institutional Relations in the Italian Antitrust Authority. Mr. Heimler introduced a challenging and somewhat controversial proposition: that while competition in the market is always to be encouraged, competition for the market, in this case through concessioning, may not always be preferred to public provision of the service or good. When efforts at creating such competition turn out badly, as sometimes happens, the good reputation of competition in general, and of the competition agency specifically, can suffer. In support of this proposition he cited a survey conducted in 2001 in several Latin American countries, which showed that substantial majorities in these countries felt that privatisation, much of which had occurred in infrastructure industries, had not been successful. Mr. Heimler described a few cases of privatisations or concessions that had apparently gone wrong in these countries.

A problem arises when the assets that are privatised or concessioned are natural monopolies, when the opportunity for cost reduction stemming from reductions in quality is high, and there is no way to reward quality improvements. Quality may suffer and there may be little technological improvement. In this context, it may be better not to privatise, but to provide the good or service publicly.

In considering whether to grant a concession for a fixed term or for an indefinite term – in other words to privatise – an important issue is whether there are significant sunk costs that the private party must bear. If there are none, concessioning is the better course. When sunk costs are high, on the other hand, it is better to fully privatise. This eliminates the incentive that would exist in a fixed term concession for the concessionaire not to make investments near the end of the term. Privatisation is also preferred when it is likely that at the end of the initial concession there would be little competition for the subsequent concession; the incumbent would have informational and other advantages that would discourage new entry.

The opportunity for renegotiation of concession agreements can be a significant drawback to the process. If the winning bidder is permitted to return to the bargaining table and acquire through negotiation what it conceded in the competition phase, the benefits of competition are lost. Of course, because concession contracts are by nature incomplete, that is, not all can be known and agreed to at the beginning of the contract, renegotiation is sometimes inevitable.

The design of a concession or privatisation should provide for competition to exist wherever it is possible. For example, in the provision of electricity, the transmission grid is a natural monopoly, but competition can exist in generation. For this reason, the two functions should be separated; the operator of the grid should not also be permitted to operate as a generator. The competition agency can play an important role in the design phase for this purpose. More generally, the competition agency should be ready to enforce the competition law in these sectors when it detects collusion or exclusionary abuses of dominance.

The Chair then introduced the second principal discussant, Mr. Baris Ekdi, Director of Training of the Turkish Competition Authority. Mr. Ekdi stated that there is an important role for the competition agency in the granting of concessions. One purpose for granting concessions is, of course, to enhance efficiency in the sector involved; the competition agency has expertise in this area, and its participation can be especially useful because the relevant sectors are usually characterised by some aspect of monopoly. But further, the government may have another motive for concessioning – to enhance revenues. This purpose may be fundamentally inconsistent with that of enhancing efficiency – a concessionaire who is granted market power will pay more for the concession. This is another reason for the participation of the competition agency in the process. And finally, the agency conducting the concessioning may not have sector-specific expertise; this would be especially true if there was not yet a regulatory regime established.

There are many ways in which the competition agency can participate in the concession process. There are two in general: competition advocacy and competition law enforcement. Anti-cartel enforcement is important at the award stage, and protecting against abuse of dominance after the award is also necessary. The agency can offer competition advocacy in several contexts, including designing the concession, interpreting the contracts, in renegotiations if they occur, and in the regulatory process.

Mr. Ekdi provided some examples of cases that arose in Turkey in which there were competition issues. One involved sequential bidding for two mobile telephone licences. Due to the design of the auction, the highest bidder could exclude competition for the second licence and make the holder of the third licence face high sunk costs. These negative outcomes of the auction, accompanied by poor regulation and inefficiency of the regulatory authority, resulted in roaming wars after the auction and as a result the Turkish Competition Authority had to intervene and impose fines on the two GSM operators holding collective dominant position in the market. A second case involved the restructuring of the Turkish electricity supply sector, in which the monopoly operator of the distribution grid was also permitted to own and operate a generating facility. When the monopoly operation prevented access of an electricity generator to the transmission grid, the TCA intervened in line with the essential facility concept and imposed fine.

A third case involved what Mr. Ekdi called, “hidden concessions” in domestic passenger air service. There was no formal concession process at all; instead a government agency quietly issued a decree setting forth requirements for participation in the sector that effectively protected the dominant carrier from competition through new entry. Later the “concessions” were annulled, there was new entry, prices fell and capacity increased. The fourth case involved legal monopoly for the sale of coal in Ankara granted to an undertaking owned by Ankara municipality. The competition agency intervened, fining the offending firm and recommending that legal monopoly be removed.

1. Concessions during regulatory reform

The Chair announced that she would move into brief interventions by countries that had provided written submissions for the roundtable. She would begin with Brazil and Indonesia, both of which indicated that their agencies were involved in the initial stages of broader regulatory reform in one or more sectors.

Brazil has had the experience of concessioning or privatising both before a regulatory regime was in place – in the case of ports and roads, and after – in the case of telecommunications. The latter worked much more smoothly, with fewer incidents of renegotiation and opportunistic behaviour. It's best to work out in advance the major contract issues, such as tariff rebalancing and universal service requirements. If an independent regulatory agency already exists it will be better positioned to

manage the contract, and it will also enhance certainty for the bidders, increasing the price. In general it is easier to resolve important issues such as industry structure with the government before creating the concessions rather than with private parties afterward.

The Brazilian delegate agreed with Mr. Heimler that full privatisation is usually to be preferred to concessioning, but in Brazil the Constitution sometimes made privatisation not possible, thus requiring concessions instead, if the assets are to be privately managed. As for public vs. private provision, public provisioning may sometimes be preferable, as urged by Mr. Heimler, but in Brazil's experience the government is often highly inefficient as compared to the private sector in this regard.

The Chair noted that Indonesia's submission described three concessions, in harbours, drinking water and telecommunications. The submission described the first two as having encountered significant problems, while the third, telecommunications, was considered a success. She asked the Indonesian delegate to, if possible, give the reasons for these different outcomes.

The process of concessioning in Indonesia has been an evolutionary one. At first there were no clear goals for concessions, and most of the early ones were granted to state-owned monopolies. Later the concessions were given to private parties, but the operational and regulatory functions were not clearly separated. Finally, after a monetary crisis in the country, it became clear that concessions should have specific goals of enhancing efficiency and attracting investment in infrastructure.

In the cases of harbours and drinking water, the sectors were essentially natural monopolies, and concessions were granted without there having been an effective regulatory agency created. In telecommunications, on the other hand, it was recognised that competition could and should exist. The participation of the private sector was more carefully planned and openly implemented. Today, the telecommunications sector in Indonesia is competitive and robust, while harbours and drinking water continue to lag.

2. Allocation of concessions

The Chair stated that the discussion would now turn to the methods for allocating concessions. She noted that auctions are often cited as the most efficient means of doing so. The submission of the Netherlands described an interesting process for concessioning three different types of railway service. The concessions for each were different, based on different characteristics of those markets. She asked the delegate from the Netherlands to describe the three different methods and the reasons for using them, and also whether the Netherlands competition authority was involved in the process.

The delegate from the Netherlands stated that the competition agency was not involved in the granting of these concessions, which was the sole responsibility of the Ministry of Transport.

The three concessions involved different sets of assets: the conventional passenger and freight network, a new high speed passenger network and a new network dedicated to freight. While the three concessions are different in some respects, they also have at least one thing in common. In all three the responsibility for allocation of capacity and traffic control was given to the incumbent infrastructure manager. The task is similar in all three situations and it was considered not efficient to separate these responsibilities. It was possible to have competition for the market at another level, however: infrastructure maintenance and the accompanying charges for maintenance to be paid by infrastructure users.

There were differences among the three networks as to the quantity and quality of available information about the infrastructure. As for the conventional network, the assets were not owned by

the government but rather by the incumbent manager. There was not sufficient data about these assets, some of which were many decades old, to permit potential providers to submit informed tenders, and so the concession for infrastructure maintenance was given to the incumbent without tender for a period of ten years, with a provision for the ultimate transfer of the assets to the government. As for the other two networks, which were new, there was good knowledge about the assets, which would facilitate a tendering process for their maintenance. There was, however, relatively more certainty about market conditions for passenger transportation, which had been managed by the government, than about freight transportation, which had been liberalised and which faced competition from other transport modes. The government decided that it would assume the risks associated with the uncertainties in the freight market by granting a concession for maintenance of that network for a shorter term, which was five years, during which time the relevant information could be accumulated. The short concession would be followed by one for a longer term. The concession for the maintenance of the high speed passenger network, on the other hand, about which there was less uncertainty, was awarded for a period of 25 years.

The Chair then asked the French delegate to describe the concessioning process in that country.

France has a long history in concessions, dating from the 19th century. There are essentially two forms of concessioning currently practiced in France, one in which the management of a public utility is entrusted to a public or private enterprise, which assumes the associated financial risks, and a second, more similar to the British system, which resembles a public-private partnership. It seems that neither one is inherently more conducive to competition; more important is intervention by the competition authority both before and after the award of the concession for the purpose of promoting competition.

The French delegate then briefly described two concession cases that have arisen in that country, involving drinking water and motorways. The provision of drinking water, like electricity, actually involves three distinct services: production, transport to municipalities and distribution to individual customers. As in electricity, the possibility exists for competition in the production stage, and possibly in transport as well, but local municipalities traditionally have not made that distinction and have contracted for all three services with a single firm. The French competition authority has strongly advised municipalities to tender the production and transport of water separately from distribution, as means of introducing competition and lowering prices. In motorways, the French government is in the process of privatising these assets, and recently the competition authority made a series of recommendations designed to prevent the vertical integration of the operators of these motorways and large construction and public works companies, which would serve to protect competition in the construction market.

These two cases are examples of intervention by the competition authority at the time the concession is designed, for the purpose of preserving competition.

The Chair turned to the United States, whose submission described the role of the U.S. competition agency in the allocation of takeoff and landing slots at congested airports.

There were a few large airports in the United States that were overly congested – the airlines serving them desired to make more takeoffs and landings than the airport could handle. The U.S. sector regulator, at the urging of the Department of Justice, dealt with the problem by awarding to incumbents a finite number of “slots,” or rights to take off and land. It was expected that these rights would be freely traded as with any other property right, resulting in their efficient allocation. This did not happen, however, for more than one reason, the most important one being that the large

incumbents were unwilling to sell them to potential entrants or fringe firms that might expand into their markets.

In its advocacy role the Department of Justice offered two market-based solutions: (1) to reduce congestion, raise the price of landing or taking off at peak periods to more closely approximate the real cost of congestion; and (2) to enhance the trading of slots, convert them to a form of leasehold and auction each year a significant percentage of them, say 20%. The Department also offered a third suggestion: to encourage public investment in the air traffic control system for the purpose of making it more efficient, thereby reducing congestion.

While not all of these proffered solutions have been implemented, this case points up an essential feature of effective competition advocacy: the competition agency must invest in acquiring competence and expertise in sectors in which it intends to provide advocacy.

3. Design of concessions and allocation of subsequent concessions

The Chair noted that the design of any given concession must be tailored to the specific market at hand. Further, there are special competition problems when a concession comes to an end and it is put up for auction again. In particular, the incumbent may have special advantages that could discourage other potential bidders from participating. She turned again to the Netherlands, noting from its submission that the concession for the new freight line was given to a consortium of companies for a short period of time. What were the reasons for selecting a consortium, rather than just one company? Was it to promote competition for the subsequent concession?

The Netherlands delegate replied that the award to more than one company does benefit competition, but the principal reason for doing so was to involve a new private company in providing the service, which could result in improved efficiency and reduce the subsidy required of the government. That turned out to be the case, as the consortium's offer was 13 billion less than that of the incumbent. It was also useful, however, to involve a new company in the initial, short concession. It would force the incumbent to co-operate within the consortium – to share information – which could promote competition in the long run.

The Chair raised the issue of the level of government that conducts the concessioning. Should it be done centrally, at the national level, or in the case of municipal services, should the process be decentralised? The submission by Romania described an interesting innovation: the creation of a national agency, the National Regulatory Authority for Municipal Services (NRAMS), which would have the responsibility for concessioning municipal services. Has this arrangement been successful?

The Romanian delegate first gave some background on the participation of the competition agency in the concession process. The agency strives to participate *ex ante* where possible, and to date this has taken the form of co-operation agreements between the competition agency and sector regulators, including NRAMS. These arrangements are working well; there are frequent inter-agency contacts as a result. NRAMS was created less than a year ago, however, so there has been little experience with that agency.

4. Renegotiation

The Chair stated that renegotiation was identified in the background paper and by the principal discussants as an important issue: renegotiations could diminish or eliminate the advantages that result from competition in the award stage. Only one submission addressed the topic, however, that of

Brazil's. It described the use of arbitration in that country as a way of resolving disputes in concession contracts. She asked Brazil to describe how it uses arbitration for this purpose.

The Brazilian delegate stated that recently the law on concessions was amended to permit the use of arbitration to resolve disputes. In the right circumstances, arbitration can be more efficient than the judiciary for this purpose. Because the government is a party to concession contracts, the arbitrator in these instances may be an international or foreign expert. Of course, it is understood that the government must not surrender its sovereignty in these situations, so its use of arbitration must be restricted to interpreting specific contract terms. The limits of this new law permitting arbitration have not yet been fully tested.

The Chair questioned Romania about a case described in its submission in which a state-owned enterprise was privatised and the new entity then participated in a municipal tender. It seemed that following the tender the municipality continued to hold shares in the enterprise. Did this in fact happen, and if so, what were the welfare benefits, if any, that resulted?

The Romanian delegate explained that its submission may not have been fully clear on this point. The state-owned enterprise, which had been providing the relevant municipal service, was fully privatised into a commercial undertaking. It then participated in the subsequent tender for a concession to provide these services, but the tender was won by a private foreign company. This tender did provide benefits for consumers, as it was conducted in a competitive manor, and the resulting tariffs were considered reasonable.

5. The role of the competition authority in concessioning

The Chair stated that this topic is probably the most important of all in this discussion, in view of the fact that the participants are competition agencies. As has been pointed out previously, the competition agency may participate *ex ante*, in the design stage, and *ex post*, through enforcement of the competition law. The Chair noted that in Mexico the competition agency apparently has the power to evaluate prospective concession holders and to exclude from the competition those whom it considers unqualified. She asked Mexico to describe this process.

In Mexico the sectoral laws give the competition authority this power. The Mexican delegate cited the *ex ante* participation of the agency in the railroad and telecommunications concessions as having been particularly successful. In rail, tariffs have decreased in real terms, productivity has more than doubled in ten years, rail's share of the total transport sector has increased and investment in the sector, while not increasing absolutely since privatisation, has become more efficient. The Mexican delegate also described his agency's *ex post* participation in regulation of the rail sector. It feels that current regulations controlling interlinear activity are not efficient, and it intends to recommend changes to them.

The Chair asked France to describe a third case in which the competition authority was involved in concessioning through enforcement of the competition law.

The French delegate described a case in urban bus transport. An anomalous situation existed in this sector, in which the concessions for this service were granted by local municipalities, but the concessionaires operated nationally. Moreover, there was no national regulation or oversight of this service. The result was that there was little or no competition for these concessions at the local level; the incumbents almost always were awarded successive concessions. While there were lawful explanations for this behaviour – the incumbents enjoyed informational advantages and there were costs associated with new entry – there was another possible cause: collusion. The French competition

authority conducted an in-depth study of the sector and concluded that three national enterprises had indeed engaged in collusion, by agreeing not to compete with the incumbent across local markets. It imposed heavy fines upon the respondents, and its decision was upheld by the courts.

The Chair noted that in 2005 Russia enacted a new law on concessions. She asked the Russian delegate to describe the law and the reasons for enacting it, and to state whether the Russian competition authority has had occasion to intervene in the concession process since the law was enacted.

Prior to July 2005, when the law was enacted, concessions were not separately regulated; they were subject to the general code governing commercial transactions in Russia. The purposes of the law are to attract investment, to promote effective use of publicly-owned infrastructure assets and to improve the quality of goods and services provided to consumers. The law regulates the completion, operation and termination of concession agreements and it stipulates certain rights and legal interests of the parties to these agreements. There are no laws regulating concessions in specific sectors, but such agreements are possible in many sectors, including transport, pipelines and public utilities such as heat, gas and electricity supply.

The Russian competition authority has the power to intervene in cases in which the government or tender commission introduces discriminatory measures in the concession agreement or discriminates in favour of one or more parties, and in cases in which a concessionaire abuses its dominant position by imposing discriminatory conditions of access to infrastructure assets that are the subject of a concession agreement. Because the law is new, however, the competition agency has not yet acted in a case.

The Chair returned to Indonesia, noting that the competition agency has the power to make recommendations to the government regarding terms of concessions that are deemed not to be consistent with the principles of fair competition. She asked the Indonesian delegation to give an example of such a recommendation and to describe the results.

The powers of the Indonesian competition authority to make such recommendations are derived from the Constitution, from sector-specific laws and from the competition law. The agency recommends that concessions be granted through open tenders, and it has recommended that they be accompanied by the creation of a regulatory body, where necessary. The agency has made recommendations regarding access to essential facilities and the government's supervisory role in regulating tariffs. In one case, involving roads, the competition agency recommended that a concession not be granted because it was anticompetitive, and the government accepted the recommendation. The agency's recommendations were not followed in harbours and drinking water, however, and the agency continues to work to improve the situation in those sectors.

6. General discussion

The United Kingdom offered several perspectives on the topic. Some regard the UK as having originated the concept of concessions. One of its most significant concessions was for the operation of the Channel Tunnel. It should be noted that the tunnel concessionaire continues to be in financial distress, but it is also true that there was an effort to preserve competition in the operation of the tunnel wherever possible, for example in ferries. This is one important lesson in concessioning: to preserve residual competition. Another is that the competition agency has an important role in concessioning, and it should become involved as early in the process as possible.

Another important issue is the interface between the sector regulator and the competition agency. In particular, the regulator may in certain circumstances have the power to apply the competition law, though in most cases it chooses to use its regulatory powers instead. In any case, there should be consistency when more than one agency applies competition principles. Finally, there is the issue of duration of concession contracts. They use to be as long as 20 or 30 years, but now we see shorter periods, for example in the case of railroads in the Netherlands. A related issue that has arisen in the UK is when concessionaires choose to sell their investments to infrastructure funds, which are more interested in long term cash flow. These new owners may be less inclined to make investments that would enhance the quality of the good or service, and these transactions may not therefore be in the best interests of consumers.

Brazil offered some suggestions regarding the participation of the competition agency in the design phase. One is to use simulations. They offer the means for testing various proposals, and can be persuasive as advocacy tools. Second, pre-screening of candidates – for example as to capacity, experience and financial resources – is important. Also the use of performance bonds can identify those who have a commitment to the project. Finally, the competition agency may have a specific comparative advantage as against the concessioning authority – its cadre of expert industrial organisation economists. Other agencies will have technical expertise, but the competition agency's economic expertise will often assure the agency a seat at the table.

Denmark offered some disagreement with the principal discussants. It agreed that renegotiations can be especially harmful if they are permitted, but it cited one of its experiences in mobile telecom auctions in which it threatened to re-open the auction rather than renegotiate, and the party seeking the renegotiation then dropped its objections. The Danish delegate then addressed the point made by Mr. Heimler that when it is difficult to control quality of a service to be delivered it may be better to provide the service publicly rather than through privatisation or concession. In fact, there is growing ability to measure and control quality in several sectors, including the bus transportation sector cited by Mr. Heimler.

Finally the Danish delegate noted a problem that has occurred in that country: co-ordination between an incumbent and labour unions to limit opportunities for training in specific sectors, thereby inhibiting new entry. The competition authority has advised that these practices not be permitted.

South Africa offered a new perspective, comparing concessioning with what it called part-privatisation. It cited an example in fixed line telephony in that country, in which the government sold a minority share of the fixed line monopolist to a private consortium, and the result was highly unfavourable, having the effect of excluding a second competitor in the sector for ten years. The problem with concessioning is that it could align the interests of the government and the private operator in a way that harms consumers. In South Africa, privatisation has become unpopular because of some unfavourable experiences with it, and concessioning has taken its place. But concessioning could simply another form of industrial policy, with attendant negative outcomes.

The United States commented that one point that has emerged from the discussion is that there exist significant opportunities for corruption in concessioning. Competition law enforcement can play an important role in limiting corruption, first by explicitly prohibiting “hidden concessions” – informal arrangements between government officials and private parties. A second way is for the competition agency to publicly draw attention to manifestly harmful arrangements, and third, the agency can promote the use of an open, fair concessioning process, which by its terms makes corruption more difficult.

Another point that comes through in the discussions is that empirical work is an important component of successful competition advocacy. It is not sufficient for the agency simply to say “competition is good.” It must support its position with empirical information, and some of this might come from experience in other countries, what might be called “economic precedence.” In this regard, organisations like the OECD could act as repositories for information of this type, making it searchable and accessible to individual countries.

Chinese Taipei described a case from that country that involved bidding for the construction of a large construction project, worth more than USD ten billion. There were two bidders. The bid by the more aggressive one did not require any capital investment by the government, and included an offer to pay a royalty fee if it were selected. The more conservative bidder specified that the government would have to invest at least USD 300 million. Predictably the bid was awarded to the first bidder, but then the project soon encountered delays, cost overruns and requests by the contractor to renegotiate. In this situation the government was effectively a hostage to the contractor, because termination of the contract would have been very difficult and expensive. The lesson from this experience was that the design stage of a concession is highly important, and if the competition agency is permitted to participate at this stage it should. Unfortunately, in this example the contract was considered to be simply one for procurement or construction, and the CFTC could not participate.

The European Commission noted that most of the issues raised in this roundtable are more appropriate for Member States rather than for the EU as such. Still, the Commission has promulgated some general standards for public procurement. Recently it adopted a new directive on public procurement, which imposes EU-wide competitive tendering for public works contracts above a certain value, and which may be extended to service contracts as well. The EC delegate noted that the discussions had included references to public transportation by rail and road, and recently it adopted a proposal for a directive in that area. The directive would impose transparency requirements in such contracts. Other subjects of inquiry for the Commission are standards for compensation of concessionaires for public service contracts, measuring and reporting costs and imposing certain publication requirements.

The Chair noted that Professor Allen Fels from Australia was present, and invited him to speak on the subject.

Mr. Fels stated that the sharing of experiences across countries, as in this Forum, can be quite valuable. He noted generally that in the public-private contracting arena the government often comes out second best. There may be several reasons for this. The private party is more focused on profits, while governments have much more diverse goals, including enhancing revenue, quality of service, universal service, and so on. The private party will probably have more technical expertise than the government in the relevant sector, and the government may generally lack important commercial know-how. The challenge for the public sector in this situation is to import specialised knowledge when it is required. This includes the expertise of the competition agency in competition policy and economics, as well as technical expertise, which might be supplied by consultants. Finally, he noted that most concessions today are in infrastructure industries, but in the future there may be more such arrangements in services, such as health care and education, where the issues are even more complex.

A representative of the World Bank addressed the topic of the role of the competition agency in the concession process. He proposed that the agency consider this issue through three filters: (1) prices, i.e. tariffs, and the means for compensating the concessionaire for providing universal service; (2) output, which includes timing and quality issues; and (3) entry, which includes the number and qualifications of bidders. He advised that the competition agency should concentrate on these issues rather than more technical ones, such as identifying the best bid or possible renegotiation scenarios.

Within the World Bank, privatisation is not always considered the best alternative to concessioning or public provision. Ownership is less important than ensuring that there will be competition in the market. This points up the importance of the competition law and the competition agency. There should be no exemptions from the competition law for specific sectors or transactions, and the competition agency should participate to the extent that it can pre-award, and vigorously enforce the competition law post-award.

The Chair again brought up the Jamaican experience, in which contracts for long duration were granted before liberalisation of certain sectors, and this led to confusion about whether liberalisation had the effect of voiding these contracts, or parts of them. Some of these issues have not yet been sorted out.

7. Conclusion

She then stated that the roundtable would close with final remarks from the two leading discussants.

Alberto Heimler returned to the subject of renegotiation. Often a threat to reopen a tender if renegotiation is demanded is not credible, if the product or service is essential and the public authority cannot quickly provide an alternative. Mr. Heimler cited a case in solid waste removal from the U.S., which offered one solution to the problem. There, the municipality awarded concessions to four parties to provide the service in specific sectors of the city, and in a fifth sector it continued to provide the service itself. One purpose of this arrangement, of course, was to provide “yardstick” competition, but a second was to make it possible for the city to quickly offer service if a concessionaire defaulted or demanded renegotiation.

In general, the discussion has pointed up the number and complexity of issues that can arise in the concession process. It is important to deal with them as much as possible *ex ante*, but this is difficult.

Baris Ekdi also addressed renegotiation. He agreed with the Danish delegate that there are means of minimising the problem and that threatening to re-open the auction is one, but he reiterated that renegotiation offers a means for opportunistic behaviour. Second, the goal of efficiency results in a preference for private monopolies over public ones. In this context, ownership does matter, but the challenge is to ensure that the efficiency gains are transferred to the consumer. This points up the important role of the competition agency.

The Chair thanked the delegates for their participation in this useful and informative roundtable discussion. In conclusion, she read from the submissions of Indonesia and Mexico, and adopted these recommendations as her own. From Indonesia:

Concessions should be granted through transparent, competitive and accountable process and should be kept away from collusive process. Concession agreements must be made specific and clear, using measured indicators, so that the reward and punishment measures can be performed properly. Concession planning and implementation must minimise the potential misuse of dominant positions, anticompetitive behaviour, especially by concession holding companies. And it is required that [there be] co-operation and co-ordination between business competition authorities and sector regulatory bodies in order to guarantee the achievement of concession granting purposes technically and economically, and to maintain fair business competition climate.

And from Mexico:

. . . [I]t is essential to consider competition issues in designing the specific concession scheme to be adopted in each case, in order to prevent anticompetitive conditions and guarantee access to essential facilities. In addition, effective enforcement of the competition law is also needed to guarantee *ex post* the efficient functioning of markets related to concessions.

CONCESSIONS

4. COUNTRY CONTRIBUTIONS

Further information from the following jurisdictions on Concessions is available at: <http://www.oecd.org/competition> under the topic "Best Practice Roundtables".

Country contributions

Brazil	Romania
Czech Republic	Russian Federation
France	Tunisia
Indonesia	Turkey
Mexico	United States
Netherlands	

COMPETITION IN BIDDING MARKETS

The OECD Competition Committee debated competition in bidding markets in October 2006. Competition authorities become interested in auctions by a number of routes. In competition advocacy, they may advise other parts of government on how to design auctions in order to improve their efficiency—the degree of competition. They may evaluate mergers and agreements between firms that operate in auction markets. And they may be concerned with collusion and abuse of a dominant position in auctions.

Because their formal rules reduce “noise” and make communication among rivals easier, auctions can promote collusion, compared with ordinary “posted-price” markets. But an auction can be designed to reduce collusion or concerted practices or to promote participation. Thus, the design of an auction can be the object of lobbying pressure. Auctioneers can also behave strategically, choosing auction formats or practices that favour competition.

Two fundamental prescriptions for effective auction design follow from the theoretical literature: Induce bidders to truthfully reveal their valuations by making what they pay not depend entirely on what they bid, and maximize the information available to each participant before he bids.

COMPETITION IN BIDDING MARKETS

1. SYNTHESIS BY THE SECRETARIAT

SYNTHESIS

by the Secretariat

Considering the discussion at the roundtable, the delegates' submissions and the background paper, several key points emerge:

1. Merger analysis in bidding markets

(1) *The term “bidding market” does not contribute to understanding competition in a market.*

Definitions of “bidding markets” typically include the following concepts:

- “Winner takes all,” so each supplier either wins all or none of the order. There is therefore no smooth trade-off between the price offered and the quantity sold.
- “Lumpy competition,” that is, each contest is large relative to a supplier's total sales in a period.
- “Every contest is a new contest”. In other words, there is no “lock-in in” by which the outcome of one contest importantly determines another.
- Sometimes, “entry of new suppliers into the market is easy.”
- Involves a bidding process.

Markets having the first three characteristics experience Bertrand price-setting competition, where indeed “two is enough” to ensure a competitive outcome. Markets having the first four characteristics are like contestable markets, where one supplier—and many potential suppliers—is enough to ensure a competitive outcome. The use, or not, of a bidding process is irrelevant. A market that involves a bidding process does not necessarily have any of the other four features. Therefore, one cannot assume that markets where bidding processes are used will have the characteristics implied by Bertrand competition or a contestable market. That is, one cannot assume that bidders have no market power or that any market power can be easily eroded.

(2) *Merger analysis is not significantly changed by the existence of a bidding process. Markets where bidding processes are used are subject to similar economic forces as those in other markets. As in any merger analysis, it is important to understand the competitive constraints to which the merging parties are subject and to ground the choice of economic model in an analysis of the factual circumstances.*

Most of the instruments competition authorities use in merger analysis are robust and seem to provide good results in markets with bidding processes.

Existing market shares are not always informative about competition in the future, whether in markets with bidding or markets without bidding. It can be useful to separate the concepts of competition *ex ante* and market share *ex post*, and note that the *ex post* market share does not necessarily reflect the intensity of competition in the market during the bidding process.

The key is to identify likely credible bidders in future bidding opportunities. This is equivalent to the standard analysis of existing and potential competition. Likely potential bidders are identified and their likely entry barriers are assessed. It is not necessarily the case that each potential bidder is an equally likely future winner of a bidding competition.

Where there are incumbency advantages, so having sold to a particular customer in the past makes it substantially more likely to sell to him in the future, then a larger existing market share indicates market power in the normal way.

Market definition by use of the SSNIP test (“small but significant and non-transitory increase in price” test) can sometimes be difficult in markets characterised by bidding processes for two reasons. First, the price is different potentially for each contract. The same is true in any other market in which prices are set individually for each contract. Second, there is no obvious price on which to add the SSNIP since competition occurs simultaneously rather than through sequential moves. Notwithstanding these difficulties, the notion of substitutability which underlies the SSNIP test can be used in defining the relevant market. Non-price factors can help to identify the extent of substitutability on both the demand and supply side. These may include *inter alia* distinct product characteristics and uses, unique production facilities or processes, distinct purchasers, specialisation of sellers and the views of industry participants.

In markets with **differentiated products**, the analysis of the impact of a merger revolves around the closeness of competition between the merging parties that is, on whether the merging parties exert important competitive constraints on each other. There may be an important subset of customers for whom the merging parties’ products are their first and second choices and for whom the merger has a competitive effect. Even if there is only a possibility that the merging parties’ products are first and second choice, the merger has a competitive effect. (The same analysis would hold for undifferentiated products where there are cost differences among competitors, perhaps due to differences in transport costs.)

- (3) *Quantitative techniques can be applied to data that come out of the bidding processes to identify competitive constraints.*

One such technique is **frequency analysis**. One can take all, or a large number, of sales of the relevant product to see how frequently the merging parties face each other. Or one may be able to learn how frequently or for which customers the merging parties were the first and second choices. One may also be able to detect patterns where firms do not bid to supply certain customers, which could prompt further investigation as to whether they are unable to supply. Other techniques for assessing the closeness of two differentiated products remain relevant, whether that is assessment of product characteristics, the use of surveys or other instruments to gauge the opinions of customers or, in some occasions, “natural experiments,” i.e., what happens if one product suddenly disappears from the market for temporary reasons. Even if the merging parties offer close substitutes, if a third party always participates in each bidding competition and offers a close substitute, then this would indicate a likely limited competitive effect of the merger.

Another such technique is **reduced form estimation**. This means, for example, to estimate the relationship between the prices (or discount) that are bid and the number of bidders, the identity of bidders and the characteristics of the buyer or product. A possible data problem is that one may not know how many bidders there are, since in an ascending or open auction some bidders may drop out before they actively submit a bid. Another possible data problem is that there may be unobservable factors that cause changes in price rather than, or in addition to, changes in factors like the number of bidders. For example, there may be characteristics that affect the desirability of winning an auction. While this technique assumes that firms are behaving non-cooperatively, the possible presence of collusion presents a lesser problem for this technique than for structural modelling of competitive effects, like merger simulation. A slightly more subtle issue is “repositioning:” If suppliers offer differentiated products, then the post-merger entity may choose to reposition and offer products with different characteristics from those that were offered pre-merger. This would be a change in competition due to the merger in addition to raising price.

The analysis of an auction can be affected by what the bidders observe during the bidding—do they know the identity of their rivals or what they are offering, and when do they learn that? It can be difficult to learn who knew what when. One example where differences of view about what bidders observe during the bidding had an effect on the choice of economic model, and thus on the merger analysis, was the merger between Oracle and Peoplesoft. In that merger, some analysts found that the bidders knew the identity of their rivals and could submit additional bids to undercut their rivals, but other analysts found that the bidders did not have good information about their rivals to enable them to submit undercutting bids. The first set of analysts modelled the market as open or ascending auctions and the second set as sealed-bid auctions. The different models yielded different predictions of the competitive effect of the merger. It should be noted that various analytical techniques unrelated to bidding were applied to evaluate the merger.

- (4) *Mergers in markets with so-called “common value auctions” increase competition only in special, implausible circumstances.* In a “common value auction,” bidders do not know the value of what they are bidding for. The basic idea is that, by combining the information different bidders have, this gives them greater confidence in estimating the value and therefore they will bid more aggressively. But competition is increased only in special cases which are not very plausible; in general we would expect such a merger to reduce competition for the usual kinds of reasons.
- (5) *Bid-takers may be unable to protect themselves from the anticompetitive effect of a merger by changing the auction rules in their favour.* They may not be able to choose an auction form. They are subject to constraints of various types.
 - There are legal constraints. E.g., state aid rules prohibit discrimination in a straightforward way between bidders in the European Union.
 - There may be political constraints.
 - There are organisational constraints. Principal-agent problems may mean that the designer of a bidding process today may design the bidding in a way that is ideal in terms of the short-run effects but may overlook lock-in effects that leave the institution in a very weak position in the future.

- It may be impossible, for political or organisational reasons, to commit to a particular design. There may be lobbying pressure. Or it may be impossible for the bid taker to commit to its own future behaviour, e.g., in not allowing further bids after the bidding process is supposed to end.

Given these constraints, it cannot be assumed that bid-takers can counter anticompetitive mergers with changes in the design of auctions.

2. The design of auctions and tenders

Choices about auction design can affect how susceptible an auction is to collusion or concerted practices, or how widespread is participation in the auction. Thus, the design of an auction can be the object of lobbying pressure. Auctioneers can also behave strategically, choosing auction formats or practices that favour competition. Other considerations include how costly it is for bidders to take part, how large is the threat of collusion between bid-taker and bidders, and how costly and how much time it takes to run the auction.

- (6) *In designing a bidding process, the competition concerns are the same as for any other market process: entry, coordinated effects, abuse of dominance, and so on.* The analysis of bidding process involves standard economic analysis. But there is no checklist since each situation is different. One must go into the details of the specific situation and bidding process.

The European UMTS auctions are examples where different situations led to different “right answers.” When it was thought that only four licenses would be awarded in the United Kingdom’s auction, the designers, recognizing that there were only four incumbents, proposed a design that had special features to encourage entry, the so-called “Anglo-Dutch design.” Subsequently the technology changed and five licences could be allocated. This guaranteed that an entrant would win, so it guaranteed that entrants would participate in the bidding. Not having to be as concerned about encouraging entry, the designers proposed a standard ascending design that would have greater efficiency. Later, in the Netherlands auction, there were exactly the same number of licenses and incumbents but the entry-detering ascending design was chosen, and this yielded poor results. Yet later, Denmark held an auction with the same number of licenses and incumbents but chose a sealed-bid design. This yielded good results: They were successful in getting entry where otherwise they may not have had it. These were examples of different choices in different circumstances.

Just as in non-bidding situations, **more entry improves competition**. Thus, rule changes to attract more entrants are generally beneficial. Entry could be subsidized, e.g., by paying for proposals in an architectural competition. Or entry can be promoted by providing bidding credits or low-cost financing, or making resale easier. Reducing the cost of bidding, such as providing centralised information about future bidding opportunities, can promote entry. Entry can be promoted by providing information, for example about the costs and risks of performing the contract up for bid, either public information or in the form of scoping contracts to potential bidders in a later competition. In addition, less restrictive tender specifications or pre-selection criteria can enable more bidders to participate in the competitions. Generally, sealed-bid auctions favour entry more than do ascending auctions, all else being equal.

Coordinated effects can be reduced by rule changes.

- Division may be made harder by infrequent repetition, different sizes of auctions, and not announcing a series of auctions in advance.
- Monitoring adherence to coordination can be made more difficult by having multidimensional criteria, thus making it harder to predict exactly how the winner will be chosen. However, decreasing transparency can facilitate corruption or collusion between the bid taker and some bidders. Hence, the advisability of decreasing transparency will depend on the setting.
- Signals and threats may be possible if the auction rules give bidders a language in their bids. In one auction, bidders used insignificant digits in the bid amount to communicate. Changing the rules can eliminate this language.
- Auction theory suggests that sealed bids are less open to collusion than ascending bids, since deviation from coordination is harder to detect and cannot be punished immediately.
- Disclosing the identities of losing bidders helps bidders monitor possible collusion but makes it easier to monitor possible corruption between bid-takers and bidders. Retaining auction data may help in any later bid-rigging prosecution. If so, knowing the data has been retained may help to discourage bid-rigging.
- Imposing a high but credible reserve price, that is, the price above (below) which no sales (purchases) will occur, reduces returns to collusion.
- Procurement procedures can inadvertently make coordination easier. For example, a bid-taker announcing a reference price can provide a price on which rivals can base their coordination. Or requiring split awards reduces rivals' incentives to bid aggressively, as they will still get a partial contract even if their bids are high.

Auction design can **affect competition in other markets**. For example, the auctions for telecommunications 3G (third generation mobile) licenses determined how many competitors there would be in the UMTS markets. Another example is recontracting, where the auction today affects the auction that will occur at the end of the license period.

Collusion between procurement officers and bidders is easier in a sealed bid auction than in an ascending auction. Such collusion is the target of many authorities' actions, not via auction design changes but through punishment and deterrence. For example, a Japanese law is aimed at procurement officials orchestrating bid-rigging. But the law, effective 2003, has been applied in only three cases to date. In Indonesia, the competition and anti-corruption authorities work together in cases involving collusion among bidders and procurement officials. In Korea, centralised public procurement is conducted electronically, reducing the contact between bidders and procurement officials in order to make collusion more difficult. In Turkey, firms found guilty of collusion in the provision of milk to schools defended themselves by pointing to orchestration of the allocation of tenders by the relevant ministry.

COMPETITION IN BIDDING MARKETS

2. BACKGROUND NOTE

BACKGROUND NOTE

*by Sally Van Siclen**

Introduction

Competition authorities become interested in auctions by a number of routes. In competition advocacy, they may advise other parts of government on how to design auctions in order to improve their efficiency—the degree of competition. They may evaluate mergers and agreements between firms that operate in auction markets. And they may be concerned with collusion and abuse of a dominant position in auctions.

Because their formal rules reduce “noise” and make communication among rivals easier, auctions can promote collusion, compared with ordinary “posted-price” markets. But an auction can be designed to reduce collusion or concerted practices or to promote participation. Thus, the design of an auction can be the object of lobbying pressure. Auctioneers can also behave strategically, choosing auction formats or practices that favour competition.

Two fundamental prescriptions for effective auction design follow from the theoretical literature: Induce bidders to truthfully reveal their valuations by making what they pay not depend entirely on what they bid, and maximize the information available to each participant before he bids. Among the other recommendations that flow from the literature are:

- Where collusion is a significant threat, use sealed-bid rather than ascending bid (or “open”) auctions. Where the information about the true value of the object being auctioned is dispersed among the bidders and there is significant uncertainty, then consider using an ascending auction.
- Impose a high but credible reserve price, i.e., a price below which the auction is cancelled.
- Carefully consider the information provided to bidders and the public, including non-disclosure of the identities of losing bidders and retention of auction data for use in any possible later bid rigging prosecution.
- Consider bundling smaller auctions and refraining from announcing a future schedule of auctions.
- Consider means of reducing bid preparation costs.
- Where promoting “weaker bidders” is an important consideration, use sealed-bid rather than open auctions.

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- Consider other means to attract “weaker bidders” to participate in the auction such as set-asides, bidding credits, and splitting objects.

The effects of a merger in “bidding markets” depend on whether the context is “private values” or “common values” In a private values context, a merger among bidders in general leads to less aggressive bidding and lower demand (absent efficiencies), as one would expect from analogy with “ordinary” markets. In a common values context, these reductions in competition might be countered by a reduction in the “winner’s curse” effect. Whether this effect is sufficient to outweigh the other effects is an empirical matter. Methods for distinguishing private values from common values situations are a subject of ongoing research. Finally, although it is indeed sometimes the case that “two is enough”, that possibility is probably of little empirical importance in merger review.

Auction theory is quite technical. It may therefore be reassuring that a prominent auction theorist and practitioner writes:

“My experience in auction consulting teaches that clever new designs are only very occasionally among the main keys to an auction’s success. Much more often, the keys are to keep the costs of bidding low, encourage the right bidders to participate, ensure the integrity of the process, and take care that the winning bidder is someone who will pay or deliver as promised.” (Milgrom 2004, p. xii)

This paper has three parts and three annexes. The first part introduces key terminology and concepts. The second part is about characteristics of auctions that can harm or help competition, notably with respect to bid rigging and concerted practices, and participation. The third part addresses the evaluation of mergers in bidding markets. The first annex provides a basic introduction to auction theory, which underpins the policy discussions and recommendations. Two technical annexes follow.

1. Terminology and Concepts

1.1 *Standard Auction Types*

There are four standard auction types.

- In an *ascending (or “English”) auction*, the price is raised until only one bidder remains, and he wins at the final price.
- In a *descending (or “Dutch”) auction*, the price is lowered until a bidder cries out, and she wins at the final price.
- In a *first-price sealed-bid auction*, each bidder submits one bid without knowing the other bids, the highest bidder wins and pays his bid.
- In a *second-price sealed-bid auction*, each bidder submits one bid without knowing the other bids, the highest bidder wins and pays the amount of the second-highest bid.

Common variations and details include reserve prices and restrictions on bid increments and on bid timing. Further complications are introduced when multiple objects are being sold, either simultaneously or sequentially.

1.2 *Valuations, Private Values and Common Values*

Information is key to understanding auctions. Indeed, effective auction design can be described as trying to induce bidders to truthfully reveal their value for the object and trying to maximise the information available to bidders at the time they bid. What the object being auctioned is worth to the bidder is called the bidder's "valuation" of it. The valuation is not necessarily equal to either the amount that is bid or the amount that needs to be paid.

- Bidders have *private values* if each bidder knows her own value of the object and she would not change her valuation if she learned any of her rivals' values.¹
- In a *common values* context, each bidder would change her belief about the value of the object if she knew her rivals' information.
- *Affiliated values* refers to the intermediate situation between pure private values and pure common values (which could be considered special cases of the general concept of affiliated values).

An example of private values would be nondurable consumer goods, where the consumer knows the value to herself and is not influenced by the value to others since there is no possibility of resale. Even in a private values context, a bidder would like to know her rivals' information for strategic reasons, but knowing that information will not cause her to change her beliefs about the value of the object to her. In a common values context, the value of the object is not necessarily the same for all bidders. In *pure common values*, a special case of common values, each bidder has the same value of the object.

An example of common values would be petroleum tracts, where the main uncertainties are how much petroleum there is, how costly it will be to recover and transport to market, and future price, and these uncertainties are common to all the bidders. Bidders may have different information about these uncertainties, so if they learned a rival's information they would use it to modify their beliefs about these uncertain factors. Another example is if the object will be resold. This is likely a common values context because the bidders are likely to have different information about future market conditions. In common values, the information about the object is dispersed among the bidders.

1.3 *Bidding Strategies and Outcomes*

This section describes the bidding strategies and likely outcomes that game theory analysis deduces for the four standard auctions, assuming no collusion and no barriers to entry or participation.

- In an *ascending auction with private values*, each bidder will stay in the bidding until the price reaches the bidder's value. After the bidder with the second-highest valuation drops out, the only remaining active bidder is the one with the highest valuation, who wins at the price equal to (or perhaps just slightly higher than) the second-highest valuation.
- In a *second-price sealed-bid auction with private values*, each bidder will bid his own valuation. The bidder with the highest value wins and pays the second-highest valuation.
- In a *first-price sealed-bid auction with private values*, bidders must trade off bidding higher, thus increasing the probability of winning, against bidding lower and increasing the value of winning, if he wins. The bidder with the highest bid wins and pays his bid, but he is not necessarily the bidder with the highest valuation. His bid is less than his valuation.
- In the *descending auction with private values*, bidders use the same strategies as in the first-price sealed-bid auction, because they have access to the same information and are making the same trade-offs.

In the common values context bids become informative, and theory becomes less certain. The bids reveal information about the bidders' valuations. That information will cause rivals to change their own valuations. The ambiguity about beliefs and changes in beliefs about rivals' valuations means that it is far more difficult to make general statements about common values auctions. In addition, bidders in a common values context shade their bids to avoid the winner's curse.

These standard auctions are, in a particular technical sense, very similar. The "revenue equivalence theorem" shows that, under certain conditions, each of the standard auction designs (ascending, descending, first-price sealed-bid and second-price sealed bid) will yield the same expected revenue and results in each bidder making the same expected payment as a function of her information about the value of the object. This theorem follows because bidders act differently in the different auction types. For example, they bid lower in the first-price sealed-bid auction than in a second-price sealed-bid auction. But the revenue equivalence theorem does not mean that all types of auction are equal from the point of view of competition policy.

Another source of significant difference among the auction types is that they imply significant differences in bid preparation for the bidders. For the ascending and second-priced sealed-bid auctions with private values, the bidder need "only" discover his own valuation and either stay in the bidding until that level is reached or submit it to the auctioneer. For the other types of auctions, the bidder must also estimate the number of other bidders and the distribution of their valuations.

1.4 Winner's Curse

The winner's curse is a phenomenon of common values auctions. For example, in a sealed bid auction, the winning bidder is the one who had formed the highest estimate of the object's value. A naïve bidder, upon winning, learns from that fact that everyone else estimated the value to be lower, and would thus revise downwards his own estimate of the true value. On average, the naïve winner regrets winning because on average he pays more than the true value. A sophisticated bidder will take this phenomenon into account. He therefore submit a lower bid than his naïve bid. This bid shading is the winner's curse effect. The winner's curse effect is stronger when there are more rivals. That is, as there are more bidders, bidders shade their bids more. If the winner's curse effect is large enough, then the price paid decreases with more bidders. That decrease could outweigh the effect of increasing competition, of stimulating more aggressive bidding to have a chance of winning. The winner's curse effect has important policy implications, about such issues as when should joint bidding be allowed, when should participation in auctions be restricted, and when are mergers anticompetitive. The empirical significance of the winner's curse effect is the subject of debate and research.

1.5 Non-Standard Auctions

Several variations on these standard auction types are important in practice.

- Auctions for multiple objects or multiple units arise frequently. Examples include licenses to use parts of the electromagnetic spectrum for telecommunications and transmission and generation of electricity. Multi-unit or object auctions are more complicated than single unit auctions. Objects may be complements as well as substitutes. Bidders' costs can increase rapidly with the complexity of the auction rules and the relationships among the objects. Efficiency and revenue objectives can involve radical tradeoffs, so policy choices about the objective of the auction make major differences in the design. It is hard to achieve efficient outcomes.

- *Sealed-bid auctions* to sell multiple units can be either *uniform price* or *discriminatory*, also called “pay as bid.” In the first, the winners all pay the same price, which is equal to the highest unsuccessful bid. In the second, each winner pays the amount he bid.
- The *simultaneous ascending auction* (SAA) is also a uniform price auction. SAAs have been used to sell rights to use the electromagnetic spectrum. In the SAA, bidders submit bids on the items, and rounds of bidding continue until the closing conditions are met. The advantage of SAAs over sequential ascending auctions is that bidders can arbitrage among the auctions, shifting their bidding to objects that are relatively cheap.
- *Package* and *contingent auctions* are somewhat different from the multi-unit auctions. In a package auction, a bidder would submit a bid for items A and B separately and a bid (lower than the sum of the individual bids for A and B), for the package of A and B. Contingent bids are a generalisation of package bids: for example, a bid for A and a bid for A if the bidder also wins B. The auctioneer chooses the combination of bids that sums to the highest total.
- *Auctions with re-sale* are followed by an opportunity for the winners to resell the objects. This possibility fundamentally changes the bidding practices. With resale, increasing the number of bidders can increase bidder valuation and increases the winning bid.

Annex 1 provides examples and a less compact exposition on these topics. The next sections apply these concepts in the context of pro-competitive auction design and merger review in “bidding markets.”

2. Improving Competition in Auctions

The same competition issues that are important in familiar settings are important in an auction setting. These include keeping barriers to participation low, encouraging the “right” bidders to participate, and suppressing collusion and other impediments to efficient transactions. Auction design affects all of these issues. This part focuses first on collusion and then on participation.

2.1 Collusion and Concerted Practices in Auctions

Bid rigging practices have been uncovered in past prosecutions. Details of several successfully prosecuted cartels are provided in Kovacic *et al* 2006. These practices involve both bid suppression and disguising actions to avoid detection.

Auction design can affect the main elements necessary for successful bid rigging or concerted practice. Bid rigging or concerted practices in auctions can be impeded by direct methods—interfering with communication for reaching a consensus or with enforcement of the agreement—or by indirect methods—making prosecution easier and thereby strengthening deterrence. Methods applied in ordinary markets, such as the one-two punch of significant penalties for collusion and leniency programmes for informants, remain vital, but the focus here is on auction-specific methods.

In sealed-bid auctions, bidding rings must meet before the auction to determine who places the highest value on the object, what he should bid, and then what the others should bid. These “complementary” or “cover” or “courtesy” bids may be “competitive” on price but contain clauses unacceptable to the auctioneer. According to the United States Department of Justice, “Complementary bidding schemes are the most frequently occurring forms of bid rigging and they defraud purchasers by creating the appearance of competition to conceal secretly inflated prices.” (Antitrust Division US DOJ 2005)

Box 1. Detecting Bid Rigging: Advice to Auctioneers

Indicators of bid rigging are contained in a pamphlet from the Antitrust Division aimed at auctioneers. Among the indicators of bid rigging are:

Bids

- The same company always wins a particular procurement. This may be more suspicious if one or more companies continually submit unsuccessful bids.
- The same suppliers submit bids and each company seems to take a turn being the successful bidder.
- Some bids are much higher than published price lists, previous bids by the same firms, or engineering cost estimates.
- Fewer than the normal number of competitors submit bids.
- A company appears to be bidding substantially higher on some bids than on other bids, with no apparent cost differences to account for the disparity.
- Bid prices drop whenever a new or infrequent bidder submits a bid.
- A successful bidder subcontracts work to competitors that submitted unsuccessful bids on the same project.
- A company withdraws its successful bid and subsequently is subcontracted work by the new winning contractor.

Prices

Identical prices may indicate a price-fixing conspiracy, especially when:

- Prices stay identical [over different auctions for similar products] for long periods of time.
- Prices previously were different.
- Price increases [over different auctions for similar products] do not appear to be supported by increased costs.
- Discounts are eliminated, especially in a market where discounts historically were given.
- Vendors are charging higher prices to local customers than to distant customers. This may indicate local prices are fixed.

Suspicious Behaviour

- The proposals or bid forms submitted by different vendors contain irregularities (such as identical calculations or spelling errors) or similar handwriting, typeface, or stationery. This may indicate that the designated low bidder may have prepared some or all of the losing vendor's bid.
- Bid or price documents contain white-outs or other physical alterations indicating last-minute price changes.
- A company requests a bid package for itself and a competitor or submits both its and another's bids.
- A company submits a bid when it is incapable of successfully performing the contract (likely a complementary bid).
- A company brings multiple bids to a bid opening and submits its bid only after determining (or trying to determine) who else is bidding.

In ascending auctions, the corresponding practice is to meet in advance, designate who will win, and instruct the others either to refrain from bidding or, in order to disguise the bid rigging, submit low bids and then drop out.

Bid suppression schemes may be complemented with a system for payments to compensate members. Alternatively, the complementary system could involve knock-out auctions, that is, private auctions in which the cartel member with the highest value “wins” the object (becomes the cartel’s designated winner) and compensates the other members. If side payments, knockout auctions or pre-

auction meetings are infeasible, a bidding ring could operate a bid rotation scheme, where each member is the designated winner at certain auctions.

Ascending auctions, in contrast to sealed-bid auctions, also allow ring members to communicate and reach an understanding during the course of the auction. The clarity of bidding rules makes communication easier than in ordinary markets. If ring members are unwilling to run the risk of communicating directly, interrupting bidder signalling makes some bid-rigging more difficult to achieve.

The use of auction theory and auction data to detect collusion is a topic of possible future interest to practitioners. The theory is not yet sufficiently developed to provide a reliable basis for use. (ABA 2005 and Bajari and Summers 2002)

2.1.1 Signalling

Bidding rules tightly constrain rivals' conduct as compared with ordinary markets. In ordinary markets, firms can vary quantities, prices, varieties and the like. In auctions, by contrast, the only communications are prices (if the object is defined) or price-quantity pairs (e.g., in some multi-unit auctions). With less "noise," auctions can allow clear communication via bids. This is a key distinction between bidding and ordinary markets.

Signalling allows bidders to announce what they wish to win, to threaten retaliation if thwarted, and thereby to reach an understanding of who will win what. Signalling can be done in media such as newspapers in both auction and ordinary markets,² but in auctions bidders can also use the bidding process to signal.

An example of signalling during the bidding process is the DEF telecommunications license auctions in the United States in 1994. These were simultaneous ascending auctions, so communication was analogous to negotiation among the bidders. The signalling was done by encoding into the last digits of a bid amount the name of other licenses in which either the bidder or the standing high bidder was interested in winning. The signals could be used to indicate which licenses others should quit competing for, or on which licenses retaliation would occur, or, if the bid was made and then withdrawn, proposing an amicable split.³

This signalling had an effect. Six of the 153 bidders in the auction regularly signalled. These six won about 40% of the available spectrum in terms of population covered. For the licenses where any bidder could bid, the signalling bidders paid \$2.50/person compared to the \$4.34/person paid by the nonsignalling bidders. Even for the licenses set aside for small bidders, signalling bidders paid significantly less than the nonsignalling bidders. (Cramton and Schwartz 2002) The Antitrust Division brought suit against the colluders.

The auctioneer, the Federal Communications Commission, subsequently changed the auction design to block the signalling. In particular, it specified the bid increment(s) and limited withdrawals to two rounds per bidder.

2.1.2 Bidder Identities

Bid rigging or concerted practices may be interrupted if the auctioneer does not reveal the bidders' identities. If bidders know other bidders' identities, then they can retaliate against cheaters and cooperate better across auctions. Further, bidders can intimidate others. One study found that small bidders avoided bidding against large bidders in the DEF auctions mentioned above, and posited

that they did so to avoid retaliation. If small bidders avoid large bidders, then it makes any agreement among large bidders easier to reach and more effective. (Cramton and Schwartz 2000)

But the auctioneer might also want to reveal bidders' identities in some circumstances. For example, revealing identities might help each bidder to extract useful value information from others' bids. In the DEF auctions, the auctioneer explicitly chose not to suppress bidder identities so that other bidders would be able to evaluate the meaning of other's bids, reduce the winner's curse, and "generally assist[...] sensible bidding." (McAfee and McMillan 1996, p. 170) Also, it was thought that the auction would raise higher revenues since it was thought that bidders' valuation of a license would depend on the identities of the other likely winners in the same geographic area. (Cramton and Schwartz 2000)

2.1.3 *Other Auctioneer Actions*

Auctioneers may increase reserve prices to reduce collusion. A high reserve price reduces the gains from collusion by increasing the lowest collusive price. In addition, higher reserve prices can reduce the number of rounds in an ascending auction, thereby reducing the opportunity for signalling. Reserve prices may also reduce incentives for demand reduction in sealed-bid uniform price auctions.⁴ On the other hand, higher reserve prices increase the risk that an insufficient number of bidders participate. Also, reserve prices need to be credible to be effective. A reserve price at the opportunity cost (such as the cost of self-provision or extending an existing contract or adapting a substitute) would be credible.

Auctioneers may change the size and timing of auctions to encourage bidding ring break-up through cheating. More predictable auctions schedules and unchanging quantities sold or bought can facilitate bid rotation schemes by helping the bidder riggers find a focal point, a "natural" way to share winning. Lower value and more frequent auctions reduce the incentives to cheat on a cartel.

Information provided by the auctioneer may help bidding rings to monitor compliance. Reducing the information provided, such as the identity and value of losing bids, can increase the difficulty of monitoring. On the other hand, in the case of public procurement, competitors and the public may use information released by the auctioneer to monitor the auctioneer's conduct. Adequately resolving this dilemma may involve the creation of a separate monitoring body to monitor the auctioneer's conduct while limiting the publicly available bidding information.

"[T]he system of sealed bids, publicly opened with full identification of each bidder's price and specifications, is the ideal instrument for the detection of price cutting...collusion will always be more effective against buyers who report correctly and fully the prices tendered them." (Stigler 1964, p. 48 quoted in McAfee and McMillan 1987, p. 724)

Also, retaining—but not publicising—the bid information for use in a possible future prosecution, and making that fact known to bidders beforehand, may help to deter bidding rings.

Separately, as mentioned elsewhere, the auctioneer can provide information about the value of the object to be auctioned. This can reduce bidders' incentives to collude by reducing their informational rents (let the auctioneer get a better price) in common values contexts.⁵

Box 2. Design Trade-Offs between Collusion and the Winner's Curse Effect

The allocation by auction of the right to enter a given volume of gas into the National Transmission System (NTS) in Britain illustrates the tradeoffs made in actual auction design. The auction system replaced earlier methods of negotiation and grandfathering access under regulated tariffs. Natural gas from under the North Sea is landed in Britain at six major and a number of smaller terminals and sites. Landed gas can either be sold to traders or enter the transmission system. The value of the entry rights is the expected difference between the spot price on the beach and the price at which the gas is traded at the National Balancing Point. Entry capacity for each terminal for each month is auctioned twice each year. There are also daily auctions of firm and interruptible capacity. Since 2003 there are long term capacity auctions as well.

The auction design is simultaneous sealed-bid, multiple-round. It is simultaneous in that all the terminals for all six months are auctioned at the same time. It is multiple-round in that the capacity⁶ of each terminal is divided into quarters and each quarter is sold on successive business days. (There is also a fifth round for any unsold capacity.) The reserve price for each terminal is based on an estimate of long run marginal cost; it is equal to long run marginal cost where there is only one bidder and discounted where there are more bidders. Bids specify the bidder's identity, terminal, month, minimum volume and price. Each bidder can submit up to 20 bids per terminal per month per bidding round. The idea is that the bidders bid a demand schedule with several steps. The auctioneer ranks bids, ignoring the terminal specified, from high to low. Bids with the same bid price are ranked by bid volume. Then capacity is allocated following the descending bid prices. Between each round, bidders are informed about their winning volumes, the highest/lowest bid price of capacity that was allocated and the weighted average price of accepted bids.

...
The auction was designed to trade-off possible collusion with the winner's curse effect. Low bids due to the winner's curse effect could be expected because bidders' valuations have common sources of uncertainty—future gas prices. Sharing information between rounds is designed to improve bidders' information about others' valuations in subsequent rounds so as to reduce the size of the winner's curse effect. On the other hand, the multiple rounds allows possible colluders to immediately punish cheaters on a cartel (the provision of information between rounds can help in detection of cheating) and the repeated auctions with about the same participants makes possible rather sophisticated collusion. In the event, only at the one capacity constrained terminal do winning bids exceed the reserve price by more than 25 %, and often they exceed the reserve price by less than 15 %. (McDaniel and Neuhoﬀ 2002).

2.1.4 Joint Bidding

Joint bidding may not, strictly, belong in a section on collusion, as joint bidding is usually open and collusion usually hidden. However, it does provide the pro-competitive arguments for cooperation among competitors. In general, joint bidding has negative effects on competition in a private values context but can, in theory, have positive effects in a common value context.

Joint bidding may have a number of effects. First, joint bidding reduces the number of bids and therefore reduces competition. For years this was the main argument against joint bidding. But early empirical studies claimed that joint bidding did not, in fact, reduce the number of bids. Indeed, joint bidding was seen as a way to diversify risk, weaken liquidity or capital constraints, and allow the sharing of private information.⁷ If bidders share private information about an object of unknown but common value (i.e., a pure common values context), then their estimates are more accurate, the winner's curse effect is diminished and they will bid more aggressively. The influential paper by DeBrock and Smith in 1983 focused on auctions for petroleum leases, for which pure common values and information pooling were reasonable assumptions.⁸ But they also noted that joint bidding could be carried so far that the reduction of competition effect would dominate. In other words, this work found that, in a pure common values context, joint bidding—up to point—can have positive effects on the auctioneer's revenues.⁹

Only in specific models is there an analytic answer to whether the winner's curse or the reduction in competition effect is larger.¹⁰ These results rely critically on specific assumptions, and small changes in the assumptions can make it impossible to identify the equilibrium analytically. Klemperer cites several simple examples that suggest that net effect of joint bidding is always anticompetitive. (Klemperer 2005, pp. 19-21)

Various empirical estimates of the size of the winner's curse effect in specific situations have been published. In one study of highway and bridge procurement auctions quoted by NERA the winning bid was 15% higher (i.e., worse for the auctioneer) when the number of bidders increased from three to six. (NERA 2005 citing Hong and Shum 2002)¹¹

Other recent theoretical work focused on joint bidding in a uniform price auction with multi-unit demand (Levin 2004). Pure common values were assumed. With multi-unit rather than single-unit demand, a new strategy is available, that of reducing the quantity demanded. In other words, the jointly bidding group can gain by lowering their bids on second and subsequent units. While this increases their probability of not winning those units, this strategy has the benefit of lowering the price they pay for the first unit. (The rules of the uniform price auction mean that all units are sold at the same price, itself determined by the marginal unit.) In addition, Levin shows that, under certain conditions, the information effect is absent in the multi-unit case. In other words, "the pro-competitive benefit from joint bidding in single-unit auctions does not generalise to a multi-unit environment. With [demand reduction], the scope for improved competition [from joint bidding] is further eroded." (Levin 2004) In other words, joint bidding reduces the aggressiveness of bidding in these cases.

Thus, there are three effects from joint bidding: an information effect (from information pooling) promoting more aggressive bidding, a reduced competition effect (from fewer bidders) promoting less aggressive bidding, and, in multi-unit auctions, the demand-reduction effect, also promoting less aggressive bidding. While the reduced-competition and demand-reduction effects are present in a private-values context, the information pooling effect is absent, so joint bidding always leads to less aggressive bidding. But in a common values context, whether joint bidding is less aggressive than individual bidding is largely an empirical matter.¹²

Finally, it is worth noting that joint bidding arranged close to the auction date does not allow potential participants time to respond and compete against the cooperating bidders in multi-unit auctions with single unit demand (like telecommunications license auctions). This problem arises when the joint bidders are relatively advantaged so the potential participants chose not to incur bid preparation costs, but would have done so if they had known the advantaged bidders would bid jointly. As well, the auction design may be predicated on a certain number of likely bidders. This problem can be addressed by prohibiting joint bidding arrangements announced just before the auction.

2.1.5 *Ascending versus Sealed-Bid*

Ascending auctions are seen as being more susceptible to collusion than (first-price) sealed-bid auctions because cartel members can more easily cheat in sealed-bid auctions.¹³ The intuition is as follows.

- In an *ascending bid auction*, assume that the bidding ring members agree not to bid against other members. With private values, the collusive gain comes from the reduction in the second-highest valuation—which is the price paid by the winner (see the earlier discussion on standard auctions)—due to the other ring members' withdrawal from bidding. (If an outsider has the second highest valuation, then there is no gain from the cartel.) Ring members will not cheat on this agreement: Since none will bid above his own valuation, the

bidder with the highest valuation wins with or without the agreement, the only question is the price. Any potential cheater is simply overbid and knowing that this will happen,¹⁴ does not cheat.

- In a *first price sealed-bid auction*, assume that the bidding ring members agree to make specific bids. The collusive gain comes from the ring member with the highest valuation submitting a lower bid than he would have absent the agreement. There is thus a temptation for another ring member to submit a higher bid—but not higher than he would have submitted absent the agreement—and win the auction, a feat he would not have accomplished in a competitive auction. He might even win while keeping his identity secret and continue as a bidding ring member in good standing.

Sealed-bid auctions are nevertheless not immune to coordination. Repeated interaction can allow the development of signalling, particularly if the auctioneer provides information about past behaviour.

Recent empirical work suggests that the effect on collusion of using an ascending rather than a sealed-bid format can be large. Indeed, for the auctions studied, the effect of switching between the formats on collusion dwarfs the effect on bidder participation¹⁵ even when bidders are asymmetric. (Athey, Levin and Seira 2004)¹⁶

Also, prosecution of collusion may be easier in a sealed-bid than an ascending auction. A sealed-bid auction leaves a paper trail that identifies all of the bidders and their bids. By contrast, an ascending auction may not formally record all of the bids and, since participants may not have an opportunity to submit their bids before the price becomes too high, there may be no record of who participated. If a cartel depends on non-participation, it would be difficult for prosecutors to identify those who did not participate in an ascending auction. In support of possible later prosecution, “all” aspects of an auction should be retained for a long period of time and, to enhance deterrence, this practice should be publicly announced. (Kovacic *et al* 2006)

2.1.6 Other Design Considerations

Uniform-price multi-unit sealed-bid auctions make possible another bidding strategy which, if all bidders use it, supports a non-competitive price. Consider markets where bidders bid a demand function (that is, they bid a series of quantities and the prices they would pay for those quantities) and the price paid by all bidders is determined by the lowest winning bid. These demand functions can be shaped so as to automatically punish any deviation from a collusive agreement.¹⁷ (Klemperer 2004, p. 105)

2.2 Participation

Promoting participation is the second major tool for promoting competition in auctions. As in ordinary markets, auction participants vary in their competitive effects but, surprisingly, weaker bidders can have a significant positive effect on auction outcomes. Participation can be promoted by switching from an ascending to a sealed-bid format, by reducing bid preparation costs, and by favouring weaker bidders in a variety of ways.

The effect of participation on efficiency depends *inter alia* on whether this is a pure common values context. In pure common values, efficiency does not depend on who wins. In pure common values, the most efficient outcome is for the winner to pay the true value of the object. A sealed-bid

pure common values auction becomes more efficient as the number of bidders increases.¹⁸ (This assumes no effect on collusion or innovation, which may be unrealistic.)

Even beyond the pure common values case, more participation generally leads to more competitive auctions. In private-value auctions and in many common value auctions, an ascending auction with no reserve price and $N+1$ symmetric bidders is more profitable than “any auction that can realistically be run” with N bidders. “So it is typically worthwhile for a seller to devote more resources to expanding the market than to collecting the information and performing the calculations required to figure out the best mechanism.” (Klemperer p 27, citing result from Bulow and Klemperer 1996)¹⁹

More bidders can be attracted to an auction by reducing bid preparation costs. This can be accomplished by standardising auction procedures, including across time and jurisdictions. For some but not all aspects of auctions, this may involve a certain trade-off with designing auctions specific to their circumstances. Packaging auctions to spread fixed bid preparation costs across more auctions or splitting objects into several smaller parts may attract more bidders. However, where complements need to work together, splitting up objects may mean that only the first auction is competitive; the incumbent is too advantaged for others to be attracted in subsequent auctions.

As noted by Milgrom:

“[I]n real auctions, bidders frequently refuse to participate if the proposed mechanism seems strange or unfair. ...Precedent and familiarity often limit the set of practically feasible designs.” (Milgrom 2004, p. 166)

Often, promoting participation is aimed at encouraging weaker bidders—i.e., those less likely to win the auction—to participate actively. Generally, sealed-bid auctions are better than ascending auctions in promoting participation. The intuition is that in an ascending auction, only the strongest bidders—those with the highest valuations—will remain near the end of the bidding. The weaker bidders know this and reason that, if they are going to drop out of the bidding late, they are better off not bidding at all and saving the bid preparation cost. Surprisingly, this effect holds even when the difference between the “weak” and the “strong” is small. By contrast, with a sealed-bid auction, weaker bidders may win at a price that the stronger bidder could have beaten, but did not. In a sealed-bid auction, the stronger bidder cannot change his bid once he sees the weaker bidders’ bids, as he can do in an open auction.

Box 3. The Participation Effect of Ascending versus Sealed-Bid in 3G Telecommunications Auctions

The Netherlands, with five incumbent mobile-phone operators, sold five 3G licenses by ascending auction. Bidders could win at most one license each. “Recognizing their weak positions, the strongest potential new entrants made deals with incumbents, and Netherlands competition policy was as dysfunctional as its auction design, allowing firms such as Deutsche Telekom, DoCoMo, and Hutchinson, who were all strong established players in other markets than the Netherlands, to partner with the local incumbents.” In the end, only one potential entrant bid and it withdrew after receiving a threatening letter from an incumbent. The five incumbents won the five licenses, paying about 3bn, far below the per capita amount in the United Kingdom.

By contrast, Denmark’s auction was considered to be a success. Denmark had four incumbent mobile-phone operators and sold four 3G licenses by auction. Having watched the earlier 3G auctions, a sealed bid format was used in order to attract weaker bidders, promote new entrants and scare incumbents into bidding high. The government kept secret the number of actual bidders, as well as all bids other than the fourth highest. All winners paid the fourth highest bid, worth about 95 per capita, almost double most expectations. One new entrant was among the winners. (Klemperer pp. 155-6, 163-4)

It may be possible to “strengthen” weaker bidders. One option is *set-asides*, that is, allowing only small enterprises to bid on certain licenses. This was done in the DEF auctions mentioned previously, where some licences could only be won by relatively small bidders. Another method is *bidding credits*, which basically require small enterprises to actually pay only a specified fraction of their winning bids. The analogy is to price discrimination in an ordinary market, which allows a monopolist to sell also to low-value customers. An example of a set-aside, though perhaps aimed more at restricting market power later, would be to prohibit the incumbent from bidding. Another method to promote participation is to *split objects or lots*. Splitting objects can encourage participation, but, if the set of participants is fixed, it may allow bidders to “accommodate” each other and reduce revenues. (Milgrom, pp. 234-239) Some of these options may run afoul of anti-discrimination or anti-State aid rules.

Lock-in occurs when winning one auction provides advantages in another. For example, the winner of a first auction, now the incumbent, may be advantaged in subsequent auctions for the same license. A successful strategy may be to bid below cost in the first auction and earn rents by bidding high, and winning, in subsequent auctions. Rivals will hesitate to bid in an auction against a better informed incumbent. The auctioneer may be able to change the rules to thwart this strategy by favouring participants as mentioned in the previous paragraph.

An example of lock-in and rules changes to counter the effect is the monopoly franchise to run the UK National Lottery. In the first auction, there were eight bidders. The winner had learned-by-having-done and developed a reputation by the time of the second auction. Only one rival showed up to bid against the incumbent. Fears that no rival would show up in 2006 prompted a review by the Department for Culture, Media and Sport and a change in the structure of the franchise. An auction for a single franchise will begin. If, at a certain stage such as after the initial invitation to tender has closed, the National Lottery Commission concludes that “there is no prospect of effective competition,” then it may ask the Government to exercise the option for auctioning additional licenses. (United Kingdom Department of Culture, Media and Sport 2004)

2.3 *Other Considerations*

Some aspects of auctions do not have an analogue in ordinary markets. First, as noted earlier, the auctioneer may be able to change the rules. However, auction rules are often subject to negotiation or lobbying, sometimes in an anti-competitive direction. For example, an incumbent would lobby in the direction of ascending auctions in order to strengthen his advantages.

Second, auctioneers can intensify competition by changing the information available to bidders. If the auctioneer reveals all of his private information about the value of an object, then it is advantageous in two ways in a common values context. First, it reduces bidders’ rents from their own private information. Second, the additional information makes more precise bidders’ estimates of the value of the object, so they are willing to bid more aggressively.²⁰

Third, differences between almost equal rivals are magnified in an auction format, very unlike in an ordinary market where one might have a somewhat higher market share. One example was described above—an incumbent having informational or cost advantages—but another example involves complements. If one bidder has a slightly higher valuation than other bidders in an auction due to ownership of a complement, this is almost common values. Weaker bidders are discouraged from entering an ascending auction even when their disadvantage is small. If a merger would likely result in a stronger bidder in a subsequent auction, then this likely reduction in competition would yield a negative decision on the merger. This was reportedly part of the reasoning in the BSkyB Manchester United merger decision. (Klemperer 2004, p. 23)

2.4 Conclusions

Auctions are often preferred to posted prices and negotiation because the value of the object is unknown, there is a desire for fairness (to provide an equal opportunity to buy or sell) and to limit price discrimination, and for economic efficiency.

Criteria upon which to judge among auction types include: market power, the cost to run the auction, the cost to bidders of taking part, risks of various types borne by bidders (not winning, not winning enough or the right combination of objects, paying more than necessary), and the time it takes to hold the auction.

Different auction designs can reduce collusion or concerted practices. Different designs may discourage or promote participation. In addition, auctioneers can change the information available to bidders as well as ensure that auction data is available for any possible later use in prosecution.

Important choices in auction design include:

- *How frequently should repeated auctions be held?* More frequent auctions may cost more and allow more collusion, but can better accommodate variations in demand or value. Pre-announcement of a series of auctions can facilitate collusion.
- *How should multiple related items be sold (bought)?* Items can be identical, substitutes to various degrees, or complements to various degrees. Sequential auctions can result in identical items being sold at different prices, which appears to be unfair, and can mean that bidders do not get their desired combination of items, particularly complements, which is inefficient. Simultaneous auctions can result in bidders winning too many or too few substitutes, or not getting the combinations they wish. These problems can be mitigated by multiple bidding rounds. A secondary market after the auction cannot be expected to improve misallocations where there is private information about the objects.
- *Who may bid?* Bidders who cannot perform may win and then default, defeating the purpose of the auction. But excluding too many bidders may inadvertently exclude the bidder with the highest valuation, or allow the exercise of market power by the non-excluded bidders.
- *Do some bidders get special treatment?* Providing incentives to weaker bidders can improve the aggressiveness of stronger bidders. However, this raises issues of fairness and may run afoul of state aid rules.
- *Should auctions be ascending or sealed, i.e., should bidders have multiple opportunities to submit bids?* Collusion is more difficult to sustain in a sealed-bid auction than in an ascending auction because cheating is easier. Participation is likely higher in a sealed-bid auction than an ascending auction because weaker bidders are attracted since they have a chance of winning against stronger bidders, whereas in an ascending auction they do not. In a sealed-bid (single round) auction, bidders save bid preparation costs since they focus their efforts on identifying their valuation of the object rather than also on deciphering rivals' bidding strategies. On the other hand, the bidder with the highest valuation may not win a sealed-bid auction, though this can be mitigated by an appropriate reserve price. An ascending auction may take more time than a sealed-bid auction, but a descending auction may be the quickest format.

- *How should the price move during the auction? An ascending auction to buy an object allows bidders to learn about rivals' valuations, so it is useful when bidders have poor information about others' valuations or are risk averse. But the seller may get more revenue with a descending (Dutch) auction. Large amounts of goods can be sold quickly with Dutch auctions, a feature important with perishable goods.*
- *What information is revealed to bidders? In a common values context, an ascending auction allows bidders to know who else is bidding and their bids, which helps them learn about their rivals' valuations and reduces the winner's curse effect. However, this facilitates collusion because cheating on a collusive agreement is more difficult. The auctioneer can induce more aggressive bidding by revealing all of his information about the value of the object. Iterative sealed-bid rounds between which the auctioneer announces some information about bids can help reduce the winner's curse problem (see the discussion of British North Sea gas capacity auctions). In repeated auctions, providing information about bids can help monitor the auctioneer but also help bidding rings monitor members' conduct.*
- *What price is paid by the winning bidder? A simple conclusion is not feasible on this point, given the number of considerations which come into play. In a single-unit second-price private values auction, bidders bid their true value and the bidder with the highest valuation wins, which is efficient. However, charging that bidder only the second-highest bid after learning her true value can create political problems. Bidders would also be reluctant to bid their true values in repeated auctions. However, if bidders pay their bid (first price) in either a single or multi-unit private values sealed-bid auction, the bidder with the highest valuation may shade her bid too much and not win, which is inefficient. In a multi-unit pay-as-bid market, different prices may be seen as unfair. In a uniform price multi-unit auction, bidders reduce their bids for the above reasons as well as to pay lower prices on infra-marginal units. In sum, a number of considerations mean that a simple recommendation is not feasible.*

These observations give rise to a number of recommendations:

- *Where collusion is a significant threat, use sealed-bid rather than ascending bid auctions.*
- *Impose a high but credible reserve price.*
- *Carefully consider the information provided to bidders and the public.*
- *Consider bundling smaller auctions and refraining from announcing a future schedule of auctions.*

Promoting participation is another major tool for promoting competition in auctions. Like in ordinary markets, reducing participation costs by lowering bid preparation costs can help. Sealed-bid auctions are more likely to attract weaker bidders than are ascending auctions. Other methods can be used to attract weaker bidders. These include set-asides, bidding credits and splitting objects. However, splitting objects may promote more collusive outcomes in an environment where the number of participants is fixed.

The application of economic theory is often subject to policy constraints. But it can be useful to at least hear what a current auction theorist says about auction design:

“The auctions literature has provided us with two fundamental prescriptions guiding effective auction design. First, an auction should be structured so that the price paid by a player—conditional on winning—is as independent as possible of her own bids (William Vickrey, 1961). Ideally, the winner’s price should depend solely on opposing participants’ bids—as in the sealed-bid, second-price auction—so that each participant has full incentive to reveal truthfully her value for the good. Second, an auction should be structured in an open fashion that maximises the information made available to each participant at the time she places her bids (Paul R. Milgrom and Robert J. Weber, 1982a). When bidders’ signals are affiliated and there is a common-value component to valuation, an open ascending-bid format may induce participants to bid more aggressively (on average) than in a sealed-bid format, since participants can infer greater information about their opponents’ signals at the time they place their final bids.” (Ausubel 2004)

3. Aspects of Mergers in Bidding Markets

Competition authorities often evaluate mergers in markets governed by auctions. The fundamental issues are the same as in ordinary markets, but “[a]uction markets also provide an opportunity for implausible defenses.” (Waehrer and Perry 2003) After examining such arguments as “two is enough” this part addresses the competitive effects of mergers in common values contexts and private values contexts, taking advantage of the detailed public records from the reviews of the Oracle/PeopleSoft merger, and finally deals with shares.

3.1 *Ideal Bidding Markets*

It is sometimes asserted that competition authorities should evaluate mergers differently when the markets supplied by the merging parties are “bidding markets.” It is variously asserted that “two is enough for competition,” “market shares don’t matter,” and “buyers can redesign the auction to protect themselves from the exercise of market power.” These assertions are addressed in this part of the paper, largely following Klemperer (2005).

These assertions rely on extreme conditions that are not often met in the real world. The assertions invite analogies to more familiar models of Bertrand competition—where one rival is enough to prevent the exercise of market power—and of perfectly contestable markets—where competitive constraints imposed by potential entrants are sufficient to prevent any exercise of market power. While the conditions for Bertrand competition or perfect contestability are rarely met, the models nevertheless are useful to force an examination of the relevant facts. The same can be said about ideal bidding markets.

In a recent paper directly addressing these assertions, Klemperer 2005 offers four criteria for an “ideal” bidding market:

1. competition is winner-take-all;
2. competition is lumpy, in the sense that each contest is large relative to a supplier’s total sales over a period;
3. previous wins do not affect the likelihood of winning the immediate contest, in particular, there is no “lock-in” by which the incumbent is advantaged; and
4. entry is easy.

Conditions 1 to 3, plus an assumption of identical firms, yield the Bertrand model of competition in which firms compete on the basis of price to sell to a single buyer. With constant marginal cost and

no capacity constraint, the equilibrium is perfectly competitive with just two suppliers. So, “two is enough” when these conditions are met.

The ideal bidding market is reminiscent of the perfectly contestable market. The model of perfectly contestable markets relies for its remarkable predictions on the feasibility of large scale “hit and run” entry. In particular, as Schwartz and Reynolds (1983) noted, an entrant must be able to enter at large scale, incur the same costs as incumbents, and both enter and exit before incumbents can respond with a price cut. The similarity of the two models makes the similarity of the models’ predictions unsurprising.²¹ The relationship among Bertrand, perfectly contestable, and ideal bidding markets, coupled with the result of competition authorities’ long experience in evaluating the suitability of the Bertrand or perfectly contestable market models to particular markets, suggests that the conditions in which two rivals would be enough to yield an efficient outcome would be rare but not impossible.

The more interesting question is whether mergers in non-ideal bidding markets, meeting only some of these criteria, should be treated differently from “ordinary” markets. The second major part of this paper has shown that the ordinary competition concerns from ordinary markets apply also to markets that use auctions. Should the presence of some of these factors nonetheless lead to a different analysis or conclusion about the possibility of coordinated or a unilateral effect of a merger? Note that the use of an auction mechanism can itself be an indicator of characteristics of a market that increase concerns about competition. For example, auctions may be used where there are transaction-level economies of scale because contracts are large and specialised. If the scale economies are caused by substantial sunk costs, then there is a lock-in effect (winning one auction provides advantages in winning another) and subsequent entry is difficult.

3.2 *The Competitive Effects of Mergers in Common Value Contexts*

The effect on competition of mergers among bidders can be slightly different than that of a merger among rivals in ordinary markets. The usual effects of a merger among bidders would be less aggressive bidding, because there are fewer rivals, and reduction in demand because the marginal units set the price²².

In addition, and more importantly, the distinction between private values and common values contexts can affect merger analysis. The possible difference has to do with a merger’s effect on bidders’ information and its impact on the winner’s curse effect. The argument is that, in some cases, having fewer competitors—such as result from a merger—yields better prices for the auctioneer. The idea is simple. In a common values context, the merger pools the information of the merging parties. This information pooling can allow the parties to bid more aggressively because they are less exposed to the winner’s curse. If this effect outweighs the other effects of the merger, then the merger improves the prices paid by the bid-taker or auctioneer.

There are thus two questions that arise in an auction context. Is the merger taking place in a private values context, in which case there is no winner’s curse effect? And if the merger is taking place in a common values context, does the reduction in the winner’s curse effect outweigh the other, anticompetitive effects of the merger? Empirically distinguishing private from common values is often impossible, and one must fall back on examining the market and using intuition. This is discussed below. The second question is also an empirical matter to which there is no general answer. Some results about this tradeoff were provided in the discussion of joint bidding above.²³

“In sum, while these issues are still not well understood, the current evidence is that joint bidding is unlikely to be much more benign in common-value auctions than in private-value auctions or in ‘ordinary’ markets.” (Klemperer 2005, p. 22)

3.3 *Common Values or Private Values?*

Since the winner’s curse reduction effect does not arise in a private values context, it can be useful to distinguish common values from private values. A large and growing literature addresses this issue.²⁴

The first tool is intuition: “While it may be possible to differentiate among specific forms of private and common value auctions from the data, intuition may be a better guide in determining whether the private or common value framework is more appropriate. An empirical answer sometimes does not exist.” (ABA p. 233)

Auction theory results show that in only certain circumstances can private values and common values be distinguished. The most general result is a negative one: If only bids are available, the number of bidders is fixed and there is no reserve price, then one cannot distinguish common values from private values. (Laffont and Vuong 1996) The reason is that the observed distribution of bids could simply be the distribution of bidders’ private values. A more positive result is that if the number of bidders varies exogenously, then common values can be distinguished from private values in sealed-bid auctions.²⁵ This logic fails in ascending auctions.²⁶ The seemingly simple solution, to look at how bid levels change with the number of bidders to distinguish private from common values, does not work.²⁷

In summary, whether one can empirically distinguish common values from private values will depend on what auction type was used and what data are available. And often one must fall back onto intuition.

3.4 *The Competitive Effect of Mergers in Private Value Contexts*

When firms merge in a private values context, it may be possible to estimate the effect of the merger directly.

In a merger in a private values context, it is usually assumed that the private value of the merged firm is the maximum of the private values of the merging parties. This implies that the merged firm will win any of the auctions that the merging parties would have won. This assumption has been used to model the “unilateral” effects of mergers between hospitals, mining equipment manufacturers, defence contractors, and others where there were no efficiencies. (Baker 1997) The result of this assumption is that, as a result of the merger, the winning price is different, but the same bidder wins. The auctioneer may be able to partially, but not entirely, protect herself from the price rise by raising the reserve price. (Waehrer and Perry 2003) The estimates of the effect of mergers in private values usually assume no reaction by the bid-taker and no efficiencies.

It is straightforward to estimate the effect of a merger in a second-price sealed-bid auction with private values because one can use the result that bidders bid their true values. First, one separates the auctions into those in which the merging parties would have bid the highest and second-highest bid, and all other auctions. The merger has no effect on the second group. Second, for the first group of auctions, one measures the difference in the second and third highest bids. (The idea is that the merger, by eliminating the lower of the merging parties’ bids, means that the formerly third-highest bid is now the second-highest bid, setting the price.) By summing this difference across all auctions and dividing

by the number of auctions, one can calculate the average effect of the merger. Note that this method requires a significant amount of data, in particular the identities of bidders and their bids, or at least of the three highest bids. An example of this calculation is provided in an Appendix.

Additional assumptions are needed if the data on losing bids are missing. One standard assumption is for second-highest bids to be in proportion to highest bids. For example, if three bidders A, B, and C win 50%, 30% and 20% of the time, then B would be assumed to be the runner-up 60% of the time when A wins but 37.5% of the time when C wins. This assumption is clearly violated when bidders have characteristics that make them significantly closer or more distant competitors, such as different transport costs or technical capabilities.

It is critical to incorporate differences among competitors in modelling the effect of a merger. Thus, in such a situation, each bidder's value is specified as a function of the characteristics of the bidder and the object being auctioned. For example, if transport costs are significant, then the location of bidders and the object is an important characteristic in the value function. A merger between bidders at different locations would have a smaller effect on competition than a merger of bidders at the same location. (Froeb and Tschantz forthcoming)

It is more difficult to estimate the effect of a merger in first price auctions because bidders do not bid their true values. Instead, a bidder shades his bid to trade off profits if he wins (lower bid) against the probability of winning (higher bid), taking into account that other bidders are making analogous calculations. Additional assumptions must be made. One study reports that "Numerical analysis using [a logit model] finds that, given the merging firms' pre-merger winning bid share, the price effects of mergers in a sealed-bid auction are almost perfectly predicted by taking 85% of the price effect predicted by the corresponding English [i.e., ascending] auction model." (Werden and Froeb forthcoming citing Tschantz, Crooke and Froeb 2000)

In a model of descending open procurement auctions with independent private values, Waehrer and Perry allow bidders to be asymmetric in terms of having different costs, which have a natural interpretation as different capacities. They allow the buyer to use a reserve price, and to change the reserve price in response to mergers. The reserve price can significantly protect the buyer from the anticompetitive effects of a merger if the buyer's internal cost is near the suppliers' costs. They obtain a general result that the buyer is made worse off by the merger, despite being able to adjust the reserve price to moderate the effect of the merger. (Waehrer and Perry 2003)

3.5 Auction Analysis in the Oracle/PeopleSoft Cases

The Oracle/PeopleSoft case provides an unusually complete public explanation of the precise methodologies used to evaluate the effect of a merger in a bidding market. The two major jurisdictions which reviewed the case reached different conclusions as to whether the method by which the product was sold was better analogised as ascending or sealed-bid auctions. They relied on different datasets, apparently used different econometric techniques, and reached different conclusions. The European Commission and the United States District Court were in agreement on the outcome, though not the underlying model of the market.

In June 2003 Oracle launched a hostile bid for PeopleSoft. In October 2003, it was notified to the European Union. In the United States, the Antitrust Division and several states sued to prevent the acquisition. After a trial in June 2004, the district court judge ruled against the US government in September 2004. The government did not appeal. In Europe, the Commission engaged in a second-phase investigation. A six month suspension allowed the information made available at trial in the

United States to be incorporated into the EC's investigation, as well as allowing the American judicial process to come to an end. In October 2004, the EC cleared the merger unconditionally.

Oracle and PeopleSoft competed in the sale of Enterprise Resource Planning (ERP) software also known as Enterprise Application Software (EAS). At issue were Human Relations Management (HRM) software, which deals with pay, benefit and other employee matters, and Financial Management Systems (FMS), which deal with receipts, accounts receivable and the like. Purchasers are large firms. Within these categories, software has different capabilities. The Antitrust Division alleged that high-function HRM and FMS software were separate markets from less-than-high-function HRM and FMS software, and that the geographic market was North America. The European Commission alleged that the relevant market was high-function HRM and FMS software and that the geographic market was worldwide. In its Statement of Objections, the European Commission alleged that the only suppliers in the relevant market were Oracle, PeopleSoft, and SAP AG, but during the course of the investigation the EC found that other suppliers were credible bidders for at least some customers. The Antitrust Division held to the three supplier position. The parties disputed the distinction between high- and medium-functionality and thus the limited list of competitors.

Large companies buy high-function HRM and FMS software. The software is customised, the buyer and seller maintain a relationship, and the licenses prohibit sublicensing. Hence, arbitrage is not possible. The Antitrust Division argued that different customers were charged different prices.

3.5.1 The Antitrust Division

The Antitrust Division argued that each procurement of high-function HRM and FMS software constituted an entirely separate competition. The Division argued that the procurement process was like an ascending auction and that the merger would eliminate PeopleSoft as a bidder. The result would be, it argued, that Oracle would be able to win some auctions at higher prices. Different customers would be affected differently by the merger. The expert for the US government, R. Preston McAfee modelled competition as an ascending auction. His model predicted price increases of 5–11 percent for high-function FMS software and 13–30 percent for high-function HRM software. (Werden forthcoming)

Prof. McAfee performed three separate analyses that allowed him to choose the most appropriate model and to estimate the effect of the merger. First, he examined 25 specific transactions and prepared statistics for the overall set of transactions, finding that Oracle faced competition at least 93 % of the time, and that PeopleSoft was one of the competitors on larger transactions about half the time. Second, he used regressions to estimate the effect of PeopleSoft on the discounts offered by Oracle. He found that Oracle's discounts were larger by, on average, 10 percentage points when competing against PeopleSoft. Since the average discount was about 50 percent, then buyers for whom PeopleSoft was a competitor got on average a discount of 60 percent. Another regression, run on a different dataset, showed that average discounts increased by 7.6 percentage points when PeopleSoft was a competitor and, for transactions over \$0.50 million, the average discount increased by 13.6 percentage points.

Third, he used an economic model, calibrated it for the facts in the case, and estimated the effect on prices of the merger. Prof. McAfee found that the model that fit best the facts of the market was an ascending auction. The relevant facts were that there were multiple rounds of bidding and multiple bidders, and bidders had information, albeit imperfect, on their rivals' pricing strategies. So it was reasonable to conclude that the winner bidder must offer the price of the "best" losing bidder. This is a feature of an English auction. The result of this model was to predict that the merger would increase prices. Predicted price increases were higher in the HRM than in the FMS software because a third

party was a much more potent competitor in FMS than in HRM. In particular, the expected price increases for HRM were 13.0%, 16.5%, 20.6%, 25.2% and 30.4% depending on the “competitiveness” parameter. The expected price increases for FMS were 4.6%, 5.7%, 6.8%, 7.9% and 9.0%, again depending on the “competitiveness” parameter.

The court appears to have applied a different model, Bertrand competition with differentiated products, rather than an auction model. Further, the court rejected the merger simulation because it was based on market share statistics which the court had already rejected as a reliable indicator of the suppliers’ positions in the ERP market. [*U.S. v. Oracle Corp.*, No. C04-0807 (N.D. Cal. Sept. 9, 2004) Findings of fact, conclusions of law and order thereon.] The court ruled in favour of Oracle.

3.5.2 *The European Commission*

The European Commission concluded that the markets would remain competitive despite the number of major players falling from three to two because there were several smaller yet credible suppliers.

With respect to non-coordinated effects, the EC examined both a market simulation and a number of regressions. The market simulation is described below since it was based on an auction model. However, the model ultimately did not influence the outcome of the case because it was based on a three-to-two merger, a view which was ultimately rejected. (EC paras. 179 and 196)

The regressions were designed to test the extent to which the number and identity of final round bidders affected the discount offered by the respective bidders (PeopleSoft’s discount in PeopleSoft’s dataset and Oracle’s discounts in Oracle’s dataset). (EC para. 199) They found that the size of deal affected the discount, but when the size of deal was included as an explanatory variable the number of final bidders did not explain discounts. As well, the presence of a particular bidder did not prompt particularly high discounts, with one minor exception. (EC para. 200-1). The EC warned that the absence of such an effect in the data did not exclude an anticompetitive effect from the merger (EC para. 202) but that the absence of an appreciable effect of the number or identity of bidders makes the bidding data “unsuitable to rely on as proof of an anticompetitive effect of the merger.” (EC para. 204)

With respect to coordinated effects, the EC found that the number of potential bidders was too large, the products too differentiated, their market shares too asymmetrical and their structural links too few to sustain coordination. (EC paras. 209-211) With respect to possible coordination among only the major two remaining players, the Commission did not exclude the possibility despite the product heterogeneity and the obscuring effect on market transparency of huge discounts. However, the minor players were seen as credible bidders who could destabilise a duopoly. (EC paras. 212-3)

The market was simulated using a sealed-bid auction model.²⁸ Several market characteristics guided the decision of how to model the market. First, bidders knew the identities of their rivals in given procurements. Second, bidders’ marginal costs of fulfilling the contract were seen as close to zero. (Costs were mostly sunk before the competition began.) This implied *inter alia* that any uncertainty about future costs were relatively unimportant. Third, when a bidder submitted his bid he did not know the prices being offered by other bidders nor how much the customer was willing to pay for a better “fit” among the heterogeneous offers. Thus, a further reason to model the market as a sealed-bid format was that the alternative was seen to lead to unrealised predictions. A key factor was “whether bidders can always expect to be given the chance to respond with an improved offer if they are on the verge of being eliminated from the contest, or whether they risk being eliminated even before they have reached their [lowest possible bid]” (Bengtsson 2006, p. 136) Under the finding that marginal costs were zero, it was thought that an English auction would result in prices close to zero.

Since these were rarely observed, the auction could not be approximated as an English auction. (*ibid.*, p. 137) As buyers could not credibly commit to transfer information—for example, prices and relative performance of the software—to the bidders, a sealed bid format seemed a better way “to capture the general uncertainty that bidders are facing.” (*ibid.*)

The information structure of the model was for the buyer to privately know the value he places on each of the bids, but the bidders to know only that the value of each offer is drawn from a known distribution. (*ibid.*, p. 135)

Calibrating the model using actual market shares, assuming a range of probabilities that customers chose not to buy at all after a bidding competition, and making alternative assumptions about the relative qualities of the three firms’ offerings, the model produced predictions about bidding prices, average prices paid, and the expected utility the customers gained by buying the products. Over a range of assumptions, the model predicted substantial price increases and consumer welfare losses. Note again, that this model and its predictions did not affect the outcome of the decision-making process because the model assumed that there were only three suppliers and the investigation concluded that there were in fact many more.

3.5.3 *Conclusion on Oracle/PeopleSoft*

The three institutions—the European Commission, the Antitrust Division and the US District Court—relied on three different economic models in their analyses—sealed-bid auctions, ascending auctions and apparently Bertrand competition with differentiated products, respectively. The choice among auction models depending on how the competitions were run, i.e., on what information was available to rivals and the number of rounds of bidding. Having each chosen a model based on the information available, the European Commission and Antitrust Division then relied on econometrics to evaluate the likely effect of the merger. (The District Court said that relevant information for a Bertrand competition model had not been presented.) The institutions reached different conclusions, however both the European Commission and the US District Court found that the merger should not be stopped.

3.6 *What do market shares mean?*

In merger analysis, market shares are often used as a starting point to assess market power. Further facts can substantially modify the view about market power. But where auctions make a market “lumpy,” with each auction determining the supplier for a large part of the market, shares based on historical sales appear to vary much more than when numerous small buyers make independent decisions. Could these market shares be useful in assessing market power in the future? In auctions, the competition takes place during the bidding process²⁹ and the sales are just a reflection of the outcome, not necessarily a reflection of the true competitive process.

Distinguishing equilibrium market shares from structural market shares is a start. “In antitrust cases and in the business world, market shares most often are assigned on the basis of revenues, production, and the like, which describe the market equilibrium. Such shares are elements of market performance rather than market structure. Structural market shares, by contrast, are based on the endowments of competitors, for example, on their ownership of assets, such as productive capacity or reserves of an exhaustible resource. [footnote deleted] And structural market shares may differ substantially from equilibrium shares.” (Werden 2002, p. 78)

For example, if company A won a past auction to supply all the water to a particular city, then market shares today and for a number of years of firms A, B, C, ...N would be 100%, 0%, 0%, ...0%.

These are the equilibrium market shares. But, if market shares are used to infer competitive significance, however roughly, these should be structural rather than equilibrium market shares.

In this example, perhaps the rivals had a fairly equal probability of winning the auction for the contract. If this were the case, then market shares of $1/N$ would provide a better summary of the competitive situation when the competition was underway.

But more often rivalry is far from symmetric, so it would be wrong to assume that each bidder had an equal chance of winning. Incumbency can confer an advantage in subsequent auctions, for example. If so, then the market shares are likely different from $1/N$. How different could perhaps be estimated by using auction data from a number of similar auctions, perhaps other city water auctions which might allow success rates for entrants bidding against incumbents to be estimated. More generally, where bidders or customers are heterogeneous, information about bids and outcomes in similar auctions could help clarify the competition among companies. But it may be the case that past events do not provide useful indicators, for example when there have been no analogous auctions.

In summary, where an object is sold by auction, the competition occurs during the auction, rather than when sales transactions are effected sometime after the competition is finished. The relevant shares for measuring competitive significance are the structural shares and not the equilibrium shares, as the latter reflect only the outcome of a competition.

4. Conclusions

Auctions are simply one way to organise market transactions. The choice of an auction rather than another mechanism can indicate characteristics that might heighten competition concerns, such as scale economies.

By their imposition of formal rules which reduce “noise” and make communication among rivals easier, auctions promote collusion, Auction designs can reduce collusion or concerted practices or promote participation. For this reason, auction design can be subject to lobbying, such as by incumbents who would prefer a (generally) participation-discouraging ascending (or oral or English) auction to a sealed-bid auction. Auctioneers can also behave strategically, choosing auction formats or practices that favour competition.

Two fundamental prescriptions for effective auction design follow from the theoretical literature: Induce bidders to truthfully reveal their valuations by making what they pay not depend entirely on what they bid, and maximize the information available to each participant before he bids. Among the other recommendations that flow from the literature are:

- Where collusion is a significant threat, use sealed-bid rather than ascending bid (or “open”) auctions. Where the information about the true value of the object being auctioned is dispersed among the bidders and there is significant uncertainty, then consider using an ascending auction.
- Impose a high but credible reserve price.
- Carefully consider the information provided to bidders and the public, including non-disclosure of the identities of losing bidders and retention of auction data for use in any possible later bid rigging prosecution.
- Consider bundling smaller auctions and refraining from announcing a future schedule of auctions

- Consider means of reducing bid preparation costs.
- Where promoting “weaker bidders” is an important consideration, use sealed-bid rather than ascending auctions.
- Consider other means to attract “weaker bidders” to participate in the auction such as set-asides, bidding credits, and splitting objects.

Regarding merger analysis in “bidding markets,” although it is indeed sometimes the case that “two is enough”, that possibility is probably of little empirical importance. In a “private values” context, a merger among bidders in general leads to less aggressive bidding and lower demand (absent efficiencies), as in “ordinary” markets. In a “common values” context, these reductions in competition might be countered by a reduction in the “winner’s curse” effect. Whether this effect is sufficient to outweigh the other effects is an empirical matter. Methods for distinguishing private values from common values situations are a subject of ongoing research.

Auction theory is quite technical. It may therefore be reassuring that a prominent auction theorist and practitioner writes:

“My experience in auction consulting teaches that clever new designs are only very occasionally among the main keys to an auction’s success. Much more often, the keys are to keep the costs of bidding low, encourage the right bidders to participate, ensure the integrity of the process, and take care that the winning bidder is someone who will pay or deliver as promised.” (Milgrom 2004, p. xii)

Notes

1. Almost always, the assumption is made that these are statistically independent so are more properly termed *independent private values*.

2. One example goes as follows:

--“I’ll be satisfied with just two of the 12 blocks of frequency on offer.”

--“If the [five other bidders] behaved similarly it should be possible to get the frequencies on sensible terms,” but “[I] would bid for a third frequency block if one of [my] rivals did”. (Klemperer, p. 136 citing Crossland 2000) In the instance, six firms won two licenses each at low cost.

3. Example of Coded Bidding from Cramton and Schwartz 2002, Table 1, p. 4.

Round	Marshalltown, IA 283 E		Rochester, MN 378 D		Waterloo, IA 452 E		
	McLeod	USWest	McLeod	USWest	AT&T	McLeod	USWest
24	56,000					287,000	
...			...	...			
46				568,000			
52			689,000				
55				723,000			
58			795,000				
59				875,000			313,378
60						345,000	
62			963,000				
64		62,378		1,059,000			
65	69,000						
68						371,000	

“Table 1 shows all of the bids that were made on Marshalltown, block E and Waterloo, block E after round 24, and all of the bids on Rochester, block D after round 46. USWest and McLeod were contesting Rochester, trading bids in rounds 52, 55, 58, and 59. Rather than continue to contest Rochester, raising the price for the eventual winner, USWest bumped McLeod from Waterloo in round 59 with a code bid, \$313,378. The “378” signified market 378—Rochester. USWest’s bid revealed that McLeod was being punished on Waterloo for bidding on Rochester. In round 60, McLeod retook Waterloo, bidding \$345,000, \$58,000 more than its round 24 bid. But McLeod did not yet concede Rochester—it placed another bid on Rochester in round 62. USWest then used the same technique in round 64, punishing in Marshalltown instead. USWest’s bid in round 64 on Rochester won the license. (We have shown only two of the markets on which USWest punished McLeod; USWest had actually punished McLeod on several markets contemporaneously.)” (Cramton and Schwartz 2002, pp. 5-6)

4. The example is from Cramton and Schwartz 2000. Assume Bidder A has capacity for two units and Bidder B has capacity for one unit. Assume A values winning one unit at \$160 and two units at \$300, and B values winning at \$75. Assume the reserve price is \$0. Assume complete information, but the

authors say that the result extends to incomplete information. The only weakly dominated strategy for B is to bid \$75. A knows this. A sees that if she makes one high bid (over \$75) and one bid for \$0, then the clearing price will be \$0 and she will get a payoff of $\$160 - \$0 = \$160$. A sees that if she wishes to win two units then she must bid at least \$75 for both, and she will get a payoff of $\$300 - 2 * \$75 = \$150$. Therefore, A prefers to win only one unit. This is demand reduction. If a reserve price of \$20 were imposed, B's strategy remains unchanged. But A's calculation changes. Her payoff if she wins two units remains the same, since B will always bid \$75. But her payoff if she wins one unit falls because now she must pay the reserve price, making her payoff $\$160 - 20 = \$140$.

		Reserve Price = 0		Reserve Price = 20	
A's Bids	B's Bids	Clearing Price	A's Payoff	Clearing Price	A's Payoff
High, 0	75	0	$160 - 0 = 160$	20	$160 - 20 = 140$
High, High	75	75	$300 - 2 * 75 = 150$	75	$300 - 2 * 75 = 150$

5. Having *better* information about the value of an object than other bidders does not provide an incentive to collude. Rather, rents from information are due to its privacy, not its quality. (Rival bidders with the same information will earn nothing, but another bidder with poorer but private information will earn a rent.) Hence, information provides an additional incentive to collude with those rivals with the same information since the alternative to collusion—competition—eliminates the informational rent. The auctioneer's released information could reduce that information rent.
6. "Capacity" is not necessarily the physical capacity of the terminals but reflects also expected network constraints.
7. Perhaps perspective is improved by learning that much of the early work was related to auctions for petroleum leases in the Gulf of Mexico when there had been little drilling and seismic surveys were relatively primitive. In this environment of great uncertainty with common values, oil companies would form bidding consortia to take on these large, risky projects. (On the history of the technology of seismic surveys, see Society of Petroleum Engineers http://www.spe.org/spe/jsp/basic/0,,1104_1714_1004089,00.html) Much more recently and with respect to much smaller projects, Felsö, Baarsma and Mulder (2006) surveyed winning joint bidders and procurement authorities in a sample of Dutch construction procurements. They found that about three-quarters of the reasons for "combinations" (two or more companies agreeing to carry out a project together and therefore bid jointly) related to firms being unable to fulfil the contract separately, including not having special expertise or not having sufficiently large capacity. While bidders and procurement authorities disagreed on the relative weightings among the specific reasons, the three-quarters figure holds for both types of respondents.
8. They did not consider the asymmetries that followed from a company having more information about a tract than its rivals because it had more information about adjacent tracts, nor different values due to potentially lower costs made possible by production in adjacent tracts. In addition, they explicitly assumed that the information about the value of a tract was gathered by the companies before they decided whether to bid jointly, so one could reasonably assume "information pooling" rather than simply elimination of a competitor.
9. Recall that, in a pure common values context, overall efficiency does not depend on who wins—pure common values means that the object is worth the same to all the bidders—but public policy in these auctions is often directed toward extracting the maximum revenue in light of the inefficiencies of raising tax revenue.

10. One of these specific models was examined by Mares and Shor (2003), who examined mergers in an average values auction model. (In an average value model, the object's true value is equal to the mean of all of the signals. It is, therefore, a type of a pure common values auction, itself a type of a common values auction.) In this model, a merger implies that the post-merger firm has both of the signals that were received by the pre-merger firms. A merger thus has two effects, eliminating competition between the merged firms and consolidating information so that the post-merger firm has better information about the true value of the object. The information effect reduces the size of the winner's curse. Mares and Shore tried to answer the question, Is the reduction of competition effect on bids larger than the reduction of winner's curse effect on bids? They used both a first-price sealed-bid auction and second-price sealed-bid auction formats. They found that, for the second-price sealed-bid auction, the competition reduction effect on bids was indeed larger: Bidders bid more aggressively when there were more other bidders. For the first-price sealed-bid auction, only if the number of bidders were large did this result hold. In equilibrium, mergers reduced the expected revenues from the auctions. (By the revenue equivalence theorem, which holds under the assumptions of the model, this is true for both types of auctions examined.)
11. The procurements studied by Hong and Shun included two other types of work for which there were significant private value elements. For these procurements, the authors found that more bidders meant a better deal for the State of New Jersey.
12. It may be worth noting that it would be problematic to assume that the information pooling effect of joint bidding carries over into mergers. In particular, a post-merger firm may not have the same information as the two pre-merger firms would have had, had they remained separate. I.e., the information pooling effect may be a one-time or short-term effect, whereas the competition reducing and demand reduction effects are longer term.
13. But note that the practice of publicly announcing the result of sealed-bid auctions helps bid-riggers police their cartel by revealing otherwise secret cheating.
14. Overbidding the cheater is a cheap way for bid riggers to prevent cheating on a cartel in an ascending auction.
15. See the part below on how participation is affected by the choice between sealed-bid and ascending auctions.
16. The authors studied timber auctions. To provide a sense of scale, they found that, if they ignored bidder participation effects, sealed-bid auctions would generate \$651 (northwestern United States) or \$1018 (California) more revenue than ascending auctions would generate. Higher bidder participation (about 3-6 more per 10 sales) increased revenues from sealed-bid auctions by an average of \$5300 (4% in northwestern United States) and \$26,000 (13% in California). If mills "engage[d] in a mild amount of cooperative competition" in ascending auctions then this generates about \$22,000 less revenue than competitive sealed-bid auctions, or over \$27,000 if participation effects are taken into account. (pp. 36-7) This work was based on timber auctions in the Lolo and Idaho Panhandle National Forests (here called "northwestern United States") and national forests in the Pacific southwest (here called "California") in 1982-1990.
17. If the functions are shaped so that bidders must pay a very high price for a slightly smaller quantity than their agreed share, then if anyone cheats and tries to buy more than the agreed share, the price is very high and all bidders are punished.
18. Holt (1980) shows that for symmetric equilibria, as the number of bidders approaches infinity their bids approach the true value of the object.

19. A class of affiliated private values first-price auctions are exceptions to this general rule. (Pinske and Tan 2005) In a theoretical paper, the authors assumed that bidders' valuations were affiliated through a common unknown factor but are independent conditional on that factor. They also assumed risk neutrality and symmetry. The number of bidders was determined exogenously. They found that the equilibrium bidding function could increase with the number of bidders. But they could not determine whether the winning bid always increased with the number of bidders, nor find conditions when the winning bid decreases as the number of rivals increases. In other words, for these auctions, more bidders may or may not result in higher prices.
20. A study of highway construction procurement auctions provides empirical support for this result from auction theory. These auctions took place in Oklahoma and adjacent parts of Texas in 1998-2003. Oklahoma changed its information disclosure policy in April 2000, allowing potential bidders to see the state engineer's cost estimate for the projects. Texas had no change in policy and serves as a control. For bridge-related projects, where uncertainty about common costs was seen as greater, average bids and winning bids declined by nearly 10% after the change in information policy. For asphalt work, where uncertainty about common costs is smaller, there was no significant change in average or winning bids. A number of states have recently or are considering a policy change toward releasing state engineer's cost estimates. [DeSilva et al 2005]
21. For completeness, the contestable markets model assumes *inter alia* that the buyers do not behave strategically, which is not necessarily true for bidding markets where the auctioneer can make some choices.
22. In a uniform price multi-unit auction. For both of these effects see the discussion on joint bidding.
23. In addition to the relevant footnotes, see also Klemperer 2005 pp. 19-22 which summarises the literature.
24. A technical discussion is in Athey and Haile 2005. Much of this discussion is based on theirs.
25. The logic is as follows. The winners curse is present only in common values auctions and increases with the number of bidders. Therefore, a bidder in a common value auction shades his bid more when he faces more rivals, but does not do so when he is in a private values auction. Tests detecting this difference in bidding behaviour as the number of rivals increases can distinguish common from private values. Further, for first-price auctions, variation in the level of a binding reserve price can allow common values to be distinguished from private values. [Athey and Haile 2003, p 93]
26. The logic fails for the following reasons. First, in an ascending auction, the winner's valuation is never revealed. Second, bidders are modifying their strategies in the course of the bidding and the exact modifications cannot be observed. Third, there are many equilibria in common values ascending auctions and it is difficult to "choose" among them.
27. "One cannot use a reduced-form test on the relationship between bid levels and the number of bids to distinguish between the private- and common-value paradigms in first-price auctions. However, such a reduced-form test works well in second-price and ascending private value auctions since it is then a dominant strategy for a bidder to bid her true valuation." [Pinske and Tan 2005] More recently, Adams et al (2006) argue that even in a second-price auction a reduced-form test will not work due to endogeneity and selection problems.
28. The description of the auction model is from Bengtsson 2006.
29. Or indeed, the competition might begin with the design of the auction process which can favour one or another participant.

ANNEX 1.

A PRIMER ON AUCTION THEORY FOR COMPETITION OFFICIALS

The purpose of this part is to provide a basic introduction to auction theory and terminology. It also introduces a few of the variants that bring one closer to the facts in real world auctions, such as multi-unit auctions (used in some electric power sectors, for example) and auctions for resale (used in timber auctions, for example). The variations help to illustrate how seemingly trivial differences in assumptions can lead to important differences in results. This part provides background for the two policy-oriented parts of this paper. A technical appendix accompanies this part.

Types of Auctions

There are four standard auction types.

- In an *ascending or English auction*, the price is raised until only one bidder remains, and he wins at the final price. This type of auction is used for art, for example. This type of auction was by far the most popular type (Milgrom 1989), but with the growth of the internet this is probably no longer true.
- In a *descending auction*, the price is lowered until a bidder cries out, and she wins at the final price. This type of auction is used to sell flowers in the Netherlands, hence is also called a Dutch auction by economists.
- In a *first-price sealed-bid auction*, each bidder submits one bid without knowing the other bids, the highest bidder wins and pays his bid. This is the type of auction that had been most popular for industrial procurements. (Milgrom 1989)
- In a *second-price sealed-bid auction*, each bidder submits one bid without knowing the other bids, the highest bidder wins and pays the amount of the second-highest bid. This type of auction is also called a Vickery auction after William Vickery.

These standard auction types have various strengths and weaknesses which can be important to policymakers concerned with efficiency and competition, notably as concerns collusion and participation.

Variations that can be introduced include reserve prices, restrictions on bid increments and on bid timing. Further complications are introduced when multiple objects are being sold, especially when the objects may be either substitutes or complements, and when bidders compete against each other at several auctions. A relatively common variation combines two formats. In an *Anglo-Dutch auction*, an ascending bid auction is run until only two bidders remain, then they submit sealed bids and the highest bidder wins and pays his bid.

Valuations, Signals, Private Values and Common Values

Information is key to understanding auctions. Indeed, effective auction design can be described as trying to induce bidders to truthfully reveal their value for the object and trying to maximise the information available to bidders at the time they bid.

“Valuation” is the term given to the value a bidder places on the object being auctioned. This is not necessarily the amount that is bid or that needs to be paid. “Signal” is the term given to the information a bidder has about the object being auctioned. It could be, for example, a seismic survey of an oil tract. To avoid confusion with the term “signalling” as used in discussions of collision, in this paper the term “indication” will be used where the auction literature uses “signal.”¹

Bidders have *private values* if each bidder knows her own value of the object and she would not change her valuation if she learned any of her rivals’ values. An example of private values would be nondurable consumer goods, where the consumer knows the value to herself and is not influenced by the value to others since there is no possibility of resale.²

By contrast, in a *common values* context, each bidder would change her belief about the value of the object if she knew her rivals’ information. “The critical distinction [between common values and private values] concerns the nature of bidders’ private information. When each bidder’s private information concerns only idiosyncratic determinants of his own valuation, this is a private values setting.” (Athey & Haile, p. 82) Of course, even in a private values context, a bidder would like to know her rivals’ information for strategic reasons, but knowing that information will not cause her to change her beliefs about the value of the object to her.

In common values, the information about the object is dispersed among the bidders. In general in common values, the value of the object is not necessarily the same for all bidders. In *pure common values*, a special case of common values, each bidder has the same value of the object.^{3 4}

¹ Valuations and indications are linked by the following relationship: A bidder’s expected valuation increases if her indication increases, taking all other bidders’ indications as fixed. Without loss of generality, the expected valuation given the indication can be assumed to be the indication itself.

² Almost always the assumption is made that these are statistically independent, so are more properly termed *independent private values*.

³ Auctions for petroleum tracts are examples of common values contexts: The main uncertainties are how much petroleum there is, how costly it will be to recover and transport to market, and future price, and these uncertainties are common to all the bidders. Bidders may have different information about these uncertainties, so if they learned a rival’s information they would use it to modify their beliefs about these uncertain factors. Another example is if the object will be resold: This is likely a common values context because the bidders are likely to have different information about future market conditions. Note, though, that the existence of factors that affect all bidders’ valuations does not imply common values. (Athey & Haile 2005, p. 82) An example of this would be where art dealers are bidding on a painting, they all know the resale price and this is the only common component in how the bidders value the painting. This would be private values. If, by contrast, the bidders do not know the resale value, then they are likely to have different indications about the resale value so would, if they learned rivals’ indications, use that information to change their own estimate of the resale value. In this second case, this would be common values.

⁴ Auctions often take place where bidders’ valuations have both private values and common values components. The *affiliated values* model by Milgrom and Weber 1982 fills in the gap, having both

It is likely that auctions often occur in common values contexts. For example, if the value of the object depends on later market conditions, such as when timber or artwork will be resold or when work on a procurement will be carried out later, then this implies common values. The reason is that bidders are likely to have different information about future demand and supply of substitutes for the object, either because they have access to different information or because they evaluate the information differently. Bidders in such situations may find their rivals' information or evaluations useful in forming their own valuation. This is a common values context. [Athey & Haile 2005, p. 82]

Note that, in a pure common values context, efficiency does not depend on which bidder wins the auction, so efficiency gains are made by minimising bidders' and the auctioneer's costs, and policy is often oriented toward extracting the highest revenues for the seller.

In addition the private values-common values distinction, there are other important distinctions for understanding auction design.⁵

Bidding

This section describes how bidders bid in the four standard auctions.⁶ In each case, assume that there is no collusion, tacit or otherwise, and no barriers to participation. For the first set of examples, assume independent private values.

private values and common values as special cases. *Affiliation* means that a higher value of one indication makes a higher value of another indication more likely, and this is true over all the possible values of the indications. Affiliation is similar to but stronger than the statistical concept of correlation.

The difference between independent private values and affiliated values is illustrated by the following example:

"Consider the issues that arise in attempting to select an auction to use in selling a painting. If the independent private values model is to be applied, one must make two assumptions: that each bidder knows his value for the painting, and that the values are statistically independent. The first assumption rules out the possibilities: (i) that the painting may be resold later for an unknown price, (ii) that there may be some "prestige" value in owning a painting which is admired by other bidders, and (iii) the authenticity of the painting may be in doubt. The second assumption rules out the possibility that several bidders may have relevant information concerning the painting's authenticity, or that a buyer, thinking that the painting is particularly fine, may conclude that other bidders also are likely to value it highly." (Milgrom and Weber 1982, p. 1095)

However, affiliated values concept does not appear often in policy documents. Rather, it appears that most authors take the view that it is sufficient to assume common values when bidders' valuations depend in part on other bidders' indications. (See Klemperer 2004, p. 14.)

⁵ A second important distinction among different auction contexts is the joint distribution of indications. That is, bidders' private information may have different relationships, and these differences can feed into different bidding conduct. Two common assumptions are independence and affiliation. *Independence* means that the indications are statistically independent, that is, unrelated. Affiliation has been defined in the previous footnote.

A third distinction is *symmetry*. In auction theory, this means that bidders' indications are all drawn from a common distribution. This is a condition for the revenue equivalence theorem.

⁶ The information structure implies that the appropriate equilibrium concept is Bayes-Nash equilibrium. This is like the Nash equilibrium concept commonly used in antitrust where each player behaves optimally given the moves of the other players. The difference is that players behave optimally given

- Consider the *ascending auction with private values*. The dominant strategy⁷ for each bidder is to stay in the bidding until the price reaches the bidder's value. After the bidder with the second-highest valuation drops out, the only remaining active bidder is the one with the highest valuation, who wins at the price equal to the second-highest valuation.⁸
- Consider the *second-price sealed-bid auction with private values*. The dominant strategy for each bidder is to bid his own valuation.⁹ This yields the outcome that the bidder with the highest value wins and pays the second-highest valuation.
- Consider the *first-price sealed-bid auction with private values*. In the Nash equilibrium bidding strategy,¹⁰ the bidder trades off bidding higher—increasing the probability of winning—against bidding lower—increasing the value of winning if he wins. The bidder with the highest bid wins and pays his bid, but he is not necessarily the bidder with the highest valuation.¹¹ His bid is less than his valuation.¹²
- Consider the *descending auction with private values*. This auction is similar to the first-price sealed-bid auction because bidders use the same strategies. This is because they have access to the same information and are making the same trade-offs. Hence, the Nash equilibrium bidding strategy is the same as for the first-price sealed-bid auction with private values.

We turn now from private values to common values contexts. This change implies that bids become informative: The bids reveal information about the bidders' valuations and, in the common values context, this information will in general cause rivals to change their own valuations. The initial beliefs about other bidders' valuations and the subsequent changes in beliefs can vary; and if

their updated beliefs about the strategies of others. Their beliefs are consistent with equilibrium strategies, and they update their beliefs according to Bayes rule given equilibrium strategies. In an auction, a player's beliefs will relate to the other bidders' valuations.

⁷ A dominant strategy is a strategy that always yields a better (or equal) payoff than any other strategy, regardless of what other players, such as rival bidders, do.

⁸ Assume the two highest valuations are v_1 (the highest) and v_2 (the second highest). Near the end of the auction, only these two bidders remain active. As soon as the price exceeds v_2 , the bidder with the second highest valuation drops out. The only remaining bidder is the one with valuation v_1 . But he pays only v_2 plus the bid increment, often approximated by v_2 .

⁹ Assume bidder B bids ε less than his true value v . Let w be the highest other bid. Then one of the following must be true: $w > v$, $v > w > v - \varepsilon$, or $v - \varepsilon > w$. In the first case, B loses since the other bid was higher than B's true value. In the third case, B wins and pays w . In both of these cases, the outcome is the same whether B bids v or $v - \varepsilon$. However, in the second case, B loses and gets nothing when bidding $v - \varepsilon$ but would have won and got $v - w$ if he had bid v . So B would do better to bid his true value v than to underbid $v - \varepsilon$. A similar argument holds for bidding $v + \varepsilon$.

¹⁰ There were dominant strategies for the ascending and second-price sealed-bid auctions but not for the other auction types. For the other types, a type of Nash equilibrium concept is used. Thus these are the strategies that are optimal given other bidders' strategies.

¹¹ In symmetric auctions the winner does have the highest valuation. A symmetric auction is one in which the bidders' signals are drawn from a common distribution. An example of an asymmetric auction would be one where some but not all bidders already owned complements to the object being sold.

¹² It can be shown that, in a symmetric model where bidders know the distribution of valuations, the bid is equal to his expected value of the second-highest valuation, given his own valuation. (McAfee and McMillan 1987, p. 710)

rationality is assumed this imposes certain restrictions on how beliefs should change. But the ambiguity about beliefs and changes in beliefs about rivals' valuations means that it is not possible to be as precise about how rational bidders bid, and even in a symmetric auction there may be multiple equilibria. In addition, bidders in a common values context shade their bids to avoid the winner's curse (see below).

- The ascending *auction with common values* illustrates this updating. A bid reveals to the rivals that the bidder's valuation was at least the amount of the bid. Each rival revises her beliefs about her value of the object. The process continues as more bids are made and each bidder revises her beliefs. A bidder quits when her expected value of winning becomes zero, that is, when her expected valuation of the object if she wins is just equal to her bid.

This section described bidding strategies and outcomes for standard auctions. In the next section, the revenue equivalence theorem shows that these standard auctions are, in a particular sense, very similar.

Revenue Equivalence Theorem

One of the most fundamental results of auction theory is the revenue equivalence theorem. This theorem says that, under certain conditions, each of the standard auction designs (ascending, descending, first-price sealed-bid and second-price sealed bid) will yield the same expected revenue and results in each bidder making the same expected payment as a function of her indication. Roughly speaking, the conditions are that bidders are risk neutral, that their indications are independent and drawn from the same distribution (which implies *inter alia* that bidders are symmetric).¹³ The result applies to private values and to those common values models in which indications are independent. Note that, in general, this result does not apply to common values auctions. Klemperer (2004) contains an easy-to-follow proof and discussion of this theorem.

This result may seem counter-intuitive. For a start, how could the price in the first-price sealed-bid auction be the same as in the second-price sealed-bid auction? The reason is that bidders act differently in the different auction types. For example, they bid lower in the first-price sealed-bid auction.

Despite the revenue equivalence, the auction types (under private values) imply significant differences in bid preparation for the bidders. For the ascending and second-priced sealed-bid auctions, the bidder need "only" discover his own valuation and either stay in the bidding until that level is reached or submit it to the auctioneer. For the other types of auctions, the bidder must also estimate the number of other bidders and the distribution of their valuations.

For policy-makers, the significance of the revenue equivalence theorems¹⁴ is that they are used as benchmarks against which to analyse auctions when the assumptions do not hold.

¹³ Quoting Klemperer (2004), p. 17 to be more precise: "Assume each of a given number of risk-neutral potential buyers of an object has a privately known signal independently drawn from a common, strictly increasing, atomless distribution. Then any auction mechanism in which (i) the object always goes to the buyer with the highest signal, and (ii) any bidder with the lowest-feasible signal expects zero surplus, yields the same expected revenue (and results in each bidder making the same expected payment as a function of her signal)."

¹⁴ There are several revenue equivalence theorems for various special cases. The result is broader than that stated in the text and extends to some non-standard auctions.

With certain violations of the assumptions for the revenue equivalence theorems, the revenues can still be ranked. Leaving other assumptions in place, with affiliated values, the descending and first-price sealed-bid auctions are equivalent. When bidders are uncertain, the ascending auction yields higher expected prices than the second-price sealed-bid auction. The reason is that rival bidders reveal information in the course of the bidding. When valuations are statistically dependent, the winning bid is higher in the second-price than the first-price sealed-bid auction. Thus, the ranking the auction formats from higher to lowest expected revenues is: ascending, second-price sealed-bid, and first-price sealed-bid tied with descending. (Milgrom and Weber 1982)

Winner's Curse

The winner's curse is a phenomenon of common values auctions. To illustrate the phenomenon, imagine a pure common values sealed-bid auction. (The format of the auction is irrelevant.) Each bidder forms his own estimate of the one true value of the object. The winning bidder—the highest bidder—is the one who had formed the highest estimate of the object's value. All other bidders' estimates were lower. So a naïve bidder will, upon learning that he has won, immediately revise downwards his estimate of the true value of the object. On average, the naïve winner regrets winning because on average he pays more than the true value.

But a sophisticated bidder does better than a naïve bidder. A sophisticated bidder will take into account the fact that if he wins then this means that he had the highest estimate. He therefore shades his bid, bidding lower than his naïve bid. This bid shading is the winner's curse effect.¹⁵ (McAfee and McMillan 1987, pp. 720-1)

The winner's curse effect is stronger when there are more rivals.¹⁶ That is, as there are more bidders, bidders shade their bids more.

The phenomenon of bid shading increasing with the number of rivals is exploited when it is necessary to empirically distinguish common values contexts—where it occurs—from private values contexts—where it does not occur. (See the section on merger evaluation.)

If the winner's curse effect is sufficiently large (an empirical question) then price decreases with more bidders. The winner's curse effect can, in principle, outweigh the effect of increasing competition, i.e., of bidders bidding more aggressively to have a chance of winning an auction. Since

¹⁵ In particular, he assumes that his estimate is higher than any other bidder's. He then sets his bid equal to the value of the second-highest valuation given that all other bidders are making the same calculation. Since losers pay nothing, there is no cost to being wrong in his assumption.

The basis for bid shading is this result from probability theory. Let the i th bidder's information about the true value of the object be x_i where a larger x_i implies a higher true value v . Then $E(v|x_i) \geq E(v|x_j)$, $x_i > x_j$ for all $j \neq i$. (McAfee and McMillan 1987 p. 721 citing Milgrom (1979) *The Structure of Information in Competitive Bidding*, pp. 60-63, and (1981) "Good News and Bad News: Representation Theorems and Applications, *Bell Journal of Economics*)

¹⁶ The winner's curse effect is stronger when there are more bidders because more bidders implies more estimates of the true value of the object. More estimates means the highest estimate is higher. (This result assumes that the estimates are unbiased which means, roughly, that the estimates are correct on average. The idea is as that as the number of estimates increases, then some of the new estimates that are added are higher than any previous estimates, so the highest estimate increases. The same process is at work for the lowest estimate.) A growing highest estimate means a growing difference between the highest estimate and the true value. This growing difference means that a bidder must shade his bid even more below his estimate in order to avoid paying more than the true value.

it has important policy implications—when should joint bidding be allowed, when should participation in auctions be restricted, when are mergers anticompetitive, etc.—it is fair to say that the empirical significance of the winner’s curse effect is the subject of debate and research.

Non-Standard Auctions

Auctions that are important empirically often differ from the standard auctions described above. The theory of some of these other forms is developing rapidly because these formats are being used more than in the past. One notable form is multi-unit auctions, which are used to sell licenses to use parts of the electromagnetic spectrum for telecommunications and transmission and generation of electricity. A second form described here is auctions with re-sale. This is not an exhaustive list—the variations are almost endless—but it tries to touch upon the empirically important ones.

Multiple Object and Multi-unit Auctions

Auctions for multiple objects or multiple units arise frequently in practice. They are used for allocating radio spectrum, electric generation and gas transmission among other items. The size of markets using multiple object or multi-unit auctions and the commercial benefits to improved bidding strategies may be the impetus behind the substantial ongoing research in this area. The distinction between multiple object and multi-unit auctions is that “units” implies homogeneity. Much of this section follows Milgrom 2004 chapter 7.

Multi-unit or object auctions are more complicated than single unit auctions for a number of reasons. First, they include the problems for single unit auctions of giving bidders incentives for truthful revelation of their valuations and of allocating the objects to the highest value bidder. In addition, the objects may be complements as well as substitutes. Further, bidders’ costs can increase rapidly with the complexity of the auction rules and the relationships among the objects. “The design problems...include not just the usual ones...but also limiting the complexity so that costs incurred by bidders are not too high and the reliability of the system is maintained. Unlike auctions for a single object, in which efficiency and revenue objectives are usually at least roughly aligned, multi-item auctions can involve radical trade-offs between these two objectives.” (Milgrom 2004, p. xiii) If items are not substitutes, then in general there are no market clearing prices. Or, “A main message of much of the current research on multi-unit auctions is that it is very hard to achieve efficient outcomes.” (Klemperer 2004, p. 33)

As with single-unit auctions, there can be first-price sealed-bid, second-price sealed-bid and ascending auctions.

Sealed-bid auctions to sell multiple units can be either *uniform price* or *discriminatory*, also called “pay as bid.” In the first, the winners all pay the same price, which is equal to the highest unsuccessful bid.¹⁷ In the second, each winner pays the amount he bid. The uniform price auction corresponds to the second-price sealed-bid auction when only one unit is for sale, since the amount paid depends on others’ bids (in this case, the price of the highest unsuccessful bid). The discriminatory auction corresponds to the first-price auction in the single-unit case since winners pay what they bid. The England and Wales electricity markets have provided an example of both of these types of auctions.¹⁸

¹⁷ This can also be set at the lowest successful bid.

¹⁸ The old Electricity Pool operated as essentially a uniform price auction; the New Electricity Trading Arrangements that replaced the Pool operates a discriminatory auction for the residual balancing

In uniform price auctions, if bidders want to buy more than one unit and they have private information, then in general they will reduce demand, that is, they will bid less than their values for some units. The logic is the same as for a monopsonist, a single buyer, who recognises that reducing the price paid for the marginal unit reduces the price of the inframarginal units. Further, in a range of models of uniform price auctions, there are low price equilibria, i.e., not very competitive outcomes, despite a large number of bidders. (Milgrom 2004, pp. 257-264)

For the benchmark case for the revenue equivalence theorem, these two types—uniform price or discriminatory—yield the same revenues. But if bidders are risk averse then the uniform price yields higher revenues, but in common values the discriminatory auction yields higher revenues. (McAfee and McMillan 1987 citing Weber 1983)

Another type of uniform price auction is the *simultaneous ascending auction* (SAA). SAAs have been used to sell rights to use the electromagnetic spectrum in various countries. In the SAA, bidders submit bids on the items, and rounds of bidding continue until the closing conditions are met. The advantage of SAAs over sequential ascending auctions is that bidders can arbitrage among the auctions, shifting their bidding to objects that are relatively cheap. (This arbitrage is why these are classified as uniform price auctions.)

SAAs can yield an outcome similar to competitive equilibria if certain conditions hold, including that all the objects be substitutes for each bidder.¹⁹ On the other hand, if the objects are not substitutes, then there may not even be a competitive equilibrium. The reason for this is the *exposure problem*. That is, a bidder may end up bidding and winning a collection of objects he does not want because the complements have become too expensive.

A possible example of the exposure problem is the 1998 Dutch DCS-1800 auction. Eighteen lots were offered for sale. Two were sufficiently large that an entrant could use them to enter. The other sixteen were smaller. They could be used by incumbents to expand their networks, thus were substitutes for them. Or, if an entrant won four or six lots, they could be assembled to support entry at minimum efficient scale. Thus, for entrants the sixteen lots were complements. The same lots were substitutes for some bidders and complements for others, just the conditions under which a competitive equilibrium does not exist and certain simple bidding rules become infeasible. The result was that the price per unit of bandwidth of the two large lots was more than twice as high as for the sixteen lots. (See Milgrom p. 278 for more details.)

A more recent multi-unit auction design is Ausubel's. (Ausubel 2004) The theoretical results of this design have certain positive attributes related to truthful bidding and efficiency, and the experimental results suggest it would lead to efficient outcomes in practice. He proposed a multi-unit ascending bid auction that would have the two positive properties of inducing bidders to truthfully reveal their value of the objects and of maximising the information available to each bidder when they make their bids.²⁰

market. Many simulations and experiments conducted during the discussion of the NETA aimed at distinguishing the efficiency and level and volatility of prices under the alternative types of auctions. See Newbery and McDaniel 2002 for a summary.

¹⁹ "Competitive equilibrium" means, in this case, maximising the total value over all possible allocations (to within a single bid increment). See Milgrom p. 272. I.e., the outcome is Pareto efficient.

²⁰ In this, to the author's knowledge, untried, model the auctioneer announces a price, bidders respond with bids for quantities and the process repeats until there is no excess demand. The design innovation is in determining the winners' payments. The idea is to decouple a bidder's payments for

This auction design was favoured by the British gas network owner Transco during consultations about access to gas terminals, described in Box 2, but the design ultimately chosen was a sealed-bid, multi-round auction. The other design was chosen because “it was more familiar and less complex than the Ausubel auction,” and time was limited. (Newbery and McDaniel 2002)

Box 4. Example of New Zealand Television Licenses

New Zealand sold licenses to deliver television broadcasts using *simultaneous second-price sealed bid* auctions. (Recall that in these auctions, the winner is the higher bidder but he pays the amount of the second-highest bid.) This kind of auction would work well only when the objects for sale are neither substitutes nor complements. But in the event, the licenses could be substitutes or complements, so bidders ran a risk of winning too few or too many licenses. (If a bidder wished to broadcast on only one channel, he would not want to learn he had won two. If a bidder had business strategy that required two channels, he would not want to learn he had won only one.) The actual outcome suggests that the auction was inefficient because the bids show little connection between the demands expressed by bidders, the number of licenses they won or the prices they paid. Also, bidders could not guess each other’s values. For example, it appears that neither Sky—who bid much higher than the others—nor Totalisator—who bid NZ\$401,000 for six licenses—made accurate guesses about their competitors’ bidding strategies.

The auction could have been improved by having several rounds. The winner would be allowed the number of licenses desired (up to a limit set by antitrust concerns) at its winning bid, the second round would sell the right to choose next, and so on. Or the auction might have bids consisting of prices and quantities where the highest bidder got to fill its bid, then the second until all licenses were gone.

Winning Bids on Nationwide UHF Lots: 8 MHz License Rights

Lot	Winning Bidder	High Bid (NZ\$)	Winning Bid Second Bid (NZ\$)
1	Sky Network TV	2,371,000	401,000
2	Sky Network TV	2,373,000	401,000
3	Sky Network TV	2,373,000	401,000
4	BCL	255,124	200,000
5	Sky Network TV	1,121,000	401,000
6	Totalisator Agency Board	401,000	100,000
7	United Christian Broadcast	685,200	401,000

Source: Hazlett (1998) cited in Milgrom 2004, p. 12.

the inframarginal units from her bids for those units, so as to eliminate incentives for demand reduction. The payments are calculated as follows. For each price p , the auctioneer determines, for each bidder i , whether the aggregate of all the rivals’ demand at that price is less than the supply. If it is less, then the difference is “clinched” (a term from baseball pennant races) and the newly clinched goods are awarded to bidder i at price p .

Ausubel provides an example in his paper. Assume that two identical objects are available and that three bidders, A, B and C, initially bid for quantities of 2, 1 and 1 respectively. Assume they continue to bid these quantities until the price reaches p , at which point C reduces his demand to 0 and drops out. Bidder A’s rivals now collectively demand only one unit (B only wants one unit), so A “clinches” one unit at price p , and the auction for the remaining object continues.

Somewhat different from the multi-unit auctions are *package* and *contingent auctions*. In a package auction, a bidder would submit a bid for items A and B separately and a bid (lower than the sum of the individual bids for A and B), for the package of A and B. Contingent bids are a generalisation of package bids, e.g., a bid for A and a bid for A if the bidder also wins B. The auctioneer chooses the combination of bids that sums to the highest total. Hence, the alternative name of these auctions is *combinatorial auctions*. Such auctions are used in practice. E.g., London bus routes and subsidised Norwegian air transport services are auctioned in combinatorial auctions. However, as this is a complex and rapidly advancing topic, it is outside of the scope of this paper.

In closing this overview of multi-unit and multi-object auctions, it is worth noting that the cost implied by complexity imposes limitations on auction design. In practice, auctions must be simple. They must be simple for bidders to use, so that they will indeed participate, and the outcomes when bidders use simple bidding strategies must be acceptable to the auctioneer. (Milgrom 2004, p. 253)

Box 5. Description of the US Radio Spectrum Auctions

The design of the 1994 Federal Communications Commission auctions to sell spectrum licenses for PCS²¹ has inspired a number of subsequent multi-unit auctions. This box describes the first of those auctions.

There was no off-the-shelf design for auctions of multiple objects with potentially highly interdependent values. (The value of one license depended on whether one already owned a substitute or a complementary license.) Among the difficulties was the fact that some potential bidders wanted nationwide licenses whereas others wanted regional licenses.

The basic design chosen was a *simultaneous ascending auction*. Ten licenses were offered in total, with the country being divided into several large regions. There was an auction for each license. At each round, each bidder would place bids. Bidders did not bid in every auction. At the end of each round, everybody could see each bid that had been made. Bidding increments were set by the FCC at each round. The idea was that bidders could put together their own optimal basket of licenses, taking into account the cost of the various licenses. Thus, at each round, each bidder could re-design its basket of licenses after surveying the current high bid for each license.

The rule for ending the auction, the closing rule, was that the bidding on all licenses ended when there was a round in which there were no bids on any license. The alternative rule that had been discussed was to close the bidding on each license when there had been a round in which there had been no bidding on that license. This alternative rule was not chosen because it meant that a bidder who thought he had won a particular license, but was outbid at the last moment, could not then bid for a substitute license if the bidder there had already closed. To keep the auction from going on for too long, there was a rule that serious bidders either had to have a high bid or place an acceptable new bid in each round. For the same reason, there was also a rule that bidders had to “be active” on a minimum percentage of the auctions for which they were eligible to bid. (Incumbent cellular licensees were barred from holding a PCS license in the same area.) The auction closed after 47 rounds over 5 days. Fears that the process would be never-ending and too complex for the bidders proved to be unfounded.

Subsequent multi-unit licenses have been larger. From this small auction through March 1998, the FCC has held a total of 5,893 auctions. The rules have been changed as both bidders and the government have identified weaknesses. The FCC says, “Prior to [the 1993 law that gave the FCC authority to use competitive bidding], the Commission mainly relied upon comparative hearings and lotteries to select a single licensee from a pool of mutually exclusive applicants for a license. The Commission has found that spectrum auctions more effectively assign licenses than either comparative hearings or lotteries.”

Sources: Milgrom 2004, Cramton and Schwartz 2000, and FCC website fcc.gov/auctions

²¹ PCS, Personal Communication Service, is the name for the 1900 MHz radio band used for digital mobile phone services in Canada and the United States.

Sequential ascending auctions are seen as flawed under certain circumstances. The story of the first spectrum auction exposes the flaw of not conforming to the expectation of one price. In 1981 Sotheby was hired to auction the right to use seven functionally identical transponders on the same satellite. The first auction garnered \$14.4 million, and at each subsequent auction the price declined to \$10.7 million for the sixth transponder, and the seventh got \$11.2 million. From the viewpoint of bosses or shareholders, who have the benefit of hindsight, it would appear that the winner of the first transponder overpaid.²² A second problem is that bidders may behave in a predatory manner, bidding up the price of the first unit to discourage later bidding. Third, this format hinders license aggregation. If some licenses are complements, and a firm wins a license complementary to one that has already sold to someone else, then the firm cannot “go back” and bid differently in the earlier auction. Post-auction trading is inefficient given private information and the small numbers of buyers and sellers. (McAfee and McMillan 1996, pp. 162-3)

Auctions with Re-Sale

When auctions are followed by an opportunity for the winners to resell the objects, this changes the bidding practices. Recently developed theory shows that “resale can fundamentally change the interpretation of bidding data, a seller’s optimal choice of auction, the effects of a reserve price, and even existence of a separating (i.e., efficient) equilibrium.” (Haile 2001, p. 399) Haile showed that the possibility to resell meant that increasing the number of rivals resulted in an increase in bidder valuations and hence a higher winning bid. He tested this result on data from sales of timber harvesting contracts held by the U.S. Forest Service between 1974 and 1989.²³ (Haile 2001)

When resale is possible, a bidder’s valuation depends not only on the value if the firm uses the object itself (in the timber auction case, harvests and processes the timber itself), but also on the value of the possibility to buy and sell in the resale market. The option to sell a contract later raises the valuation; an option to buy later reduces the valuation. Increasing the number of rival bidders, if that increases the expected number of buyers in the resale market, makes the resale market effect larger.²⁴ That is, having more rival bidders raises each bidder’s valuation.

This result contrasts with that of standard models without resale, in which a bidder’s willingness to pay does not increase with the number of bidders. (Recall that in a private values auctions without resale the number of bidders does not affect a bidder’s willingness to pay, and that in any other affiliated values auction without resale, a bidder’s willingness to pay decreases when the number of bidders increases because the winner’s curse effect becomes larger.) Two caveats of this theoretical

²² This *declining price anomaly* is widespread. The cause is the subject of research, but a possible explanation is that some effect analogous to the winner’s curse is at work.

²³ Haile modelled the auctions as ascending (English) auctions. He distinguished bidders’ use values (the values they place on the contract, ignoring resale opportunities) from their valuations (the values they place on winning the auction). Since timber mills vary in their equipment and costs, and they have private information about their own sales and inventories of end products, contracts for future sales, and inventories of uncut timber from private timber sales, their use value was modelled as independent and private. The possibility to resell introduced a common value element. The specific practices of the U.S. Forest Service (see the referenced paper for details) meant that there was little private information regarding the common elements in the values firms place on a given contract. This suggested to the author that a private values model would be most appropriate.

²⁴ The idea is that if there are more rivals during the auction, then this is a signal that the expected number of potential buyers in the resale market is higher. This makes being a seller in the resale market more profitable and being a buyer less profitable.

model are that it ignores the effect of the same bidders competing against each other in future auctions and it ignores the possibility of collusion.

Other theoretical work shows that a resale opportunity can *inter alia* make bidders' valuations dependent on the selling mechanism itself and changes which of the standard auctions yields higher expected revenues. (See Haile 2001 for citations.) In sum, the existence of a secondary market should be taken into account in designing auctions.

Auctions of Capacity

It has been argued that auctions for capacity that will be used in subsequent competition should be designed differently. Where capacity that will be used in subsequent competition is auctioned, there will be considerations beyond optimising the auction. For example, if, in the subsequent competition, some firms will be forced to exit, then neither uniform price nor discriminatory (pay your bid) auctions are likely to result in the most efficient firms winning.²⁵ More generally, auction theory has not provided much guidance in this area, but the "toy models"²⁶ suggest that there may be concerns raised by the asymmetries between entrants and incumbents and among incumbents with different capacities.

Auctions with Asymmetric Information or Valuation

This section is concerned with circumstances where one bidder has better information about the value of an object, or is known to have a slightly higher value for an object. In general these situations are not well-understood, but two models are the drainage tract model and the almost common values model.

The drainage tract model was designed by Wilson (1969) to describe the situation in the first-price sealed-bid auctions to sell the rights to petroleum tracts in the outer continental shelf of the Gulf of Mexico. A *drainage tract* is a tract adjacent to the tract already being developed by an oil company or consortium, the *neighbour*. It is assumed that all bidders have the same valuation, that the neighbour knows with greater precision the true value and that the other bidders have worse information. When there are two bidders, there is a unique equilibrium in which the neighbour has positive expected profits and the non-neighbours have zero expected profits. If there is more than one non-neighbour, there are many equilibria all closely related to the one non-neighbour equilibrium. Oddly, the neighbour's bidding behaviour and expected payoff are independent of the number of non-neighbours bidding. Other findings are that the neighbour wants it to be known that it is better informed as this induces more timid bidding by the non-neighbours. The non-neighbours, by contrast, wish to keep secret any information they have. Further, if the auctioneer-seller publicises some of the neighbour's information, then neighbour's expected profits falls and the seller's expected revenues rises. (Milgrom 2004, pp. 166-181)

²⁵ The reason for this is as follows. A bidder would prefer to not win any capacity than to win capacity, therefore pay for it, and then later be the weakest competitor in the subsequent competition and be "shaken out" from the market. So he bids zero. By the same logic, every bidder bids zero. This cannot be an equilibrium since then each bidder would wish to submit a positive bid so they can be in the subsequent market. All equilibria are inefficient. All pay auctions, where every one pays their bid even though only a fixed number win the capacity, can be a solution. (McAfee 1999)

²⁶ A "toy model" a simple economic model that is not intended to be of general application, but is designed to study a specific phenomenon.

In the *almost common values* model, one bidder (the advantaged bidder) has a slightly higher value than the other bidders, and the other bidders each have the same value of the object. If there are two bidders and the auction is either ascending or second-price sealed-bid, the advantaged bidder wins all the time and greatly decreases auctioneer revenues as compared with the pure common values situation. However, if there is more than one regular bidder in addition to the advantaged bidder, then the advantaged bidder no longer wins all the time although he retains an advantage. Auctioneer revenue may be increased or decreased as compared with the pure common values context. (Levin and Kagel 2003)

Conclusions

This annex has introduced concepts such as private values, common values, winner's curse and the revenue equivalence theorems as well as the standard auctions. Multi-unit auctions, for which theory is less well-developed, were also introduced with examples in which design trade-offs, using intuition developed from the single-unit auctions, were discussed. The main text applies these concepts in the context of pro-competitive auction design and merger review in "bidding markets."

ANNEX 2.

VALUATIONS AND SIGNALS

The purpose of this annex is to provide more precise definitions of the concepts, private values, common values, pure common values, and affiliation.

Valuations and Signals

Notation for defining various information structures is as follows. Let U_i be bidder i 's valuation of the object for bidders $i=1,2,\dots,n$. Define $\mathbf{U}=(U_1,\dots,U_n)$. Let X_i be bidder i 's private information or "signal" or "type." An example of a X_i could be private seismic information about a drilling tract. Define $\mathbf{X}=(X_1,\dots,X_n)$. Use the notational convention that $\mathbf{X}_{-i}=(X_1,\dots,X_{i-1},X_{i+1},\dots,X_n)$.

Valuations and signals are linked by the following relationship: A bidder's expected valuation increases if her signal increases, taking all other bidders' signals as fixed. Or in symbols, $E[U_i|X_i=x_i, \mathbf{X}_{-i}=\mathbf{x}_{-i}]$ is increasing in x_i for all realisations of $\mathbf{x}_{-i}$ of i 's rivals' signals. Without loss of generality, the following condition can also be imposed: $X_i = E[U_i|X_i]$. This means, the expected valuation given the signal is the signal itself.

Definitions

Bidders have *private values* if $E[U_i|X_i=x_i, \dots, X_n=x_n] = E[U_i|X_i=x_i]$ for all $x_1, \dots, x_n$ and all i .

Bidders have *common values* if $E[U_i|X_i=x_i, \dots, X_n=x_n]$ strictly increases in x_j for all i, j , and x_j .

Bidders have *pure common values* if $U_i = U_0$ for all i .

The existence of factors that affect all bidders' valuations does not imply common values. For example, if $X_i=U_i=V_0 + \varepsilon_i$, this is private values despite the "common" factor V_0 . V_0 will introduce correlation among bidders' valuations and among bidders' information, and correlation between one bidder's valuation and another's signal. The reason this is private values is that no rival has information that is relevant to a bidder's assessment of his own valuation, given that the bidder has observed his signal. (After bidder i knows $V_0 + \varepsilon_i$, learning about ε_j does not affect U_i .)

The formal definition of *affiliation* for two bidders is as follows. Let x_1' and x_1'' be realisations of X_1 and x_2' and x_2'' be realisations of X_2 . Let $f(X_1, X_2)$ be the joint density function of the signals. X_1 and X_2 are affiliated if for all $x_1' > x_1''$ and $x_2' > x_2''$

$$(1) \quad f(x_1', x_2')f(x_1'', x_2'') \geq f(x_1', x_2'')f(x_1'', x_2').$$

The meaning of inequality (1) becomes clearer when transformed into conditional probabilities.

$f(x_1, x_2) = g(x_1 | x_2)h(x_2)$ where $g(\cdot)$ is the conditional density of x_1 given x_2 and $h(\cdot)$ is the density of x_2 . Then the above inequality holds iff

$$(2) \quad g(x_1' | x_2') / g(x_1'' | x_2') \geq g(x_1' | x_2'') / g(x_1'' | x_2'')$$

also called the Monotone Likelihood Ratio Property, i.e., higher values of x_1 become relatively more likely as x_2 increases.

The above definition of affiliation follows Klemperer (2004) pp. 50-51. A general definition is at Milgrom (2004), 5.4.1. Affiliation, p. 182 and following.

ANNEX 3.

EXAMPLE OF ESTIMATING THE EFFECT OF A MERGER IN A SECOND-PRICE SEALED-BID AUCTION WITH PRIVATE VALUES

Assume firms A and B are the merging parties, and C and D are competitors. Assume the following bid patterns in four auctions.

Auction 1: Merging Parties have highest and second-highest bids

	Bids	Outcome Pre-merger	Outcome Post-merger	Change due to Merger
A	10	A wins, price = 8	A-B wins, price = 7	Price falls from 8 to 7
B	8			
C	7			

Auction 2: Merging parties have highest but not second-highest bid

	Bids	Outcome Pre-merger	Outcome Post-merger	Change due to Merger
A	10	A wins, price=8	A-B wins, price = 8	None
B	7			
C	8			

Auction 3: Merging parties have second-highest but not highest bid

	Bids	Outcome Pre-merger	Outcome Post-merger	Change due to Merger
A	8	C wins, price=8	C wins, price = 8	None
B	7			
C	10			

Auction 4: Merging parties are not among the two highest bids

	Bids	Outcome Pre-merger	Outcome Post-merger	Change due to Merger
A	7	C wins, price = 8	C wins, price = 8	None
B	6			
C	10			
D	8			

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COMPETITION IN BIDDING MARKETS

3. SUMMARY OF THE DISCUSSION

SUMMARY OF THE DISCUSSION

The Chairman of Working Party Number 2, Alberto Heimler, chaired the roundtable due to the unavoidable absence of the Chairman of the Committee. The Chairman noted that a total of 17 contributions, including three from observers and one from BIAC (the Business and Industry Advisory Committee), had been received for this roundtable. There is also a Secretariat background paper.

The Chairman introduced the main speaker, Professor Paul Klemperer. The Chairman noted that Prof. Klemperer had distributed one of his papers on bidding markets and would make a presentation to start off the roundtable. Prof. Klemperer has contributed quite extensively to the development of the economic theory of auctions. He is a professor at Oxford University and an advisor to the UK Competition Commission. He also has quite broad practical experience in the organisation of auctions, having been involved in the setting up of the United Kingdom's UMTS auction as well as many others.

The roundtable was organised into two main themes. The first was aimed at answering the question of whether the analysis for merger control is different in bidding markets than in other types of markets. The second focused on auctions themselves, that is, on how to change auction rules to make them more competitive and on the enforcement of rules against restrictive agreements, particularly cartels, in auctions.

The Chairman gave the floor to Prof. Klemperer for his presentation.

1. Merger analysis in bidding markets

Prof. Klemperer explained that he had written the circulated paper ("Bidding Markets," *Occasional Paper No. 1*, U.K. Competition Commission, 2005, and at www.paul.klemperer.org) because arguments of the following form are quite often heard: "Because a particular market is a bidding market, market power is impossible." This he labels the "consultants' fallacy." If that argument does not work, a second argument is sometimes made: "Well, even if there is market power, it's not bad in a bidding market." This he labels the "academics' fallacy." If that argument does not work, the next argument may be: "Well, even if it were bad, you don't need regulatory intervention because it's a bidding market." This he labels the "regulators' fallacy." He has seen all of these arguments made in submissions. Taken individually these arguments are not necessarily always wrong; there is some truth in all of them but he thinks that they are greatly exaggerated. He thinks the truth of the matter is they can be true in some economics models, but in the world in which we live they are rather rarely true. His presentation will address what some people seem to mean by bidding markets and then discuss in turn these three fallacies.

So what is a bidding market? The European Commission is said to have defined the term bidding market as one in which tenders take place infrequently, the value of each individual contract is significant, and contracts are typically awarded to a single successful bidder. Definitions of "bidding markets" typically include the following concepts:

- “winner takes all,” so each supplier either wins all or none of the order. There is therefore no smooth trade-off between the price offered and the quantity sold.
- “lumpy competition,” that is, each contest is large relative to a supplier’s total sales in a period.
- “every contest is a new contest”. In other words, there is no “lock-in in” by which the outcome of one contest importantly determines another.
- The sometimes-added fourth concept is that entry of new suppliers into the market is easy.
- Finally of course a bidding market is one that involves a bidding process.

A typical bidding market would be something like a competition for a defence contract for a weapons system. It may not satisfy quite all these assumptions, but that is a kind of thing that is said to be a bidding market by contrast, for example, ordinary retail competition between supermarkets which would not be a bidding market.

The implications of that definition are as follows. The first three parts of the definition—winner-takes-all, lumpy competition, every contest is a new contest—is pretty much equivalent to what economists call “Bertrand price-setting competition” either for a single unit or indeed for a whole market. If you were then to add the fourth bit of the definition—easy entry—in that case it is what economists will call a “contestable market.” And in this context one sees why people say things like, “Market power is impossible,” because indeed if you do have Bertrand competition, then two identical firms is quite enough to ensure competitive outcome and indeed in contestable markets, one firm is enough.

Reviewing markets that involve a bidding process, we can ask ourselves whether they have these four characteristics. None of the 3G auctions were “winner takes all;” there were usually multiple licences with multiple winners. The market for consulting services involves repeated competition, contract after contract after contract, so it is really a much smoother process which Prof. Klemperer would not call “lumpy competition.” The contest to run the United Kingdom’s national lottery is allocated every five or seven years. It is indeed “winner takes all.” It is a monopoly and therefore very lumpy—just a single contract every five or seven years. But Prof. Klemperer would not characterise it as having either easy entry or that every contest began afresh. There are very large incumbency advantages; once you have learnt how to run a lottery and have developed your reputation, these give you a major advantage over anybody else who competes against you. In the actual contests, eight bidders participated the very first time a national lottery was started. For the second franchise period, there was just two bidders and surprisingly enough the same winner. How many bidders will there be in the third franchise period? The Government has got very worried about that.

Some bidding processes satisfy none of these assumptions, an electricity pool for example. In an electricity pool there can be multiple winners. It is not lumpy competition because there is another market every half an hour. And not every contract begins afresh; past history matters because the firms have learnt about each other. To produce electricity you need to build a new generator and you cannot just quickly and easily start up a new generator of substantial volume. Applying standard guidelines, an electricity market could satisfy essentially all of the conditions for market characteristics that could give rise to competitive problems. So it is no surprise that the electricity markets—despite using bidding processes—are the ones where you have seen accusations around the world of unilateral effects and coordinated effects.

All these bidding processes yield predation, dominance, unilateral effects and coordinated effects for all the usual reasons. The basic problem that Prof. Klemperer sees is that people define bidding markets in the way set out above, and then go on to assume that bidding processes have the same nice properties. They conflate the idea of a bidding process with a notion of a bidding market. So he thinks the term bidding market has now become thoroughly unhelpful and misleading. It is much more useful to use the terms “Bertrand markets” or “contestable markets,” which are perfectly fine economic concepts.

The next part of Prof. Klemperer’s presentation was about bidding processes. He argued that a bidding process does not involve fundamentally new economics, but just basic, standard economics. Nevertheless, if one looks at fine details there are some aspects to bidding processes that exacerbate competition problems rather than reduce them.

One example of an auction that went wrong was an auction for spectrum in the United States. There were many different lots, and this was an ascending auction—in which bidders make bids that everybody can see—that did not end until all the bidding on all the lots ends. This example involves only three of the lots in three towns. The bidding started in two of the towns, Marshalltown and Waterloo. In both of them, it looked like one firm was interested and nobody else really competed seriously. In the third town, Rochester, there was a very fierce battle” between McLeod and US West with the two firms overbidding each other, one after the other, bidding the price up. So that was the initial bidding: fierce competition in Rochester, not much happening in Marshalltown and Waterloo. What happened next? There was yet another bid from US West in Rochester and for the first time US West bid in Waterloo. Rather curiously, also for the first time, the bid was not a round number of thousands of dollars. This one ended in 378 dollars. Why suddenly bidding in Waterloo and why such a strange bid? The 378 was really signalling that this bid had nothing to do with Waterloo; this was a bid about what was happening in Rochester – which was *lot number* 378. This bid was saying: “If you keep fighting in Rochester, McLeod, then we’ll make your life very unpleasant in other places.” The beauty of this signal is that McLeod paid for it because McLeod had to come back with a higher bid in Waterloo. McLeod came back as expected in Waterloo, but seemed to ignore the signal and came back once more in Rochester. So now US West made a bid in Marshalltown for the first time, and that bid too ended in 378. In other words, “We can make life very unpleasant for you in many different places”, and this time McLeod got the message and never bid again in Rochester.

Prof. Klemperer think it is a beautiful example of how a bidding process can help firms signal, how it can support collusion or coordinated behaviour, in part because one can target a punishment on a firm to get the other firm do what you want it to do. So even though one firm cannot directly talk to another firm, the auction rules here gave the firm a language, a language that seems to be just rich enough to tell your competitors what you want them to do, but not so rich that it is confusing. Return to the example of supermarkets; supermarkets sell thousands of different products; they differentiate in many different ways. It is actually quite a hard environment of firms to cooperate in. You might try to signal there, but it would actually be very hard to explain what you are signalling and why. In the spectrum auction example, there is just enough language for absolutely clear signalling.

Apply a standard guideline for coordinate effects to such a market. First, “Can firms reach a common understanding?” It is very clear how you would divide things up here: Some firms win some markets and others win other markets which have been neatly divided up in packages by the government. “Can you check whether or not a firm is following the implicit collusive agreement?” Very easy; they either stop bidding on a town or they do not. “Can you credibly deter deviations?” Well, the spectrum example showed how that can be done and the same can be done to prevent further entry. Is there a better market to collude in? So much for the fallacy that market power is impossible in a market involving a bidding process!

Next is the academic's fallacy, "market power does not matter when a bidding process is involved." None make such a stark and simple statement as that, but several have argued that in the case of so-called "common value mergers," merging bidders actually will end up competing more aggressively and a merger will benefit the bid takers. While this is not the right forum to go into the details of the argument, it is largely false; there is an effect but there are countervailing effects in the other direction. The statement is not right except in special cases which are not very plausible; in general we would expect such a merger to be bad for the bid taker for the usual kinds of reasons. Furthermore, common value mergers can discourage entry into auctions and reinforce dominance and predation. We have seen that in some spectrum auctions. So market power is usually bad in this context.

- Finally, the regulator's fallacy, "That even when market power is bad we do not need regulation." The argument is that the buyer has power in setting the bidding process that generates the price. They buyer, therefore, can choose the auction form to encourage entry, or he can build in special protections against collusion, or make other clever design choices. But in practice there are real constraints on a bid taker's power to do this.
- There are legal constraints. E.g., rules about state aid say that you cannot discriminate in a straightforward way between bidders in the European Union. (One might want to discriminate between bidders in order to encourage entry, for example.)
- There may be political constraints.
- There are organisational constraints. In any organisation there will be principal-agent problems in both public and private sector organisations. For example, the person who is running the bidding process today may design the bidding in a way that is ideal in terms of the short-run effects but may overlook lock-in effects that leave the institution in a very weak position in the future. Maybe, as regulators, one should take organisational structures as given, in the same way as one understands that market structures are given, and accept limitations on organisations.
- It may be impossible, for political or organisational reasons, to commit to a particular design. There may be lobbying pressure. In his book (*Auctions: Theory and Practice*, Princeton University Press) Prof. Klemperer writes about the Hong Kong spectrum auction where the designers came up with what in theory was a beautifully clever design, but it was also not robust to lobbying. It was very easy to make political arguments that it should be changed in what looked like a very simple tweak, but which vitiated the design. Another potential problem is that it may be difficult to commit to one's own future behaviour. It's quite common to say, Let's take best and final bids now, we will run a sealed-bid auction and the winner is the winner and that will be the end of it. The trouble is that, when you take best and final bids, you have a winner but one of the loser comes back to you and says that he would pay a bit more. How are you going to respond to that? At this point it is in your interest to accept the higher bid. The problem is that if you do so, people will think you are going to accept future bids later on. Then you do not really have a best and final bid auction; it is an ascending auction. This is a very real problem in practice.

The fundamental point is that there may be constraints on the kind of auction you can really run. Competition regulators must be careful not to over-emphasize what buyers can do in the way of getting around a competition problem by running a different kind of auction. This can certainly sometimes be a fallacy.

In closing his presentation, Prof. Klemperer reiterated that fundamentally the term bidding market is unhelpful and misleading. Regarding auctions and bidding processes, there are three common fallacies:

- the consultant fallacy: Market power is impossible,
- the academic's fallacy: Even if there were market power, it would not be bad.
- the regulator's fallacy: Even if there were bad market power, regulators need not worry about it "because market-participants can correct it themselves".

All of them are wrong.

The chairman, after thanking Prof. Klemperer, turned to the written contribution to the roundtable. He commented first on the South African contribution. The Competition Tribunal's decision in a merger between Murray & Roberts and Cementation Co. mentions, in particular, the following characteristics of the market in which the merger took place: (1) competition on the basis of price, (2) unusually sophisticated clients, (3) confidential bids and award, (4) winner-takes-all, (5) each contract constituting a large part of a bidder's work, and (6) easy entry. The chairman noted that the contribution states *inter alia* that mainstream market analysis is relevant for mergers in bidding markets. The chairman asked how to reconcile this statement with the decision in the above-mentioned merger to allow a merger that left only two competitors in the market.

The delegate from South Africa said that the Murray & Roberts and Cementation Co merger decision (Case No.: 02/LM/Jan04) would not change if Prof. Klemperer's book had been published before the Tribunal's decision. He further said that the decision was based on conventional criteria for analysing mergers. The merger took place between two firms supplying the shaft sinking and raise drilling sub-markets within a broader relevant market for the provision of mining infrastructure. The sort of criteria that were examined included barriers to entry, supply side substitution, countervailing power, and the likelihood of post-merger cooperation or predation. The most important criteria in this case were supply side substitution and countervailing power. In this particular instance, the buyers, the mining houses, had until fairly recently themselves undertaken the work of shaft sinking and raise drilling. They were perfectly capable of doing so again, and in fact the largest mining house had more of the capital equipment necessary to undertake raise drilling than all of the bidders put together. So the possibility of their entering in the face of the exercise of market power was absolutely manifest. Also from their days of doing this work themselves, they had retained the kind of teams who were capable and sufficiently sophisticated not only of issuing a tender with great technical knowledge but also of detecting collusion. So the merger was approved on conventional merger criteria, in particular the countervailing power of the customer and the evidence that they were players who already possessed the assets necessary to compete immediately for the market should they have so wished to do so.

The delegate thought that, although the merger is characterised in the decision as a 3-to-2 merger, in fact it was not. In this case, the acquiring company had no existing market share at all; it was just a regular and credible bidder. But several others might have been included as well and it is a particular easy market in which to form consortia.

Another merger case involved companies that bid on concessions from the National Roads Agency to run toll roads. That market had all the features of a contestable Bertrand market. But there was some evidence—which is also important in merger analysis—that suggested that there was some collusion in bidding: Some bids had been very close to each other, there were very few bidders and

they had been declining in number. The National Roads Agency opposed the merger for this reason. When the Tribunal looked at the evidence of collusion, it seemed obvious to them that the bids were specified so narrowly and specifically that there was very little room to manoeuvre on price, so one would expect the prices to be pretty close to each other. There were so few bidders because margins were so low that few companies were interested in bidding. So if market power was being exercised, in this instance it was market power exercised by the buyers rather than the sellers.

The Chairman turned next to the United Kingdom's contribution, which he quoted part: "the economic analysis of markets characterized by bidding processes....should not be seen as requiring a whole new paradigm". But he noted that the contribution does say that there is a need for some different forms of analysis. He asked the delegate from the United Kingdom, What are the classical tools of analysis which are not so useful to examine mergers in bidding markets? How does one adapt the conventional paradigm to assess mergers in markets characterised by bidding processes? In particular there is a quote from the UK report that says that "in principle a quantitative assessment of the unilateral effects of the loss of a bidder on pricing can be made, but recent Competition Commission decisions to block mergers have not been based on such an assessment." What are then the alternatives, the chairman asked, and why were they chosen?

The Delegate from the United Kingdom began by noting that he agreed with Prof. Klemperer's characterisation of the problem in his presentation.

Regarding practical techniques in markets characterised by bidding processes, he first addressed the question of what is not so useful. As, e.g., the contribution from New Zealand, has highlighted, market definition by use of the SSNIP test ("small but significant and non-transitory increase in price" test) can sometimes be difficult in markets characterised by bidding processes because the price is different potentially for each contract. While the delegate thought this was a problem, it was not necessarily more so than in any other market in which prices are set individually for each contract. In these circumstances, sometimes it is useful to focus on the supply side.

As many contributions, such as the one from the European Commission, have said, market shares may not be very informative. In recent merger cases the competition authority has tried to identify circumstances in which market shares will be informative about market power. For example, incumbency advantages were examined in the Carl Zeiss/Bio-Rad microscope case. If incumbents have an advantage, so if a firm has sold a microscope to a particular customer in the past it is more likely to sell one to him in the future, then a larger market share in principle can create market power in the normal way.

Regarding what is useful, the delegate did not think it useful to modify existing tools, but rather to pick appropriate tools from a normal regulator's "tool box." In the United Kingdom, there were four merger cases over the last three or four years that the delegate thought exhibited Bertrand style competition. Two of these cases involved differentiated products and two involved undifferentiated products but with significant capacity constraints. In both of the differentiated products cases—the microscope case and one involving incubators for premature babies—the key was assessment of the closeness of competition between the merging parties. Many contributions address this, and they note that sometimes the bidding processes themselves can be very informative about this. An example is the Oracle/Peoplesoft case that both the United States and European Commission contributions address. Bidding in these circumstances can create an opportunity for some analysis about the closeness of competition. But the delegate urged that one should not lose sight of the fact that other techniques for assessing the closeness of two differentiated products are still very relevant, whether that is assessment of product characteristics, the use of surveys or other instruments to gauge the opinions of customers or in some occasion the natural pricing experiments, what happens if one

product suddenly disappears from the market for temporary reasons, where the customers turn to, that is, diversion ratio analysis. So in differentiated product cases, the delegate opined that the analysis revolves about identifying the closeness of competition; sometimes the bidding data will be helpful, sometimes it will not be.

The two cases involving undifferentiated products involved the production of glass bottles and the bottling of soft drinks. The competition authority examined capacity constraints in great detail, including the various costs of different degrees of capacity expansion going from the short term to the longer term. Effectively, the competition authority estimated a supply curve. It found in the soft drinks bottling case that the supply curve was sufficiently flat that it had no concerns that the fringe firms would be able to expand and defeat any attempt at exercising any uncoordinated or unilateral market power.

The delegate closed his answer by noting that he thought that the note by the Secretariat was absolutely excellent, but he especially appreciated the accuracy and relevance of a quote from Waehrer and Perry 2003: “Auction markets also provide an opportunity for implausible defences.”

The Chairman noted that the delegate from the United Kingdom confirmed that the economic analysis is the same in markets using a bidding process as in “regular” markets because the issues that are of interest are the same irrespective of the way competition operates.

The Chairman next turned to the New Zealand contribution. This contribution addresses the difficulty of applying the hypothetical monopolist test (or “SSNIP test”) for market definition in markets where bidding processes are used, and also the issue of how well market shares indicate competitiveness. The New Zealand contribution discusses the Sonic/New Zealand Diagnostic Group merger of pathology business. In this case, the Commission seems to have worked around these difficulties by looking directly at how the merger would modify the competitive constraints imposed by the various bidders, and the potential for competing bidders to constrain the merged entity in future bidding rounds without resorting to complex quantitative analysis. He noted that the merger was prohibited. The chairman asked the delegate from New Zealand to describe the merger and the methods used to analyze it.

The delegate from New Zealand described the Sonic/New Zealand Diagnostic Group merger. It involved the two largest pathology businesses in the country. The remaining participants in this market were niche players in individual regions in the country. The parties applied for a merger in six of the eleven District Health Board regions in New Zealand and they intended to compete head to head in the remaining regions. At the same time as this application was received, the District Health Boards in New Zealand were moving towards single provider contracts for the provision of all pathology services. Under this system, winning providers secured exclusive rights to provide services to a region for the duration of the contract period. For the purposes of the application and the analysis, the competition authority assumed that this would be the preferred method of contracting in the future. Consequently competition would therefore be *for* the market rather than *in* the market as that had been to date; hence the Commission considered that its market definition needed to recognise the changed nature of competition.

Regarding the application of the SSNIP test for market definition, the problem is that there is no obvious price on which to add the SSNIP since competition occurs simultaneously rather than through sequential moves. Even if the hypothetical monopolist in a region were assumed to add 5 to 10% to its full cost, it is difficult to predict whether a provider elsewhere would bid. While players may have been able glean some information about competitors’ costs and prices from experiences with tenders in other regions or from previous contracting rounds, such information would be of limited use. There

are significant regional variations in terms of demographics, testing needs, relationships with the regions' health board and other factors. Also bidding occurred infrequently, every 3 to 10 years, so market conditions were likely to evolve significantly in the intervening period. Another factor that confounded the application of the SSNIP test was the change in the contracting model. Both the change from multiple suppliers to a single supplier selected via an auction process and the change from regulated prices to unregulated prices represented fundamental shifts in the competitive landscape. Thus, applying a SSNIP test to historic prices would not be sensible. Notwithstanding these difficulties, the notion of substitutability which underlies the SSNIP test was useful in defining the relevant market. Several non-price factors helped to identify the extent of substitutability on both the demand and supply side. These included, among other factors, distinct product characteristics and uses, unique production facilities or processes, distinct purchasers, specialisation of sellers and the views of industry participants. In this particular case, the Commission relied more on these non-price factors to come to a view on the scope of the relevant market.

Regarding the predictive value of market shares, current shares can and did provide a misleading view of the existing competition in these markets, particularly where they have a winner-takes-all element. By definition, in such markets the incumbent firm has a 100% market share so there are no rival firms in the market. However there may be several potential competitors ready to enter at the next bidding opportunity. The focus of the analysis really was on the competitive constraint from such potential entrants on the incumbent merged entity. The Commission modified its standard analysis of existing competition and potential competition and instead analysed the nature of competition by identifying the likely potential bidders, that is, previous providers to the region, new domestic bidders and also potential overseas entrants.

The Commission qualitatively assessed the likely barriers to entry faced by each future potential bidder which included access to technical labour and capital, the incumbents' operational scale and scope, knowledge of the region, reputation and previously established relationships. The Commission considered the likelihood, extent and timeliness for potential entry in the next bidding round by evaluating the identified barriers with respect to each potential entrant. Consultation with industry participants was useful. The Commission found that most potential entrants would find these barriers insurmountable. However, given that Sonic and NZDG are the largest, best resourced and most experienced providers of pathology services in New Zealand, they would be likely to overcome these barriers readily.

Therefore it was likely that, absent the merger, NZDG and Sonic would exert a strong competitive constraint on one another. The proposed merger would eliminate this constraint.

The Commission examined the extent of countervailing power by the District Health Boards either through switching to an alternative provider or by re-establishing in-house provision. But the likely high barriers to entry and risk and costs associated with self-provision—the Health Boards had clearly signalled in the past that they would not re-enter this market—the Commission found that the countervailing power to be insufficient to discipline the merged entity. One difficulty in this case was that three of the District Health Boards had invited the merging parties to put in a joint bid.

Finally, the Commission also was not satisfied that the proposal would not enhance the likelihood of coordinated behaviour occurring both in these markets but also the other regional markets in NZ. Taken together, these factors meant that the Commission could not be satisfied that the proposed merger would not be likely to lead to a substantial lessening of competition. As a consequence the Commission declined to clear the merger.

The Chairman next turned to the Czech Republic. This contribution contains a description of a merger of two construction companies, Metrostav and Subterra. One major difficulty was in the analysis related to market definition. Construction is a very broad term; some companies are specialized and others are capable of performing a wide range of work. The chairman asked the Czech delegate to describe the analysis used to assess this merger. The contribution contains the statement that, “This decision was confirmed by win/loss analysis of merging parties in tenders last year;” the delegate was asked to expand on the remark.

The delegate from the Czech Republic noted that, in the referenced case, the definition of a relevant market was very important and not easy. There are ten large companies in the construction business in the Czech Republic. They are not specialised but have complex portfolios of technologies. This is one reason for the relevant market definition. Only three of the companies had specialised in underground work; only three would bid for tenders for tunnels or building metros or for building new mines. The merger involved two of these three companies. The competition authority found that both companies’ turnover from this special type of work for was not higher than 10% of their total turnovers, and that this special type of work represents only 1 or 2 % of the construction market. This is why the relevant product market was defined as the market for building construction and structural engineering.

Regarding the win/loss analysis, the outcomes of tenders were used to calculate market shares. These were found to be stable, so previous years’ results could form a basis for calculating market power.

Regarding the assessment of the impact of the merger, the competition office found that the Public Procurement Act and the existence of comparably efficient competitors on the market would prevent the creation of a dominant company. So the merger was approved.

The Chairman turned next to the United States. He noted that the contribution thoroughly discusses the quantitative approaches to identifying competitive constraints when there is bidding market or bidding process involved. He found the analysis similar to that presented by the United Kingdom delegate. The chairman asked the delegate to confirm whether the analysis involves a two-step process—first, do the merging parties actually compete and second, how can one estimate the size of the price effect, if any—and to discuss the possible limitations on the use of these methods. He also asked what confidence can be attached to the use of such quantitative instruments if there is indeed a high incidence of collusion.

One delegate from the United States addressed the question of how robust the techniques were to possible collusion. He thought that the question of collusion raises general issues about empirical analysis in antitrust that goes beyond bidding markets. Much of the empirical work done for analyzing mergers, in particular simulation, assumes that firms are behaving non-cooperatively. Certainly that should raise questions about the application of some of the more counter-intuitive theoretical results that Prof. Klemperer pointed out.

As for specific empirical techniques, the delegate thought that the possible presence of collusion presented a problem for some but not for all of them. It is a problem for the structural modelling of competitive effects. But it seemed to the delegate it is less of a problem for the simpler techniques that are sometimes used. One such technique is to look at the relationship between prices that are bid and the number of bidders. If there is bidding to supply, one might find, for example, that lower prices are bid on average when there are four bidders than when there are two bidders. As with any so-called reduced form estimation, there are a variety of interpretations. But if collusion is going on, it might go on for some bids and not for others, and when the collusion breaks up there are a lot of bidders and

lower prices. This technique, looking at the relationship of the number of bidders and bids, would perhaps detect collusive effects.

Another delegate from the United States addressed the request to describe some of the techniques and limitations. The delegate noted that the written contribution to the roundtable primarily describes what economists would call “reduced form techniques” in which they attempt to look at the relationship of the price bid to the number of bidders, the identity of bidders and also the characteristics of the bid. Such analysis also looks at how often, say, the two firms that are proposing to merge are bidding against each other and how often in those auctions they are the lowest and second lowest bidders.

The delegate fully agreed with Prof. Klemperer’s statement that similar economic forces operate in markets with bidding as operate in other markets. This means that the types of problems that are likely to arise in the analysis of markets with bidding are by-and-large going to be analogous to the types of problems that arise in the analysis in non-bidding markets. He proceeded to address three such problems.

First, data problems can arise in analyzing auctions. The number of potential bidders, rather than the number of actual bidders, is relevant. But one observes the number of actual bidders, which can differ from the number of potential bidders. Further, the analysis can be affected by what the bidders observe during the bidding—do they know the identity of who is bidding, and when do they learn that?

A second problem is a standard problem that arises in all types of reduced form analysis. To illustrate, assume one is looking at the relationship of price to number of bidders. It is important to distinguish the competitive effect that arises when there is one more bidder from what might be other factors that are inducing one more bidder to participate. A simple example would be the case when there are many suppliers who can bid on easy, low cost projects, but only two can bid on complicated, high cost projects. The analyst will then observe a high price when there are two bidders and very low prices when there are many bidders. It would be wrong to attribute the entire price drop to competition because there are really two effects: One is that costs are lower and the second is that competition is stronger. One has to try to distinguish those two effects.

A third slightly more subtle issue, which also arises in non-bidding contexts, is what is called “repositioning.” If suppliers offer differentiated products, then the post-merger entity may choose to reposition and offer products with different characteristics from those that were offered pre-merger. This would be a change in competition due to the merger in addition to raising price.

In summary, the analogous problems that arise in markets with non-bidding processes arise also in a context when bidding is involved, but an analyst might have to deal with it slightly differently because of the specifics of bidding.

Prof. Klemperer reiterated a point made by the delegate from the United States, that it is the number of potential bidders that is important in the analysis. In practice, bid-takers may pre-select a short list, or there may be different sub-markets and who gets invited to bid is very different for the different sub-markets. Simple theory can often obscure these elements of the analysis of complex processes.

The delegate from the United States noted that the idea of potential bidders could be rephrased in non-bidding terminology as, in a particular case, entry being so easy that there are many potential

bidders. Even if only three people actually bid, for example, if one is removed then in a sense another person sits in his chair.

The Chairman, returning to the example involving bidding to perform simple and complex projects, asked whether the problem of distinguishing the effect of more bidders from the effect of different complexity of project could not be resolved at the market definition stage.

The delegate from the United States replied that it depended on what is observable. If the analyst can observe the characteristics, then he should take them into account. The difficult problem arises when the determinants of why someone is bidding is observable to the bidder, but not observable to the analyst. There may be characteristics of a project, of which the analyst is simply unaware, that trigger more people bidding rather than fewer people bidding. Whenever one performs this sort of econometric analysis, one wants to ensure that one is controlling for the fact that something that cannot be observed may be going on in the process that is determining the number of bidders; one cannot just assume that there is a random variable that has been exogenously moved. Sometimes there are natural experiments, and these can be useful. As an example of a “natural experiment” the delegate referred to a hypothetical instance where a bid-taker arbitrarily excludes a bidder in advance.

The chairman asked whether the problem of hidden characteristics was common in bidding processes or whether, by contrast, characteristics of products could usually be dealt with at the market definition stage.

One delegate from the United States replied that whenever one is performing any analysis of price as a result of the number of firms or market concentration, the problem of possible hidden characteristics is present. Therefore, one should always check that the problem is not so serious as to undo the analysis.

An alternative to reduced-form analysis—the type that has just been discussed—is a structural analysis. The idea is to uncover the underlying cost structure of the firms that are bidding. This is at the forefront econometric methods right now, and it has not yet been used in antitrust case.

Another delegate from the United States replied that it would be very hard to do econometric analysis when the bidding in itself is very complex. He did not think that the competition authority would necessarily try to solve the problem through market definition. He referred to the Commentaries on the Horizontal Merger Guidelines just issued by the Department of Justice and Federal Trade Commission, in which one of the main themes is that the competition authorities try to perform an integrated analysis; they do not start with market definition and then go to effects. The delegate thought that, in a complicated bidding situation, the evidence that would tend to be most important would be evidence on whether or not the companies view each other as important competitors in a particular bidding situation.

The Chairman turned to the contribution from the European Commission. That reviews five merger cases that might be considered as bidding market or bidding process cases, and concludes with a number of lessons learnt. First, like others, it concludes that bidding markets do not fundamentally alter the nature of the competitive analysis. But the European Commission considers that market shares in bidding markets provide some indication of market power. He asked the delegate from the European Commission to explain how it applies this principle.

The delegate from the European Commission noted that probably the most salient consensus that emerges from the various papers is that bidding markets do not require a new paradigm; they do not materially or fundamentally alter the nature of the competitive analysis. In the same way, they do not

fundamentally change the way that market shares are correlated in some way with market power. The delegate thought that, whether one is examining bidding markets or not, an analyst still needs to go through the relevant factors such as product differentiation, capacity constraints, barriers to entry and all the rest.

The delegate from the European Commission thought that markets that Prof. Klemperer characterises as ideal bidding markets are those where, in many cases, market shares do not help you. But in many markets where purchases are made through bidding processes, and GE/Instrumentarium is a good example, products are differentiated. High market shares and high increments of market shares raise a question with regard to whether the market share is a random outcome. Secondly, where there are high market shares and high increments, this may indicate that the merging parties produce relatively close substitutes, that is, that they exert an important competitive constraint on each other. In other words, there may be an important subset of customers for whom the merging parties' products represent a second choice and there you would have a competitive effect.

The GE/Instrumentarium case involved highly differentiated products. While the merger concerned a whole range of product markets, the market discussed in the European Commission's paper was for a certain type of patient monitors that are purchased by hospitals. That case was interesting in terms of structural indicators, qualitative analysis and also the kind of frequency analysis that is referred to in the United States' contribution. Instrumentarium was the leading competitor in this market, with below 40% market share. GE had market share in the single digits. GE, Instrumentarium, Siemens and Philips all appeared to be credible bidders in the sense that they produced comparable products that were good substitutes. GE had a low nominal market share because they had just lost an alliance partner and they had traditionally occupied slightly different market segments. But overall they were a very powerful competitor across the whole range of medical products and they had distribution networks across Europe. So the Commission believed they had to be considered as a credible competitor.

The EC has to issue a clearance decision or a prohibition decision on a merger; it cannot simply not challenge a merger. The EC conducted an analysis very similar to the reduced-form analysis to which the delegate from the United States referred earlier. This analysis indicated that discounts were significantly higher whenever GE and Instrumentarium were bidding against each other in a given bidding contest. A challenge in the analysis was to take account of the product characteristics. These had the single largest effect on price but are not always easy for an outsider to track. In this borderline case, reduced-form regression analysis provided important and probably decisive evidence in the case.

Siemens VA Tech is a second merger described in the European Commission's contribution. The product market was hydropower equipment. The products that were tendered in a given auction could range from single turbine blades to almost a complete hydropower plant. Thus, the value of these auctions ranged from a thousand to millions of euros. It can be challenging to control for all these factors that have a strong effect on price in order to learn about the factor you are interested in, that is, the simultaneous presence of the merging parties in that case. This can make these kinds of analysis costly not only for the competition authority but also for the merging parties and for third parties who have to supply the necessary data.

Returning to the collusion point raised earlier by other speakers, the delegate from the European Commission thought collusion would be particularly important in precisely those markets that were characterised as "ideal bidding markets." Those are the markets which, based on unilateral conduct, one would expect to be very competitive. But these are exactly the kinds of markets where you will find those cartels operating. That is something that is quite difficult to analyse in a merger context, especially if you believe that pre-merger there is no collusion but you are wondering whether, having

discarded unilateral effects, maybe the merger will enable companies to collude, be it tacitly or explicitly. Obvious these are markets with a very small number of competitors where the profits from colluding are extremely high. That is probably an area where competition authorities' analytical tools are not as developed as one would like and where more research could be done in the future.

The Chairman asked the delegate from the European Commission whether supply side substitutability was substantially lower in a public procurement type situation than in other tendering situations. He noted that in many non-procurement type situations, bidders could offer products that are not exactly what the potential purchaser has requested. He contrasted this with a public procurement situation in which, while there may be supply side substitutability *ex ante*, once the request for bids is issued, it is very specific. In such a situation, how can the competitive constraints faced by each company be analyzed?

The delegate from the European Commission replied that in precisely such a setting a relatively simple frequency type of analysis can be quite informative. This is because exactly when product specifications are determined in great detail and bidding is costly, people would not participate in a tender if they have no chance from the outset to win. The delegate believes that, in such a setting, one can learn a lot from the identity of bidders that participate in the same tenders. That is a simple analysis that can almost always be implemented.

The chairman then turned to the contribution from BIAC, the Business and Industry Advisory Committee. He noted the final sentence of the BIAC contribution: "A reliance on standardised analytical tools which may be sufficient in a majority of merger cases often are inadequate in markets involving biddings or auctions." And he noted the discussion on the Oracle/Peoplesoft merger. The chairman asked BIAC to react to the discussion so far, and to explain what BIAC thought would have been the correct analytical tools to use in the analysis of the above-mentioned merger.

The representative from BIAC noted that bidding processes frequently involve business-to-business tenders. Thus, BIAC recognises that mergers between companies that have historically bid one against another have consequences for businesses on both sides of the equation.

Bid markets present a lot of interesting circumstances including the ability to obtain competitive information in a granular form that often is not observed in other types of merger analysis. The BIAC representative emphasised that one cannot stop the analysis after you construct the proper economic model. Rather, you have to ensure that the proper factual analysis is conducted as well.

The BIAC representative offered an example in which market share presumptions were not applicable. A merger was proposed between two companies that bid to supply axle shafts for pick-up trucks. The market structure was relatively simple in that there were three major purchasers in the United States, the big three auto makers. Six companies could have effectively bid in this market; they had sufficient capacity to take the entire bid, which is how the tenders were delivered. The two merging companies had won two of the three bidding competitions for the big three, so their combined market shares would be about 70%. They were also the lowest cost suppliers because their capacity utilization was very high. They had been the number 1 and number 2 bidders against one another in the past two bid competitions in which they competed. Under some structural models, such a situation would cause one to presume anti-competitive effects. But because they had each won a competition, neither had sufficient capacity to make a major bid in the market for the next 7 to 10 years. In order to bid, they would have had to construct new facilities that would have made them, in effect, the two least effective bidders in future competitions. Hence, they could not constrain other bidders. This is one simple example of an instance in which market share presumptions would have come up with

exactly the wrong conclusion as to whether a merger should or should not be approved. In fact, the merger was reviewed by the Federal Trade Commission and was cleared in the first phase.

The BIAC representative next commented on the Oracle/Peoplesoft merger. He saw this as a good example of a situation in which factual analysis was really necessary to complement the economic model. The reliability of the outcome of the analysis depends upon the accurate assessment of critical assumptions. One such critical assumption was that “customer evaluations are common knowledge.” But, in situations involving differentiated products, to make this assumption can often be a quantum leap. The products relevant to the analysis have hundreds of features and it was very difficult for bidders to determine which features were important to customers as compared to the features offered by their competitors. This information was very valuable to the purchaser and therefore closely guarded. So, the BIAC representative argued, there was no reliable or at least objective way to make that determination. Thus, one of the assumptions on which the model relied, that customer evaluations were common knowledge, was not a reliable assumption.

The second critical assumption was that the discount approval forms were an actual measure of the competition in the market place between the parties. (Oracle required salespersons to state in the customer discount approval forms who they believe their competitor was.) But Oracle surveyed customers after competitions were concluded to learn who their actual competitor had been. That survey revealed that, in fact, Oracle was correct in less than half the cases as to who their actual competitor was, and with respect to Peoplesoft they were even less accurate in measuring who their actual competitor was. So this was another assumption that, argued the BIAC representative, was not supported by a factual analysis.

The BIAC representative said that an appropriate economic model for analyzing the merger would have to properly account for the inability of Oracle to discern who they were competing against and how the customers valued the alternatives. He said that such a model would have to predict whether Oracle would have an increased ability of actually predicting those two elements because those were the two critical elements on which Oracle based their decision about how much discount to offer the customers.

He closed his comments by observing that many of the most difficult questions that arise in mergers between parties involved in a bidding process cannot be answered entirely by the economic models that try to quantify the extent of harm that comes from the merger. They require careful factual analysis and those two concepts—economic models and factual analysis—have to be married very closely together in order to get accurate results. Further, he emphasised that historical market shares may not reflect the future competitive vitality; as with any merger analysis, the value of historical information is only relevant to the extent that it can be applied to future market transactions.

2. The design of auctions and tenders

The Chairman noted that the roundtable would now focus on the second major topic, the design of auctions and tenders. He asked Prof. Klemperer to provide an overview.

Prof. Klemperer said that bidding processes are not different from the rest of economics. So in designing a bidding process one should worry about the same things as one usually worries about, in other words, coordinated effects, dominance, predation, etc. For example, can entry be made easier? One may want to subsidise entry, so for example make payments for proposals in an architectural competition. Or, in order to encourage weaker bidders to participate, one may want to give them bidding credits or low-cost financing. Of course, the bid taker is generally giving away money with these practices. Alternatively, making resale easier can encourage entry.

Information provision can promote competition. This could either be public information provision, giving everybody the same information, or providing information to specific bidders. For example, a bid taker such as a hospital may have a standard supplier for, say, a computer system, and the hospital wishes to create a second potential source. Then it may give a competitor a scoping contract to investigate what the next system might be as a way of giving the competitor some information to let them compete better with the current incumbent.

A bid taker may also want to have actual second sources. In some contexts there could be multiple winners. Or the bid taker may ask for so-called non competitive bids. These are ways of getting additional suppliers in, but they may actually be ways of reducing competition for a given number of firms. In some settings they will be desirable and in some others they will be less desirable.

Coordinated effects can be dealt with by, among other things, making division harder. Infrequent repetition of the auction makes it harder for people to figure out how to divide the pie, and possibly the bid taker can make it hard to predict the size of different auctions. Monitoring adherence to coordination can be made more difficult by having a random choice of winner or by making it hard to predict exactly how the winner will be chosen by having multidimensional criteria. Creating a lack of transparency may, on the other hand, encourage corruption or collusion between the bid taker and some bidders. The advisability of decreasing transparency will depend on the setting. Fairly obviously, signals and threats need to be outlawed.

In addition to the usual concerns, some concerns arise from the fact that a bidding process is a “new market.” One should worry about the effect of that new market on other markets and the effect of other markets on the new market. For example, one of the concerns in the design of the United Kingdom’s 3G auction was the interaction of that auction with other European auctions. There was an advantage to going first in terms of the way bidders responded to the process. If auctions will occur a second time, such as for the United Kingdom’s national lottery mentioned earlier, one should worry about the fact that what you do today will affect the re-contracting stage. Furthermore, in some cases you will be directly creating a market. For example, the 3G auctions created the market structure for the UMTS market.

Bidding processes are special in that they have formal rules and these create additional issues. First, the designer has to worry about fine detail, about loopholes that bidders will be trying to find in order to game the situation. The second issue is how the rules will be enforced. Will the rules be enforced and do people believe they will be enforced? If a rule is not credible then it is not meaningful and one is better off not having it. But in some contexts it may be better to deliberately stay vague in order to protect against the problem of loopholes. Mistakes will be made so the bid taker probably does often want to retain the ultimate ability to change the rules if absolutely necessary. How to balance credibility with the ultimate ability to change rules is a challenge.

Enforcement issues differ according to environment and regime. For example in some environments a sealed bid auction will be problematic because in a sealed bid auction there is more scope for collusion between an auctioneer and bidders than there is in an ascending auction.

To conclude, there is no check list for how we should design an auction. Auction design is not one size fits all, you have to design tailored auction to fit the situation. There are tradeoffs, e.g., a sealed bid auction may favour entry but it makes collusion between the bid taker and the bidders more problematic. So you really must look at the specifics of the situation.

The Chairman asked whether there was experience with providing inducement to entry in public procurement.

Prof. Klemperer replied that the UMTS auctions were good examples of that. The designers of the United Kingdom's auction were initially asked to design an auction to allocate four licences and there were four incumbents. At that point, the designers worried a great deal about entry and proposed a design that had special features to encourage entry, the so-called "Anglo-Dutch design." Subsequently the technology changed and the designers were told they could allocate five licences. This guaranteed that an entrant would win so it guaranteed that entrants would participate in the bidding. The designers felt they could get many entrants even with a standard ascending design, so they could retain the efficiency of the standard ascending design and still get entry. Later, in the Netherlands auction, there were exactly the same number of licenses and incumbents. The speaker thought they made a mistake of going with the ascending design which deterred entry. Yet later, the Danes found themselves in a similar sort of situation. Prof. Klemperer thought they did very well to choose the sealed bid design. They were successful in getting entry where otherwise they may not have had it. So these were examples of different countries with different situations and different "right answers."

The chairman began the discussion on the first subtopic, that of collusion between procurement officers and bidders. He asked the delegate from Japan to discuss a new law, effective in 2003, aimed at procurement officials orchestrating bid-rigging. He asked whether the law had been effective, and noted that the sanctions seem to be quite limited.

The delegate from Japan explained that, recent years, there were some instances of bid-rigging which were initiated by officers in procurement agencies or in which these officers were involved. In these cases it was possible for the JFTC (Japanese Fair Trade Commission) to take legal measures against collusive bidders based on the competition law. However, it was not possible to take any legal actions against the procurement officers under the antitrust law. The new law, the act concerning the elimination and prevention of involvement in bid-rigging, aimed at solving this problem. Since the law entered into force in January 2003, it has been applied in three cases. In these cases, the JFTC demanded the presidents of the procuring institutions to take measures to eliminate such involvement. Amendments to the law are being considered. For example, an amendment that has already been proposed to the Diet by the majority party, and that is still being discussed in the Diet, would impose criminal punishment on procurement officers who are involved in bid-rigging.

The Chairman turned next to Indonesia. He referred to their written contribution which mentions a memorandum of understanding signed between the Competition Authority and the Anti Corruption Commission to handle tender cases which involve government officials. He asked why the memorandum of understanding was seen as necessary and what has been its result.

The delegate from Indonesia said that Article 22 of the Indonesian competition law addresses collusion in tenders, whether there is one bidder or more. Collusion could be conducted through horizontal cooperation among the bidders or business players, but it can also be arranged vertically with procurement officers or be a combination of horizontal and vertical arrangements. The competition authority has produced a guideline on the subject. In the Indonesian context, the vertical arrangement often occurs in combination with collusion among bidders. But the competition law of Indonesia does not give a mandate for competition agencies to penalise or punish government officers. In that regard, the competition authority needs to cooperate with the Anti-Corruption Commission that does have a mandate to enforce the criminal law against public officers. That is the reason the competition authority arranged the referenced memorandum of understanding. As a result, many findings of the competition authority that relate to procurement officers could be passed on to the Anti-Corruption Commission. An example of this cooperation concerned the procurement of necessities for general elections. The competition authority handled only one small case—indelible election ink—among several procurements by the general election committee. But that opened the

door for the Anti-Corruption Commission to look at the procurement of other election necessities. This very big case was handled together by the competition and the anti-corruption agencies.

The Chairman proceeded to the next subtopic, the role the competition authority can play in the definition of tender specifications. He noted that according to the competition law in Romania, the Competition Council may, at the request of various bodies, state its point of view on aspects of competition policy. In 2006 it was asked its opinion regarding a public procurement procedure for the award of a public supply contract for toner for ink jets. The chairman asked the delegate from Romania to explain how they were able to expand competition in such an auction and whether indeed the way they changed the auction made a difference.

The delegate from Romania said that, in the mentioned case, re-manufactured or compatible products could not participate in the auction. Because equipment manufacturers did not require the use of original consumables, re-manufactured or compatible consumables could be used. In addition, there were cases where compatible products were accepted but only if they were certified as compatible by the original equipment manufacturer. This was unlikely to be forthcoming when the OEM also competed. Hence, the competition authority considered the exclusion of remanufactured or compatible consumables, and the certification requirement to be restrictive of competition. These restrictions were removed.

Further, the competition authority participated in the public debate on the modernisation of the public procurement legislation. As a result, the new law on public procurement states that equivalent products should be accepted in tenders and that tender requirements should not include unnecessary technical specifications such as the brand name.

The Chairman then turned to the Korean contribution to the roundtable. He noted that in Korea, as in Italy, there has been a move towards centralised public tendering. Unusually, in Korea the service can conduct tenders on behalf of private companies for a fee. The centralised tendering uses electronic bidding, which has increased bidder participation and, by eliminating the need to be present, has also reduced the contact between bidders and procurement officers as a way to reduce corruption. The Korean contribution also states that the Korean Fair Trade Commission (KFTC) is using data generated by this procurement service electronic system to screen for bid-rigging. He asked how effective the procurement service system and the screening programme have been, and whether the screening programme has aided in gathering evidence for convictions.

The delegate from Korea replied that the centralised procurement service has worked well.

Over 90% of public tenders are now conducted through this system. Since companies can have easy access to bidding information and participate in bidding process with ease the number of participants has dramatically increased thereby greatly facilitating competition.

It is too early to assess the screening system; the system was launched only at the beginning of 2006. But to date the KFTC is investigating several auctions identified by the system to be at high risks of collusion and a couple of cartels have actually been detected.

Regarding whether the KFTC has found it easier to gather the evidence needed for conviction, detecting a violation is one thing and proving it is another. Even if the system detects some kind of potential illegal activity, that does not mean that the follow-up investigation will be successful. The main purposes of the screening system are to allocate limited law enforcement resources more effectively and to send a strong message to potential violators telling them that the KFTC is watching.

The basic logic underlying the detection system is primarily based on the presumption that there are certain events or outcomes that are highly unlikely if there is no collusion among participating bidders.

The Chairman then proceeded to the next subtopic, that of auction design and competition. He recalled the reporting of widespread horizontal agreements in public procurement in Switzerland, but noted also that the contribution from the competition authority refers to some measures that were promoted to increase competition in public procurement markets. Many of these provisions refer to inducement to entry. He asked whether such provisions had been implemented and whether participation actually did increase.

The delegate from Switzerland replied that the Swiss federal act on public procurement, which has implications for auctions, was revised in 2004. The main objective of the revision, as in the old law, was the introduction of more competition. But the old law reflected a lack of awareness of antitrust and regulation issues such as collusive practices or tendencies toward the capture of public procurement entities. The governmental institution responsible for the revision invited the Swiss Competition Commission into the main Revision Committee. The Competition Commission made a contribution in 2005. This contribution is summarized in the roundtable paper. The following issues were important: collusive practices, buyer power, transparency and transaction costs, regulatory capture and barriers to entry and exit. The public consultation on the revision of the federal act on public procurement will be held in 2007. Hence the Competition Commission cannot yet assess the real impact of its contribution or recommendations. However, this was the first time in Switzerland that a checklist for identifying collusive practices in bidding processes has been published. The Swiss Competition Commission is very optimistic that its contribution and recommendations will be considered in the revision process and will contribute to increasing competition in bidding processes in Switzerland.

The Chairman turned next to the Hungarian contribution. This contained two examples where the faulty design of an auction limited competition. He asked the Hungarian delegation to provide details on what were made in the auction process to improve competition and what the role of the competition authority was.

The delegate from Hungary responded first with respect to the case of the auction for cross-border electricity transmission capacities. There was a system of yearly auctions and monthly auctions held in parallel. The problem was that there no secondary market for capacity bought in the yearly auctions: A buyer of capacity rights could not resell them if it turned out that they could not use them. But it was very easy to renounce the capacity without any cost. Any capacity that was available after the yearly auctions could be and was sold in the monthly auctions. Hence, too much capacity was shifted from the yearly auctions to the monthly auctions which made planning difficult for the market participants. This discouraged entry. The remedy was to make it possible to resell the yearly rights and thereby establish a secondary market. The Hungarian Competition Authority observed and criticised the situation, but the energy regulator took the decisions.

The delegate from Hungary responded next in reference to motorway construction auctions. The original problem was very strict pre-selection criteria which limited the number of bidders. For example, a newly designed motorway had four sections; four companies bid; it was easy to allocate the various parts of the work among themselves. The big change was to loosen the pre-selection criteria to make them more technologically neutral, which enabled more companies to participate. Other changes were made as well, so that at the end of the day prices were some 40% cheaper than before the changes. Again the competition authority was not directly involved in this redesign process. But earlier it had imposed a record fine in a cartel case regarding the previous motorway construction

tender. It also had other cases in those years involving road construction and construction industry. These had raised public awareness. But the point of the redesign was lower prices, not necessarily to reduce cartelisation.

The Chairman next addressed the Dutch delegate. He noted that the Dutch competition authority had experience in providing advice on the design and monitoring of auctions. In particular the Dutch competition authority was involved in the Dutch UMTS auction. He asked what the authority learned from this experience, for example with respect to the importance of auction rules to ensure competitiveness and ensure that there are enough participants in the bidding process.

The delegate from the Netherlands responded that the NMa (Dutch Competition Authority) has no formal role in designing auctions. It did give advice in the UMTS auction but was not directly involved in the design itself. The NMa was also involved in a case that followed the auction. The design gave rise to some suspicion of collusion between two bidders. The details are available in the literature. The NMa did investigate but could not find conclusive evidence of collusion. In the end, the way the NMa has been involved in this specific auction is a bit unsatisfying.

The Chairman next turned to the Mexican contribution. It describes a case involving spectrum auction and the interaction between competition authorities and regulators. One part of the contribution illustrates some specific features of the Mexican procurement procedure, the possibility of split award and the announcement of reference prices. In particular, a split award occurs when bidders submit bids that are in the interval of $\pm 2.5\%$; when the difference between the price of bidders is above 5% then it is allocated to the highest bidder otherwise it is split by all participants. The **Chairman** observed that 5% is quite a large percentage, particularly in where the share of input is quite high; there profits are usually around 10%. If the project being tendered is well-identified, 5% is a huge amount and annulling the outcome of the auction may be quite dangerous for competition.

The delegate from Mexico responded that he agreed that 5% is large and the whole rule is probably not too intelligent, but it is in the Mexican procurement law. It is not the only rule of this kind in that law. The Mexican competition authority's experience in bidding markets has been largely shaped by government procurement.

The delegate noted that the split award feature would probably still lead to collusion even if the threshold were not 5%. One tends to see almost identical prices in auctions. This follows from the rule that if prices differ by less than 5%, the award will be split among the two. This is a natural mechanism for collusion, but the lawmakers did not see it that way.

A second notable feature is the reference price. While the principle is that a bid taker tries to get a discount from that price, it also serves as a beautiful crystallisation point for collusion. This effect is seen in Mexico and as a result the competition authority tries to talk the government agencies out of using a reference price, with varying success.

The third notable feature is a prohibition in the Mexican procurement law of below-cost bids. The competition law in Mexico has a similar feature but the prohibition is subject to rule of reason and a recoupment requirement. There are no such restrictions in the procurement law. This rather defeats the purpose of holding tenders in the first place because it probably drives the most competitive bidders out of the contest. At a minimum, it hampers the use of an auction as a price-finding mechanism.

Further, in Mexico it is very common to scatter auctions across time and across regions. This goes against one of the principles that Prof. Klemperer mentioned in the beginning, of trying to make

auctions as lumpy as possible. The competition authority addresses this both through enforcement cases and through opinions to government agencies.

In response to a question from the Chairman, the delegate from Mexico said that the reference pricing is not mandatory, but risk-averse bureaucrats prefer to use it in order to avoid the idea that they are not following the proper process. The competition authority comments focus on how reference pricing does not necessarily serve the state.

The Chairman next addressed the delegate from Germany. He noted that the German contribution states that in some cases the obligation to have an auction can be an effective remedy in antitrust enforcement. In the Bundeskartellamt practice, this has been used both with respect to dominance abuse and merger. The chairman referred to one case involving waste disposal. There, a first auction did not lead to higher competition—there was only one bidder—but after a change in the auction design, the second auction had a significantly larger number of bidders and very good price results. The chairman asked how this auction was changed.

The delegate from Germany noted that the case was important not only in terms of learning about auction design but also in terms of the size of the tender. The total volume of the tender was 1.2 billion euros. The auction involved waste collection and sorting in about 500 local areas in Germany for a three year period. In the first tender, only one bid was submitted in 40 or 50% of the areas. Often that bidder was a subcontractor that had provided the service to the Green Dot company in the previous years. There was a suspicion that this pattern could be the outcome of some sort of collusion, for example one competitor being offered a subcontract if he did not submit an independent bid. But the second reason for this outcome was that the tender bundled waste collection and waste sorting. It was easier to enter the waste collecting activity since waste sorting a more significant investment.

The DSD company annulled the first auction and conducted a second one. Pursuant to a Bundeskartellamt request, they changed two important features. First, they auctioned collecting and sorting services separately. This improved the bidding conditions for small and medium sized enterprises. Second, they forbade joint-bidding, bidding consortia and less formal sub-contract consortia. To give a sense of scale, there was a turnover of more than EUR 50 million among the waste disposal companies. The changes resulted in considerably more bids in the various areas, on average four in each lot, and considerably lower prices. The prices were 25% lower than in the first auction. German customers saved 250 million euros.

The Bundeskartellamt conducted a dawn raid against 120 waste disposal companies throughout Germany. But it received no leniency applicant despite advertising inviting any cartel member to apply. The Bundeskartellamt did perform some econometric studies that suggested that in those lots where only one company bid there must have been a kind of agreement or collusion. There is a pending court case, but it is quite a difficult case.

The Chairman introduced the final subtopic of the roundtable, joint bidding. Joint bidding occurs when independent companies come together to submit a joint bid. Many countries favour and promote joint-bidding. Joint bidding is competition-enhancing if it allows firms that are not able to supply complementary products to join with other companies to jointly supply those complementary products. But when competing companies bid jointly, this usually reduces competition.

Some jurisdictions allow joint bidding by companies in the same market when it is costly to make a bid or the contract would require a certain size. Joint bidding is a way to enable smaller companies that would otherwise be excluded to participate in larger bids. But it is not clear that small companies working together would really have the organisational structure to perform the work a large company

can. If they do not, then it is not clear why joint bidding should be allowed as it increases the risk of collusion in other tenders.

The Chairman then addressed the delegate from Turkey. He noted that the Turkish contribution discussed a sealed-bid auction to supply milk to schools. The tender involved a quantity of milk that exceeded the capacity of any single Turkish producer, rendering joint bidding necessary. The joint bidding seems to have affected competition in many regions. He asked the delegate from Turkey to describe the case.

The delegate from Turkey replied that the tender was for the supply of 80 million packages of milk to primary schools. Such an amount exceeded the capacity of any milk producer in Turkey. Eight milk producers who participated in the tender established four separate joint-ventures. The tender specifications allowed milk producers to be party to different joint-ventures to supply milk in different territories. The main point of the case is that the auction design gave bidders the opportunity to exchange information and coordinate their offers.

When all the joint ventures were considered together, each producer supplied an equal quantity of milk, although this was not evident from examining the joint ventures individually. In addition, there was evidence indicating that the amount of milk that was to be provided by each producer for certain territories was fixed in advance of the tender. The Turkish competition authority concluded that this outcome could not be reached without coordination and information sharing among the companies that took part in the tender. However the milk producers claimed that the outcome of the tender was influenced by guidance of the relevant ministry and therefore it was out of their control. Moreover, the participants argued that the tender specifications permitted the participants to form joint-ventures with different undertakings for different territories which enabled the participants to learn the price for the region in which the tender was related. The competition authority, taking into account the mitigating factors, the role and influence of the Ministry, imposed minimum fines on the relevant undertakings.

The Chairman, after having asked for and receiving no further comments, summarized the roundtable.

Regarding merger analysis, it was clear from the discussion that the existence of a bidding process does not bring a significant change to the normal analysis of a merger. In a merger analysis, it is always important to understand the type of constraints that the merging parties have. There are many ways to measure those constraints; quantitative analysis and surveys were mentioned in the discussion. But especially where there is competition *ex-ante* with respect to product design, where procuring the product will later be subject to a bidding process, the competitive constraints would be very difficult to ascertain through simple quantitative analysis. If that sort of competition exists—and it probably does, especially in sophisticated products—then data analysis becomes extremely difficult to do. Having said that, most of the instruments competition authorities have in merger analysis are quite robust and they seem to provide good results.

As for auction design, it is important to ensure that there is enough entry and that competition is not reduced through poor design. There is no checklist since each situation is different. From the perspective of an antitrust authority, this is not very reassuring, because if an authority comments on auction design and public procurement, not having a checklist increases the difficulty because then one must go into the details of the specific situation and of the specific bidding process. This is made more difficult by the need to perform the analysis *ex ante*. The example from Germany made it quite clear how important auction design is.

The Chairman postulated a fourth fallacy to add to Prof. Klemperer's list, the "antitrust authority fallacy." Many times, especially for public utilities, antitrust authorities tend to think that auction is the solution to competition problems. But this is not always the case, and such a solution must be carefully designed to be effective.

The delegate from the United Kingdom wished to draw the Committee's attention to a discussion paper or report that has been commissioned by the Office of Fair Trading which is designed as a guide for case officers when dealing with markets characterised by bidding processes. It discusses the different techniques that can be used. The OFT hopes to publish it by the end of 2006.

The Chairman closed the roundtable by thanking Prof. Klemperer, all the delegations and BIAC for their participation.

COMPETITION IN BIDDING MARKETS

4. COUNTRY CONTRIBUTIONS

Further information from the following jurisdictions on Competition in Bidding Markets is available at: <http://www.oecd.org/competition> under the topic "Best Practice Roundtables".

Country contributions

Czech Republic	Switzerland
Germany	Turkey
Hungary	United Kingdom
Japan	United States
Korea	European Commission
Mexico	Indonesia
Netherlands	Romania
New Zealand	South Africa

CONSTRUCTION INDUSTRY

The OECD Competition Committee debated issues related to the Construction Industry in June 2008. This roundtable addressed the special characteristics of the construction industry as they relate to competition law and policy. Construction is a critical sector in OECD economies because it builds and maintains the structures and infrastructure on which almost every other industry depends. Unfortunately, the construction industry has also tended to suffer from cartel activity, as shown by a spate of well - publicised recent matters from around the world. The roundtable includes an examination of why this industry seems to be more prone to cartel formation than other industries. It also looked into the complications that may arise when multiple construction firms use the same bid calculation software. Finally, the Committee discussed the arguments – occasionally made by industry advocates – that competition is either irrelevant or “ruinous” in the construction industry. Neither argument was found to be persuasive, as there are no distinguishing features of the construction sector that reduce the benefits that competition brings to consumer welfare.

CONSTRUCTION INDUSTRY

1. SYNTHESIS

SYNTHESIS

by the Secretariat

Considering the roundtable discussion, the delegates' written submissions and the issues paper, several key points emerge:

- (1) *The construction industry is a vital component of every OECD economy.*

The construction sector is responsible for building new houses, apartments, factories, offices and schools. It also builds roads, bridges, ports, railroads, sewers and tunnels, among many other things. In addition, it maintains and repairs all of those structures and produces the basic materials such as concrete that are used to make them. The industry's significance is due not only to the fact that it provides the buildings and infrastructure on which virtually every other sector depends, but to the fact that it is such a sizeable sector in its own right. The construction industry is Europe's largest industrial employer, accounting for about seven percent of total employment, and in the EU, the US and Japan combined, it employs more than 40 million people. Among all OECD countries, the construction industry accounts for an average of 6.47 percent of GDP.

- (2) *Concentration levels and the nature of competition vary among the product and service markets in the construction industry.*

Taken as a whole, the industry appears to be overwhelmingly made up of small, local firms with fewer than 20 employees. These firms produce most of the industry's output. On the other hand, the importance of the relatively small number of large firms cannot be underestimated. Their employees tend to produce a disproportionately high percentage of industry output.

Because of the very large number of small firms, the entire industry is often characterized as unconcentrated. That description is too broad, however, because not all construction companies do overlapping work and some segments are much less fragmented than others. For example, a limited number of general contractors are capable of managing the very large projects, whereas there are a great many small subcontractors. Competition among large general contractors and among specialty firms seems to be oligopolistic, while rivalry among small contractors who do basic labour tends to be closer to perfect competition. Furthermore, different types of firms can serve very different functions and so may have more of a vertical relationship than a horizontal one.

- (3) *Historically, cartels have affected the construction industry in many OECD countries and that problem does not appear to be subsiding.*

The construction industry has acquired a certain degree of notoriety in many jurisdictions, where it is well-known that the sector has long been subject to cartel activities. Lord Borrie, former Director General of Fair Trading in the UK, once said that construction has the worst record of cartelisation of any industry. Despite an international trend toward harsher

penalties against hard-core cartels in general and many successful prosecutions against construction firms in particular, recent enforcement activities in numerous countries show that this sector continues to be fertile ground for some competition agencies.

- (4) *Nevertheless, opinions differ on whether the construction sector is more prone to anticompetitive practices than other sectors.*

Most delegates hold the view that this sector seems to be very prone to competition law infringements. They argue that when relevant markets are defined, as opposed to considering the whole industry, competition is often limited because many firms are specialized or cannot compete on large projects. Furthermore, transportation costs and safety or environmental standards may constitute formidable entry barriers in some constructions markets. Obviously, limited competition and substantial entry barriers can facilitate many different types of anticompetitive conduct, including unilateral and horizontal varieties. In addition, procurement procedures for construction projects are often conducive to collusion. There are at least two reasons for that. First, the procedures are often designed to be transparent so as to discourage corruption. In other words, the identity of the bidders and the amount of their bids are sometimes released to the public, although normally on an individual basis. Second, in some OECD countries procurement officials sometimes intentionally limit the number of bidders, which also facilitates collusion.

In contrast, other delegates believe that the construction sector is not particularly inclined toward anticompetitive practices, or at least not to cartel formation. They contend that strong economic growth and booming building activity have made cartels unnecessary in the eyes of construction firms. They also note that many relevant markets in the construction industry are not very concentrated.

- (5) *One special issue that has come up in a number of construction cases around the world concerns the use of bidding software, which has been used as an excuse for what appears to be collusion.*

Contractors sometimes use this software to assist them in calculating the amounts of their bids. The use of such programs by multiple rivals has occasionally become a concern, particularly when they used the same software. There is an obvious risk that in such situations the software could be used as a tool to facilitate collusion. In some cases, when authorities noticed suspiciously similar bids, the companies claimed that it was to be expected that the bids would be similar because the firms were all using the same bidding software. Several agencies have been able to show that such claims cannot always explain the similarities in bids. They did so by using the software themselves as if they were going to submit bids. It was determined that the probability that even the same bidding software would generate such similar bids for companies who had been acting independently was quite low.

- (6) *Although cartels tend to be harder to maintain as the number of participants increases, construction cartels involving dozens and even hundreds of firms have been detected. Those cases present challenging case management issues and call for innovative solutions by enforcement agencies.*

In 2002, for example, the Dutch government exposed rampant collusion throughout the Netherlands' construction industry. 481 leniency applicants came forward and approximately 650 companies were implicated. The nature and scale of these cases forced the Netherlands Competition Authority to develop new approaches to investigating and

sanctioning cartel activity. It therefore established a construction industry task force to tackle the investigative work. To minimize procedural delays, the authority introduced an accelerated sanctions process that reduced the fines for companies that agreed not to contest their prosecution. Approximately 90 percent of the companies chose that process. Germany's Bundeskartellamt has also used a combination of leniency and a special task force to achieve successful results in discovering and punishing construction cartels.

CONSTRUCTION INDUSTRY

2. ISSUES PAPER

ISSUES PAPER

by the Secretariat

1. Introduction

The construction industry is a critical component of every OECD economy. Building new houses, apartments, factories, offices and schools is only part of what this sector accomplishes. It also builds roads, bridges, ports, railroads, sewers and tunnels, among many other things, and it produces the basic materials such as concrete that are used to make them. In addition, the construction industry maintains, repairs and makes improvements on all of those structures. The industry's significance is due not only to the fact that it provides the buildings and infrastructure on which virtually every other sector depends, but to the fact that it is such a sizeable sector in its own right. The construction industry is Europe's largest industrial employer, accounting for about seven percent of total employment, and in the EU, the US and Japan combined, it employs more than 40 million people.¹ Among all OECD countries, the construction industry accounts for an average of 6.47 percent of GDP.²

Unfortunately, the construction industry has acquired a certain degree of notoriety. It is well-known that the sector has been plagued by cartel activity for decades. Lord Borrie, former Director General of Fair Trading in the UK, once said that construction has the worst record of cartelisation of any industry.³ Despite an international trend toward harsher penalties against hard-core cartels in general and a multitude of successful prosecutions against construction firms in particular, the sector continues to be fertile ground for competition enforcers. Here is a sample of recent cases:

- Turkey's Competition Board issued several decisions against cement producers for anticompetitive agreements – including price fixing and market allocation agreements – between 1997 and 2005.⁴
- In 2002, after a whistleblower revealed that a major construction company was keeping secret financial accounts, the Dutch government began investigations that exposed rampant collusion throughout the Netherlands' construction industry. 481 leniency applicants came forward and overall approximately 650 companies were implicated. A parliamentary enquiry committee concluded that government agencies were defrauded by an average of 8.8 percent in public construction projects as a result of the collusion.⁵ The government imposed a total of 239 million euro in fines.⁶
- In 2003, the Bundeskartellamt imposed fines totalling approximately 660 million euro on the six largest cement manufacturers in Germany. At the time, those were the highest fines ever levied by the agency. The companies had reached quota and market allocation agreements with each other, some of them dating back to the 1970s.⁷ The entrenched and seemingly incorrigible nature of these cartels is illustrated by the fact that the Bundeskartellamt had just taken stern action against collusion in the same sector a few years earlier. It fined 33 producers a total of 300 million DM in 1999 for agreeing to restrict their sales.⁸

- In 2005, Japan's Fair Trade Commission uncovered a cartel involving approximately 50 bridge building companies, including several major firms. The JFTC filed criminal accusations with the Public Prosecutor General against six of the companies for jointly deciding the bid winners in advance, as well as against two officials from the Japan Highway Public Corporation for facilitating the bid-rigging schemes. The JFTC imposed surcharges totalling more than 12 billion yen.⁹
- In early 2007, the UK's Office of Fair Trading announced that it had such extensive, high quality evidence against a construction cartel that it was no longer offering leniency to participants.¹⁰ In April 2008, following one of the largest investigations in the agency's history, it issued a Statement of Objections charging 112 British construction firms with conspiring to rig bids in thousands of tenders. The affected projects included publicly funded schools, hospitals, and housing developments.¹¹
- Also in 2007, the Korean Fair Trade Commission imposed fines totalling several million dollars on 19 asphalt concrete manufacturers for colluding on price and sales volume.¹²

These cases raise a number of questions that could be addressed in this roundtable. For example, why does collusion occur so frequently in the construction industry? What approaches have competition agencies taken to detect and prosecute construction cartels? Of course, collusion is not the only type of anticompetitive practice that arises in the construction industry. Other issues, such as abuse of dominance and problematic mergers, can also arise in this sector. But it is generally fragmented enough that dominant firms and mergers that substantially lessen competition are unusual. Cartel activity is the most commonly occurring competition problem among construction firms, so it has been given most of the attention in this paper.¹³

2. Structural Issues

2.1 Market Definition

Market definition is a fundamental issue in merger review and unilateral conduct cases. It can also be relevant in cartel cases because it may inform the decision on how high to set the level of fines. It seems clear that there is more than one product/service market within the construction industry. Common sense goes against putting all buildings and structures, for example, into a single product market for "buildings." Building a house is very different from building a football stadium. Most if not all firms who build homes would not be able to build stadiums. Furthermore, it is doubtful that a firm specializing in something like fitting pipes could suddenly shift to master carpentry work.

Another consideration is that some construction firms do not make any products at all; rather, they provide the service of organizing the construction process, leaving it to subcontractors to do the actual building work. Other firms provide a bundle of services, such as production, installation, and maintenance of heating, ventilation, and air conditioning systems.

With respect to the relevant geographic market, transportation costs are obviously an important factor. A firm wishing to bid on projects located well away from its base of operations will face substantial transportation costs for its labour, materials and equipment. Firms in the local area of the project site will, of course, have much lower transportation costs. Aside from transportation costs, some sectors within the construction industry have traits that create a firm upper bound on relevant geographic markets. For example, there is a natural limit to the distance that hot-mix asphalt can be transported (up to about 65 km) without spoiling.¹⁴

How narrowly should relevant product markets in the construction industry be defined? Is it sufficient to define separate markets for commercial buildings, residential buildings, and infrastructure, or is a narrower delineation more appropriate? How much specificity is enough? What special characteristics of the industry should be taken into account when defining geographic markets?

2.2 Concentration

There is some variation in the degree to which product and service markets within the construction industry are concentrated. Overall, the industry appears to be overwhelmingly made up of small firms with fewer than 20 employees.¹⁵ These firms produce most of the industry's output. On the other hand, the importance of the small number of large firms should not be underestimated. Their employees tend to produce a disproportionately high percentage of output.¹⁶

Because of the very large number of small firms, the industry is often characterized as unconcentrated. Some parts of it, however, are much less fragmented. There is a limited number of general contractors who are capable of managing very large projects, whereas there is quite a large number of small subcontractors.¹⁷ The two types of firms serve different functions and have more of a vertical relationship than a horizontal one. Competition among the large general contractors seems to be more in the mould of oligopoly, whereas the rivalry among small contractors who do basic work such as laying bricks and pouring concrete tends to be closer to perfect competition.¹⁸

On what factors does the variation in concentration levels among construction industry markets depend? In other words, why are there only a few, relatively large firms in a small number of construction markets and many, relatively small firms in most others? Are there any discernible trends in the way concentration is changing in the industry? If so, what implications does that have for competition law enforcement?

2.3 Barriers to Entry

For small construction firms, the start-up costs for entering their local market tend to be low. That may be due to the fact that relatively few pieces of equipment have to be bought. Small firms commonly lease equipment on an as-needed, project-by-project basis.

There are other financial hurdles, though. Customers with substantial projects often require construction firms to post a bond, which acts as a financial guarantee for the customer in the event that the firm is unable or unwilling to fulfil its obligations. The standard amount of the bond varies substantially from country to country, being as little as zero to as much as the entire value of the contract. These bond requirements may present formidable obstacles to new firms, especially if they are small.

Large construction companies seem to be better able to absorb transportation costs than smaller firms, so they typically manage to bid across a wider geographic area. Nevertheless, they still face some obstacles. In particular, buyers with projects suitable for large construction firms are more likely to demand a track record of successfully completed relevant projects.¹⁹ The larger the project, the more important this factor tends to be because the customer will have more at stake and thus will be less likely to take a chance with an unknown firm. This reputational factor may help to explain why the market for very large construction projects tends to be more concentrated, since it favours incumbents most heavily. The comparatively few major construction firms develop strong ties with the largest clients, making it more difficult for smaller or newer firms to acquire the kind of experience

and trust needed to satisfy the clients' prequalification requirements. That means new and smaller firms may not even be allowed to bid on major projects, let alone win them.

Are entry barriers high or low in the construction industry? Does the answer vary from market to market? If so, on what factors does the variation depend (e.g., firm size, the firm's area of expertise)? Where barriers do exist, what are they? What implications, if any, does the need for good track records and client relations with respect to large construction projects have for merger review?

3. Cartel Issues

3.1 *Prone to Collusion?*

Dorée, et al. have stated that “[t]here seems to be a culture and an environment that induces and sustains economic offences and malpractices” in the construction industry.²⁰ Does the industry have characteristics that make it especially susceptible to cartel activities?²¹ The following list contains some features of the construction sector that bear on the likelihood of collusion in one way or another:

- *The product is simple and not very differentiated.* Relatively speaking, most construction firms are low-tech businesses. They tend to use fairly basic materials to build the same things their competitors build. Many customers do not care which firm they hire so long as the firm carries out the work according to plan and charges a comparatively low price.
- *Transparent bid procedures.* The general public often has access to bid openings for construction projects, at least in auctions for public procurement. Procurement laws and administrative regulations tend to require a certain amount of transparency so as to discourage corruption. Procurement officials may be required to disclose information such as the identity of bidders and the terms and conditions offered in each bid.²²
- *The business is highly cyclical and orders are “lumpy.”* The construction sector is subject to substantial demand swings. In the Netherlands, for example, 12 percent of all bankruptcies are filed by construction firms, a fact that “reflects the construction sector’s relatively high vulnerability and sensitivity to the economic cycle.”²³ Housing, commercial building and public works all depend on flows from other major sectors. Boom and bust cycles in those other sectors therefore affect construction firms, too.
- *Inelastic demand.* Though subject to fluctuations, the demand for construction work – once it is there – tends to be fairly price inelastic. A town that needs a new sewer system, for example, is probably not going to be sensitive to modest price increases.
- *A large number of buyers.* A large and varied customer base buys construction services. It includes individuals, large and small businesses, and municipal and national governments. The size and heterogeneity of these customers make it more difficult for them to compare information than would be the case if there were only a few buyers.
- *Sub-contracting is common.* Many construction projects could not be efficiently completed without some degree of sub-contracting. Even large contractors have to rely on smaller, more specialised firms for some aspects of their projects. But sometimes a winning bidder will sub-contract part of a project to a firm that would ordinarily be its rival. In fact, firms in the construction sector often consider talking to and partnering with each other to be a normal way of doing business. Whereas in one project companies might truly behave like independent competitors, in another project they might form a joint venture or have a

contractor/subcontractor agreement. That kind of complex relationship causes headaches for competition authorities because it may not be clear whether or not meetings and communications between the companies served a legitimate business purpose.²⁴

In what ways do these factors affect the probability of cartel formation? What other characteristics of the construction industry affect that probability? Does the industry have any characteristics that make such conduct especially difficult to detect and/or prove? How can such an unconcentrated industry have a recurring problem with cartels?

3.2 *Types of Collusive Activities Undertaken*

Cartels may engage in several different types of anticompetitive practices. These include:

- Simple price fixing
- Bid rotation (when firms agree to take turns winning bids)
- Bid suppression (when some firms agree not to bid)
- Cover pricing (when some firms intentionally submit bid prices that are too high to win or that carry conditions that the buyer is sure to find objectionable)
- Quota agreements
- Market sharing arrangements (when rivals allocate customers to one another according to project type or location)
- Sharing bidding fees (when a cartel charges its members a fee for bidding which they all add to their bid price; the surplus is then shared after the winner is selected)
- Collusive sub-contracting (when the winning bidder rewards cartel partners for their role by giving them sub-contracts so as to share the spoils of their scheme); and
- Information exchanges (which may not be unlawful)²⁵

What types of unlawful behaviour do construction cartels undertake most often?

3.3 *Detecting Construction Cartels*

Numerous factors can be informative when an agency is trying to determine whether a construction project or market has been affected by a cartel. To begin with, competition authorities will probably find it helpful to complement their own team of investigators with an engineering consultant who specialises in the type of construction at issue and a financial auditor, if possible. This group can then consider factors such as:

- Whether qualified bidders failed to bid
- Whether certain contractors repeatedly avoid bidding against one another
- Whether the winning bidder repeatedly sub-contracts work to firms that submitted higher bids on the same projects

- Whether a certain firm always wins the contracts in a certain geographic area
- For road construction projects, the US Department of Transportation and US Department of Justice suggest plotting the project locations of suspicious contracts on a map, assigning each vendor a different colour; recognizing that, as mentioned earlier, there is a natural limit to how far hot-mix asphalt can be transported (up to about 65 km), a comparison of the vendors' wins in relation to their asphalt plants on the map may reveal a pattern consistent with territorial market allocation.²⁶

These factors are insufficient to prove the existence of a cartel, of course, but they can help to determine whether a deeper investigation is warranted.

What other strategies and factors for detecting cartels in construction markets are especially effective?

3.4 Case Management

The nature and scale of the Netherlands Competition Authority's cartel cases against hundreds of construction companies forced the agency to develop new approaches to investigating and sanctioning cartel activity.²⁷ In 2002 it established a construction industry task force to tackle the investigative work. The agency wanted to prevent lengthy procedures while ensuring that the sanctions imposed would motivate the companies to start competing honestly. The authority therefore introduced an accelerated sanctions procedure that gave a 15 percent fine reduction to companies that agreed not to contest the facts and infringement in the statement of objections. Approximately 90 percent of the companies chose this "fast lane procedure." The substantial time and expense that would have been necessary to hold individual hearings for hundreds of companies were therefore saved.

The Bundeskartellamt has also used a combination of leniency and a special task force to achieve successful results in discovering and punishing construction cartels. As mentioned earlier, it imposed heavy fines on the six leading manufacturers in Germany's cement industry for their part in a market allocation and quota scheme. The agency's success in doing so has been attributed primarily to the leniency programme adopted in 2000 and the establishment of a Special Unit for Combating Cartels in 2002.²⁸

The charges brought against 112 firms by the UK's OFT earlier this year were the culmination of a four-year effort. It began as an investigation of the roofing industry and quickly spread to other segments of the construction industry. Ultimately, the OFT raided 57 businesses and received 37 leniency applications. But the underlying problem was even larger than those figures suggest. In fact, the OFT eventually had to cut off the investigation because it was uncovering more cartel behaviour than the agency could process, given its resources.²⁹

How has your competition agency approached the prosecution of cartel cases in the construction industry? Have you devised any procedural strategies that have worked especially well in this sector? In particular, how can cartel cases be managed efficiently in an industry such as this one, where cartels may have dozens or even hundreds of members?

4. Arguments against competition

Historically, the construction industry has been relatively unreceptive toward the idea of open competition. In fact, its representatives have advanced arguments claiming that competition is not only irrelevant in the construction industry, but that it is actually harmful to society. Therefore, they

contend, the sector should be exempt from some or all of the competition laws. Competition officials are in a position to rebuff such arguments, but how should they respond, specifically?

4.1 *The Irrelevance Argument*

Construction industry advocates point out that problems that were unforeseen when a project was conceived often arise after a winning bidder has been selected and work is underway. Such problems invariably lead to change orders for additional work, which have to be negotiated and result in increases to the original price. Therefore, the winning bid price is often lower than the actual price paid by the client, and sometimes it is much lower. Industry advocates argue that because it is rarely possible to know what the real price of a project will ultimately be even after a winning bid has been selected, competition is irrelevant in construction markets.

It is true that construction work is prone to complications that become apparent only after work has begun. For example, one fairly common problem is that hazardous materials may be discovered in or under an existing building in the course of restoration or expansion work. The cost of removing such materials can have a substantial effect on a project's budget. Another typical complication is that the standard foundation exploration does not uncover a soft soil condition, causing major additional work such as moving columns. Alternatively, rainwater may damage a structure while it is still incomplete. If the damage is only partially mitigated for some reason, mould may set in, often leading to a certain amount of fear and mistrust and therefore to the possibility of lawsuits, and perhaps finally to a costly decision to demolish and rebuild.

At least with respect to public procurement auctions, another factor often interacts with the inevitable change orders. Specifically, procurement agencies are commonly required by law to select the bidder who submits the lowest price, or else to have a very good reason for not doing so. Some bidders therefore submit unrealistically low bids, knowing that the actual fee they will receive will be substantially higher due to the change orders that will arise and have to be negotiated. The real fee, in other words, is more the result of negotiation with a single contractor than of price competition among several contractors.

One possible response to this argument is that if competition were irrelevant, then construction firms would not bother to destroy it so often by forming cartels. What other responses can be made?

4.2 *The “Ruinous Competition” Argument*

Another argument that construction firms sometimes make is that the nature of their industry makes it especially vulnerable to “ruinous competition” and that both firms and customers would be better off with more cooperation and less competition. In fact, this assertion occasionally appears in academic literature, as well. Professors Dorée, et al., claimed in a 2002 article that “[t]he construction industry seems highly vulnerable to ruinous competition.”³⁰ They also contend that “emerging theoretical insights on dynamic competition” from industrial organization economics suggest that “[t]oo much competition may inhibit private enterprises from investing in Research & Technology Development and new product development.”³¹ Indeed, they claim that most countries are already moving away from traditional competitive approaches in the construction industry because competition creates a business environment that encumbers innovation and dynamic efficiency.

Grumblings about “ruinous” and “cutthroat” competition have been heard since at least the beginning of the 20th century and have not been persuasive.³² Refutations of the article by Dorée, et al., existed in academic literature on the construction industry well before they published their paper. For example, Ball, et al., published an article three years earlier that undercuts the ruinous competition

argument on both theoretical and empirical grounds. In essence, they base their argument on the unsurprising principle that competitive markets work. In other words, competitive markets tend to move toward efficient equilibria where firms earn a normal long term profit. If some relatively less efficient firms fail and exit, then their exit must have been necessary for the market to reach its long run competitive equilibrium.³³

While the notion that most countries are abandoning the competition paradigm may strike enforcement officials as a bit fanciful, the point about innovation and dynamic efficiency deserves some attention. Dorée, et al., are not as specific in their support of that point as one might wish, but they seem to be saying that entry barriers in the construction sector are so low and competition is so fierce that innovation is difficult or impossible to appropriate. Any new cost-saving techniques or quality-enhancing improvements that a firm develops will simply be imitated by the firm's numerous rivals because the construction process is so transparent. It is therefore not worthwhile to innovate, so the industry experiences an innovation gridlock. Another way of describing this argument is that it characterises the construction industry as being positioned at the far left of the inverted U-shape curve believed to depict the relationship between market concentration and innovation.³⁴ The crux of their point is that enforcers are paying too much attention to static efficiency concerns like pricing and not enough attention to dynamic efficiency concerns like innovation. Allowing more cooperation, they argue, would make it easier for firms to capitalise on their innovations, which would ultimately benefit customers.

A related point raised by these authors is that the winning bidder on construction projects is too often selected on the basis of its price alone. That suppresses competition on the basis of quality because the buyer simply assumes (or is required to assume) that all bidders offer products with equal value. That, in turn, discourages innovation that would have resulted in superior quality. Therefore, to stimulate the lacklustre level of innovation in this sector, buyers should not necessarily select the low bidder for every construction project.

Do Dorée, et al., have a point about the disadvantage of always selecting the low bidder? If the authors are correct that from a dynamic perspective there is too much competition in the construction industry and there should be more cooperation, competition authorities around the world have been making a mistake by taking actions against so many construction industry cartels over the years. How should competition enforcers reply to their argument?

Notes

1. See the European Commission's Enterprise and Industry web site at www.ec.europa.eu/enterprise/construction/index_en.htm ; U.S. Department of Labour, Bureau of Labour Statistics, 2008-09 Career Guide to Industries, available at www.bls.gov/oco/cg/print/cgs003.htm ; K. Reeves, "Construction Business Systems in Japan: General Contractors and Subcontractors," 30 Building Research & Information 413, 414 (2002).
2. OECD Annual National Accounts Database [SNA] (2006).
3. Lesley Ainsworth, "Competition Law Enforcement in the Construction Industry," in John Uff & Anthony Lavers (eds.), LEGAL OBLIGATIONS IN CONSTRUCTION 539, 549 (1992); see also A.

Hargita & T. Toth, “God Forbid Bid-Riggers: Developments under the Hungarian Competition Act,” 28 *World Competition* 205, 206 (2005) (noting that the “great number of cartels in the construction industry is not unique to Hungary”); Srabana Gupta, “The Effect of Bid Rigging on Prices: A Study of the Highway Construction Industry,” 19 *Review of Industrial Organisation* 453, 455 (2001) (the highway construction industry “has a long history of violating antitrust laws”).

4. OECD, *Competition Law and Policy in Turkey* (2005) at 17, available at www.oecd.org/dataoecd/26/7/34645128.pdf.
5. Hugo Priemus, “Dutch Contracting Fraud and Governance Issues,” 32 *Building Research & Information* 306, 309 (2004).
6. See generally www.nmanet.nl/engels/home/News_and_publications/Theme_files/Construction_case/.
7. OECD, *Competition Law and Policy in Germany 2002-2003*, p. 6, available at www.oecd.org/dataoecd/22/21/34831942.pdf.
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9. Kazuhiko Takeshima, Chairman of the Japan Fair Trade Commission, “Japan’s Endeavour for Establishing Rigorous Anti-Cartel Enforcement,” Speech before the International Bar Assn. (New Delhi, 4 November 2006); Japan Fair Trade Commission, “The JFTC Surcharged 44 Participants in the Bid-rigging for Steel Bridge Construction Projects,” Press Release (27 March 2006).
10. Office of Fair Trading, “OFT Closes Door on Cartel Leniency in Construction Bid Rigging Cases in England,” Press Release (22 March 2007), available at www.oft.gov.uk/news/press/2007/50-07.
11. Office of Fair Trading, “OFT Issues Statement of Objections Against 112 Construction Companies,” Press Release (17 April 2008), available at www.oft.gov.uk/news/press/2008/52-08.
12. KFTC, “KFTC Detects a Cartel of 19 Asphalt Concrete Manufacturers in Seoul,” 5 KFTC Newsletter 11 (28 December 2007), available at http://ftc.go.kr/data/hwp/20071228_103433.pdf.
13. This paper intentionally avoids revisiting general cartel principles and best practices for dealing with them, which have been covered from various angles several times by the Committee and Working Party 3, including quite recently. See, e.g., OECD, *Plea Bargaining/Settlement Of Cartel Cases*, DAF/COMP(2007)38; OECD, *Prosecuting Cartels Without Direct Evidence of Agreement*, DAF/COMP/GF(2006)7; OECD, *Cartels: Sanctions Against Individuals*, DAF/COMP(2004)39. The subject of how to design public procurement systems in general so as to discourage collusion is not addressed, either, for the same reason. See OECD, *Public Procurement, The Role of Competition Authorities in Promoting Competition*, DAF/COMP(2007)34; OECD, *Competition in Bidding Markets*, DAF/COMP(2006)31. Because of this body of prior work, here it is possible to concentrate specifically on the construction industry and what its distinctive features imply for competition law enforcement.
14. US Department of Transportation and US Department of Justice, *Suggestions for the Detection and Prevention of Construction Contract Bid Rigging* (1983), available at www.fhwa.dot.gov/programadmin/contracts/dotjbid.htm.
15. See, e.g., Niclas Andersson & Fredrik Malmberg, “Competition and Barriers to Entry in the Construction Sector,” *Conference Proceedings for the 10th Symposium on Construction Innovation and Global Competitiveness* pp. 461, 466 (2003) (discussing Denmark and Sweden); Gerard de

Valence, “Market Structure, Barriers to Entry and Competition in Construction Markets,” in National University of Singapore, KNOWLEDGE CONSTRUCTION (Proceedings of the Joint International Symposium of CIB Working Commissions) (22 October 2003), 819, 821-22 (discussing Australia); Roberto Pietroforte & Piero Tangerini, “From Boom to Bust: The Case of Italian Construction Firms,” 17 Construction Management and Economics 419, 421 (1999).

16. In Australia, for example, only 0.62% of all construction firms have more than 20 employees, but that small percentage of firms employs 13.6% of all construction workers, and they in turn produce almost 25% of the industry’s output. De Valence, *supra* note 15 at 821.
17. Hargita & Toth, *supra* note 3 at 209.
18. De Valence, *supra* note 15 at 823-24.
19. Andersson & Malmberg, *supra* note 15 at 466.
20. A. Dorée, E. Holmen & J. Caerteling, “Co-operation and Competition in the Construction Industry of the Netherlands,” 19th Annual ARCOM Conference (Association of Researchers in Construction Management), vol. 2 (2003), pp. 817-826 at 817.
21. For a review of factors that affect the ease of collusion, see OECD, Public Procurement, The Role of Competition Authorities in Promoting Competition, DAF/COMP(2007)34, Background Note at 21-23.
22. *Id.*, Executive Summary at 7.
23. Hugo Priemus, “Dutch Contracting Fraud and Governance Issues,” 32 Building Research & Information 306, 307 (2004).
24. Hargita & T. Toth, *supra* note 3 at 209.
25. For a more exhaustive list, see John Connor, GLOBAL PRICE FIXING 27 (2d ed. 2007).
26. US Department of Transportation and US Department of Justice, Suggestions for the Detection and Prevention of Construction Contract Bid Rigging (1983), available at www.fhwa.dot.gov/programadmin/contracts/dotjbid.htm . The same document contains several other factors specific to construction projects that can be taken into account when determining whether a cartel is present. For more generally applicable suggestions on what factors and suspicious behaviour should be considered when a cartel is suspected in connection with procurement projects, see OECD, Public Procurement, The Role of Competition Authorities in Promoting Competition, DAF/COMP(2007)34, Background Note at 36-38.
27. See generally www.nmanet.nl/engels/home/News_and_publications/Theme_files/Construction_case/ .
28. OECD, Competition Law and Policy in Germany 2002-2003, p. 6, available at www.oecd.org/dataoecd/22/21/34831942.pdf ; Bundeskartellamt, “Bundeskartellamt Imposes Fines Totalling 660 Million Euro on Companies in the Cement Sector on Account of Cartel Agreements,” Press Release (14 April 2003), available at www.bundeskartellamt.de/wEnglisch/News/Archiv/ArchivNews2003/2003_04_14.php .
29. Office of Fair Trading, “OFT Issues Statement of Objections Against 112 Construction Companies,” Press Release (17 April 2008), available at www.oft.gov.uk/news/press/2008/52-08 ; Office of Fair Trading, Information Note to Local Authorities (17 April 2008), available at www.oft.gov.uk/shared_of/business_leaflets/general/Information-Note.pdf .

30. Dorée, et al., *supra* note 20 at 818.
31. *Id.* at 817.
32. F.M. Scherer, *INDUSTRIAL MARKET STRUCTURE AND ECONOMIC PERFORMANCE* 212 (2d. ed. 1980); A. Akintoye & M. Skitmore, “The Profitability of UK Construction Contractors,” 9 *Construction Management and Economics* 311 (1991).
33. M. Ball, M. Farshchi, & M. Grilli, “Competition and the Persistence of Profits in the UK Construction Industry,” 18 *Construction Management and Economics* 733 (2000).
34. See OECD, *Patents, Competition and Innovation*, DAF/COMP(2007)40, Background Note at pp. 46-48.

CONSTRUCTION INDUSTRY

3. COUNTRY CONTRIBUTIONS

Further information from the following jurisdictions on Competition in the Construction Industry is available at: <http://www.oecd.org/competition> under the topic "Best Practice Roundtables".

Country contributions

Finland	Turkey
France	United Kingdom
Germany	United States
Hungary	Indonesia
Japan	Israel
Korea	Lithuania
Netherlands	Russian Federation
Poland	South Africa
Sweden	Chinese Taipei
Switzerland	

COUNTRY REVIEW: EL SALVADOR

*by John Clark**

The OECD has been active in promoting competition policy among countries in Latin America and the Caribbean and formed a partnership with the Inter-American Development Bank to further this aim. The principal feature of this partnership has been the annual Latin American Competition Forum (LACF), at which senior officials from countries in the region discuss, in roundtable fashion, issues of competition policy of interest to them.

Each of the first four Forums featured a peer review of one country in the region. At the fifth Forum held in 2007, work focused on the four Latin American peer review reports which had been produced in the framework of the Latin American Competition Forum (Brazil, Chile, Peru and Argentina) as well as the peer review of Mexico held in the OECD Competition Committee. This work assessed the impact that the peer reviews have had on competition policy and on the competition agencies in the countries concerned.

“Peer review” is a core element of OECD work. The mechanisms of peer review vary, but it is founded upon the willingness of a country to submit its laws and policies to substantive questioning by other members of the international community. This process provides valuable insights to the reviewed country and promotes transparency and mutual understanding for the benefit of all.

There is an emerging consensus on best practices in competition law enforcement and in applying competition policy principles to regulatory systems. Countries now co-operate regularly in such areas as anti-cartel enforcement and international mergers. Peer reviews are an important part of this process.

The OECD and the IDB are pleased to have participated in this partnership for the promotion of competition policy in Latin America and the Caribbean. This work is consistent with the policies and goals of both organisations. Sound competition policy will promote economic growth and prosperity, bringing benefits to consumers in the region and substantially improving the business climate.

Both organisations would like to thank the Government of El Salvador for volunteering to be peer reviewed at the sixth LACF meeting, held in Panama, on 10-11 September 2008. Finally, we want to thank Mr. John Clark, the author of the report, and the many competition officials whose written and oral contributions to the Forum have been so important to its success.

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EXECUTIVE SUMMARY

El Salvador's first competition law took effect on 1 January 2006. The law, following some important amendments in 2007, is sound in most respects. It employs enforcement standards that are consistent with best practices in the worldwide competition community. It provides the new competition agency, La Superintendencia de Competencia (Superintendency) with the powers that it needs to enforce the law effectively. In less than three years El Salvador is off to a good – one might say excellent – start. Its experience can serve, in some ways at least, as an example of an effective way to begin to implement a competition policy.

At the beginning of its work the the competition agency systematically arranged its priorities for its first few years. It initially focused on developing supporting regulations and guidelines to round out the structure provided by the law. Then it concentrated on developing a competition advocacy programme, involving both providing advice to other government bodies on matters of competition policy and educating the public about competition policy and the work of the agency. It has been active on both fronts. There is more to be done in advocacy, however, especially in the educational area. El Salvador still lacks a competition culture – a public understanding of and appreciation for competition policy and the mission of the competition agency.

In years two and three of its existence the Superintendency began to concentrate more heavily on enforcement. Most of its early investigations and cases involved abuse of dominance, which is often true in countries beginning to enforce a competition law. The Superintendency has completed three dominance cases in which sanctions – fines – were imposed. Two were relatively straightforward, in the cable TV and electricity distribution sectors. The third, involving motor fuels, was both more visible and more controversial.

Prosecution of restrictive agreement cases, including hard core cartels, has progressed more slowly. In its first 30 months the Superintendency had only one such case, a so-called naïve cartel, in which the participants were probably unaware that their conduct was unlawful. But in September 2008 the Superintendency's Board of Directors (the final authority in the agency) announced what may be the agency's most important case to date, the sanctioning of a hard core cartel in wheat flour.

The competition law provides for merger control, including pre-merger notification. The notification thresholds were set at high levels, however, which has had the salutary effect of limiting the number of notifications, thus avoiding the situation in which the new agency would have to devote too many resources to reviewing such filings. To date the Superintendency has not opposed any mergers under the new law.

The most serious problem confronting the Superintendency has to do with judicial review of its decisions. Appeal of its cases is made directly to the country's highest court, the Supreme Court. The process there is slow and uncertain. All but one of the Superintendency's decisions in which it imposed sanctions have been appealed, and in none of those has a final decision yet been reached.

The report concludes with several recommendations, relating to, among other things: strengthening anti-cartel enforcement, improving the efficiency and effectiveness of merger review, ensuring adequate resources for the Superintendency, structural changes in the Board of Directors for the purpose of promoting its independence and impartiality (which would require modifications of the law), and consideration of adopting procedures permitting settlement of cases – reaching agreement with respondents on an appropriate remedy, which could reduce the number of judicial appeals.

1. Foundations and context

1.1 *The economic and political context*

The Republic of El Salvador, situated on the Pacific Ocean and bordered by Guatemala and Honduras, is the smallest country in area in Central America¹. Much of the country is mountainous, featuring many volcanoes. The country is vulnerable to natural disasters, the most serious of which in recent times were a hurricane in 1998 and two earthquakes in 2001. Most of the population lives in a central plateau in which the capital, San Salvador, is located. A narrow coastal plain borders the Pacific Ocean. El Salvador's climate is tropical, with temperatures varying according to altitude. Its population is approximately 6 000 000, which is third largest in the region.

El Salvador, together with Costa Rica, Guatemala, Honduras and Nicaragua, achieved independence from Spain in 1821. The five countries briefly formed the United Central Provinces of Central America, but the federation dissolved in 1838, after which El Salvador became an independent republic. The country's economy coalesced around a coffee monoculture, which in turn resulted in the concentration of economic and political power in a landed elite. This inequality ultimately resulted in a destructive civil war that lasted from 1979 to 1991. Peace was restored in 1992 in the form of the Chapultepec Accords, and with it a democratic form of government.

El Salvador's economy is third largest in Central America. Once relying heavily on agriculture, the economy is now more diverse. Agriculture now accounts for about 10% of GDP, industry about 29% and services about 61%. The country's chief exports are coffee and the output of the maquila industry (factories that import raw materials duty free and export assembled products, often to the originating country). Tourism is a nascent but growing industry. The economy has grown steadily if relatively slowly since 1996, averaging 2.8% annually. GDP grew slightly faster in 2006 and 2007, at 4.2% and 4.7%, respectively. Inflation has been relatively low, compared to other countries in the region. It was estimated to be 4.9% in 2007. Poverty has been reduced, but it is a continuing problem, with about 35% of Salvadorans living below the poverty line. A significant number of Salvadorans live and work abroad, most of them in the United States. Remittances from those workers to family in El Salvador constituted about 16% of the country's GDP in 2006.

The U. S. dollar is the country's official currency, having been made legal tender in 2001. In the years following the civil war the government introduced several market-based reforms. Price controls were eliminated and several sectors were privatised, including banking, telecommunications, parts of the electricity sector and pensions. Fiscal policy has been conservative; the country's tax burden is among the lowest in the region. El Salvador was the first country to implement the Central American Free Trade Agreement (CAFTA), whose parties are the United States, El Salvador, Costa Rica, Guatemala, Honduras, Nicaragua and the Dominican Republic, and it has entered into free trade agreements with other countries in the region. The Salvadoran economy is considered to be one of the most open in Latin America.

El Salvador is divided into 14 departments and 262 municipalities. Nationally, an executive branch is headed by a separately elected President. Legislative power is vested in the Legislative Assembly. The third branch, the judiciary, is independent. Since the restoration of peace in 1992 the presidency has been held by ARENA, the party on the right. FMLN, the leftist party, has slowly gained representation in the Legislative Assembly and in local governments. Currently it and ARENA have roughly equal representation in the legislature (some smaller parties also are represented there), but the FMLN is in effective control. Elections for both the presidency and the legislature will be held in early 2009, and the FMLN is considered to have a good chance to win the presidency for the first time.

1.2 *The introduction of competition policy*

The economic reforms that followed the Chapultepec Accords in 1992 included a commitment to competition and consumers. Within 60 days of the Accords the government presented to the Legislative Assembly a consumer protection law, which included some provisions relating to competition.² At the same time the authorities began to consider a competition law, but these efforts took much longer to come to fruition. The criminal code applied to some types of anticompetitive conduct, but there were no prosecutions under that law. A first draft of a competition law was presented to the Legislative Assembly in 1994, but it was not enacted. Various proposals were made in the ensuing ten years, but none became law.

In 2004 a new president, Antonio Saca, was elected, and he provided new impetus for a competition law. Experts conducted a study of experience with competition law enforcement in other countries, including Spain, Mexico, Brazil and the European Commission. There was a broad consensus, which included the business community and both major political parties, in favour of enacting a law.³ The new law was enacted in November of 2004, to take effect on 1 January 2006. The law was amended in 2007, providing for important new powers for the Superintendency and for higher maximum fines for especially harmful conduct.⁴

In less than three years El Salvador's competition agency, La Superintendencia de Competencia (Superintendency) has accomplished a great deal. A comprehensive regulation developing the competition law was issued in 2006. A five year operations plan was developed, as were an operations manual and a code of ethics. Guides describing procedures for presenting formal complaints to the Superintendency, for filing merger notifications and a glossary of technical terms have been published. Six sectoral studies, financed by outside sources, have been conducted. A comprehensive web site was created.⁵

Several comments and proposals have been submitted to sector regulators and government ministries, some of which have been implemented. The Superintendency has entered into several co-operation agreements with other Latin American competition agencies and with Salvadoran sector regulators. The Superintendency was assisted in some of these tasks by outside consultants, whose work was funded by outside sources, including the Inter-American Development Bank. Finally, the Superintendency is actively enforcing the law, having begun several investigations and cases, though this important aspect of its responsibilities is progressing more slowly. These developments are described further in the sections that follow.

1.3 *Policy goals*

Competition policy has its foundation in El Salvador's constitution, which was adopted in 1983. Article 101 requires that the State promote economic and social development by means of, among other things, increasing productivity, the rational use of resources and the defence of consumer interest. Article 102 guarantees economic freedom and Article 110 bans the establishment of private monopolies and monopolistic practices.

The competition law is grounded in what are now universally accepted purposes for competition policy: the enhancement of economic efficiency and consumer welfare. The opening article of the law states:

The objective of this law is to promote, protect and guarantee competition, by preventing and eliminating any anticompetitive practice, regardless of its nature, and that limits or restricts competition in any way, or that impedes the access of any

economic agent to the market, in order to increase economic efficiency and consumers' welfare.

2. Substantive issues: content and application of the competition law

In most respects the law is structured like many other competition laws. It addresses the three common forms of anticompetitive conduct: restrictive agreements, abuse of dominance and anticompetitive mergers. It employs the commonly-used substantive tests for each of these three types of conduct. The law creates an independent enforcement agency, the Superintendency, possessing the usual investigatory and advocacy powers. Its recommendations are enforced by an autonomous three person Board of Directors.

2.1 *Horizontal agreements*

Article 25 of the law applies to anticompetitive horizontal agreements. It states: "Anticompetitive agreements among competitors are prohibited. These practices include the following, among others. . . ." The article then lists four traditional types of cartel conduct: fixing prices or other terms of sale, fixing output, bid rigging and market division. Presumably Article 25 is not limited just to cartel conduct, however. The phrase "among others" in the law would encompass non-cartel restrictive agreements. The implementing regulation (hereafter "Regulation")⁶ provides a lengthy list, not exclusive, of indicators of an anticompetitive agreement.⁷ They include such factors as parallel pricing that cannot be attributed to market conditions, evidence of meetings or communications, anticompetitive practices or recommendations by industry associations, evidence of enforcement mechanisms, a small number of competitors, laws or regulations that facilitate anticompetitive agreements, unexplained differences in domestic and international prices and, in the case of bid rigging, unusually similar offers that cannot be explained by market forces.

By its terms Article 25 appears to apply the per se rule to cartel conduct.⁸ There is some ambiguity as to the standard that is to be applied to other types of horizontal agreements, however. Specifically, it is not clear in the law that the rule of reason would apply to non-cartel conduct.⁹ While the Superintendency has not yet initiated a non-cartel horizontal case, it concludes that the rule of reason is the operative standard in such cases.

The 2007 amendments gave the Superintendency two important new tools for its anti-cartel effort: powers to conduct dawn raids and to create a leniency programme.¹⁰ The law requires the Superintendent (the head of the agency) to apply to a court of first instance for permission to conduct a dawn raid. The petition must describe, among other things, the conduct that is the subject of the investigation, the parties involved and the location of the premises to be searched, the evidence that is expected to exist at the site and the reasons justifying the need for a search. The court must give its decision within 24 hours after the petition is presented.

The amended law provides that leniency can be granted by the Superintendency only to the first applicant, who must furnish sufficient evidence of a cartel and of the applicant's participation in it and fully co-operate with the Superintendency's investigation. The law exempts a successful applicant from the application of the most severe fines for violating the law, but not from fines altogether. The Superintendency's Board of Directors, which imposes fines, would have the discretion to reduce the fine, however. The Superintendency has not yet formally created a leniency programme.

The Superintendency has prosecuted two cartel cases. Those are described below.

Agricultural Products Brokers

This was what is sometimes called a naive cartel – when the participants may be unaware that their conduct is unlawful and do not attempt to conceal it. In this case, a group of six brokers operating on the country's agricultural products exchange jointly published a notice that they were increasing their commissions for transactions conducted on the exchange. The publication was clear evidence of the agreement, and the Superintendency obtained other evidence, including emails and minutes of meetings, that confirmed it. In their defence the brokers claimed that the agreement had never been put into effect. The Superintendency developed evidence to the contrary, however. The brokers also claimed that the increase was necessary because the existing commissions, especially those paid by large customers, were very small. The Board of Directors rejected these defences and fined each of the brokers approximately USD 5 000. Three of the respondents appealed their fines to the Supreme Court, which has not yet made a decision.

Wheat Flour

This is the Superintendency's most recent case, and possibly its most important. On 5 September 2008 the Superintendency's Board of Directors announced that it had discovered and sanctioned an agreement between the two major producers of wheat flour¹¹ (used in the production of bread and bakery products) to share total sales in the market on a 55%-45% basis.¹² Pursuant to the agreement the parties periodically exchanged sensitive, confidential information on sales and their participation in the market. They also devised a mechanism to compensate one another in situations in which a party did not achieve its allocated share.

The Board imposed fines on the two parties totalling slightly more than USD 4 million. The fines, the highest imposed thus far by the Superintendency, were the first calculated under a new provision in the law, added by the 2007 amendments, authorising higher fines in "particularly grave" offences (described further in Section 3.2 below). The fines were calculated as 3% of the respondents' total sales in 2007. The Board also issued a remedial order requiring the respondents:

- to cease the illegal practices;
- to refrain from exchanging information relating to production, sales, prices and customers;
- for a period of two years, to report to the Superintendency monthly data on imports of wheat, flour production, installed capacity and flour sales.

The Board of Directors especially noted the importance of the case to consumers. Bread, of course, is a staple for all consumers. The decision cited statistics showing that in El Salvador, food and non-alcoholic drinks constitute about 43% of the average household's total consumption, and of that, bread accounts for about 31%. The average household spends about USD 31 per month on bread.

The case is also notable as the first in which the Superintendency conducted dawn raids. In this case there were two premises to be searched, located in different judicial districts, requiring the Superintendency to file two petitions with courts of first instance. Both were granted, and the Superintendency conducted searches of the two premises simultaneously.

2.2 *Vertical agreements*

Articles 26 and 27 of the law apply to “anticompetitive agreements among non-competitors.” Two specific types of agreements are referenced in Article 26: tie-ins and exclusive selling agreements.¹³ As with Article 25, horizontal agreements, the list of prohibited agreements is not exclusive. Again like horizontal agreements, the Regulation¹⁴ lists some indicators of an unlawful agreement, including: the restrictions result in exclusion from the market for a longer time than would result from a “legitimate economic explanation;” laws or regulations that facilitate anticompetitive agreements; and exclusive arrangements that cannot be justified by efficiency gains. The rule of reason applies to vertical restraints under the law. The standard is articulated in Article 27: the practices “. . . have or could produce the effect of limiting competition, impeding or limiting the access or displacing competitors from the market, and in any case, that the interest of consumers has been harmed.”

Resale price maintenance is not explicitly noted in either the law or the Regulation. The practice would no doubt be encompassed in the “among others” category in Article 26 if anticompetitive, but it would seem that the rule of reason would apply to RPM, as to all other types of vertical restraints.

Article 27 imposes an additional, important condition for a finding of illegality of a vertical restraint: the practitioner or practitioners, “. . . acting individually or jointly, hold a dominant position in the relevant market.” Many competition laws do not explicitly require a finding of dominance as a prerequisite to a finding of an unlawful vertical restraint. The rule of reason analysis, however, usually requires a finding that the practitioner has some market power, if not dominance. Also, the language “acting individually or jointly” in Article 27 might permit the application of the law to a situation in which there is no single firm dominance. It is generally accepted that vertical restraints could be anticompetitive when most sellers in a market engage in a practice having the effect of restricting entry or facilitating collusion.¹⁵

Article 28 addresses the concept of relevant market. It focuses on the generally-accepted test for defining a relevant market: substitutability of products or services (product market) or sources of supply (geographic market) for buyers. The Regulation elaborates on this concept.¹⁶ It does not employ the SSNIP test (small but significant and non-transitory increase in price) that some other jurisdictions use, listing instead various qualitative factors, including “the time required for the substitution, prices, characteristics, uses and applications, consumption alternatives, goals, availability, substitution costs, as well as accessibility of the goods or services in question, perceptions of substitution, and market trends.” (The Superintendency does use the SSNIP test, however, in its analysis.) Included as a relevant criterion in the Regulation is the possibility that a supplier not currently serving a market could begin to do so “without significant costs and in a short time period.”

Importantly, Article 14 of the Regulation adds an efficiency defence to these agreements among non-competitors (but not to horizontal agreements prohibited by Article 25). It requires the Superintendency to consider whether the agreement in question allows the participants to “achieve greater efficiency . . . or promote innovation or foster productive investment, which translates into benefits to consumers in the respective activity.” There follows in the Regulation a non-exclusive list of cognisable efficiencies. In general they refer to production efficiencies of various types.

The Superintendency has not yet brought a vertical case as such, though the motor fuels case, described below as a dominance case, could have been characterised in that manner.

2.3 *Abuse of dominance*

Article 30 of the competition law prohibits abuse of dominance. As in the law's other substantive provisions, this article enumerates certain types of conduct that could constitute violations, including inhibiting entry or expansion, predatory pricing and various forms of price discrimination. The Regulation¹⁷ lists some indicators of abusive conduct, including increasing costs of entry or exit, creating difficulty of access to inputs, cross-subsidisation and price discrimination not apparently justified by cost differences.

Article 29 of the law lists factors relevant to a determination of dominance. They include the ability of a firm unilaterally to raise prices or restrict output, the "existence of competitors" (presumably, market structure), the existence of entry barriers and conditions of access to necessary inputs by a firm and its competitors. The Regulation elaborates on these provisions, describing factors relevant to market structure and entry barriers.

Neither Articles 29 and 30 nor their corresponding regulations specifically refer to joint dominance. As noted above, that reference is in Article 27, which refers to vertical restraints. Still, the Superintendency has concluded that the concept applies to dominance cases as well. There must be more than mere parallel conduct between jointly dominant firms, however. They must be joined by some specific link. This concept is relevant to the motor fuel case, described below.

The bulk of the investigations and cases instituted by the Superintendency so far have been dominance cases. This is often the case in countries in the initial stages of enforcing a competition law. Three of the investigations have led to a finding of abuse, with fines having been assessed. The three are described below.

Cable Television

In El Salvador home builders sometimes undertake to construct new communities of many homes; in the process they build in infrastructure for such services as electricity, telephone and cable television. In one case, a builder formed an affiliate company that would provide cable TV service in a community that it was building. Competing cable providers also desired to provide service in the community, but the construction company physically prevented the competitors from entering the premises to install equipment. In some instances the builder destroyed competitive equipment that had already been installed.

The respondent claimed that if it were to permit other entities to enter the construction zone it could cause damage to the properties. Another defence was that security was an important consideration to homeowners in the community, and that it would compromise security to permit others to enter. The Board of Directors rejected these arguments. Regarding the security argument, the Superintendency showed that the competing providers had specific permission of property owners to enter. The Board fined the builder and its affiliate a total of approximately USD 34 000 and ordered them to cease the offending practices. The fines have been paid.

Electricity Distribution

B&D, an electricity distributor, attempted to enter an industrial zone in San Bartolo, in southern El Salvador, by constructing a new distribution network. The incumbent, CAESS, a member of a group of companies that controls close to 70% of electricity distribution nationwide, held a 100% share in this area. For B&D to construct its facilities it was necessary for CAESS to provide some minimal co-ordination, such as cutting power at agreed times to permit B&D to complete its network. CAESS refused to do so, despite receiving proposals from B&D for procedures to facilitate the process. In addition, CAESS obstructed B&D's entry by erecting utility poles at points at which B&D intended to erect its own.

CAESS offered various justifications for its refusal to cut service, including safety considerations. The Superintendency showed, however, that CAESS had cut service for others at their request, without objecting. B&D even tried to conduct its work at times when CAESS was planning to cut service for other reasons, but in these instances CAESS cancelled the cut at the last minute. Regarding its blocking of locations for utility poles, CAESS argued that B&D had other options for its network, including underground installations. With the help of an expert witness, an employee of SIGET, the electricity regulator, the Superintendency showed that these alternatives were more expensive for B&D. Finally, CAESS argued that it had no duty to deal with a competitor as demanded by B&D.

The Board rejected CAESS' arguments and found that it had abused its dominant position. It fined CAESS USD 170 000 and ordered it to cease its obstruction and to co-ordinate with B&D. CAESS has appealed the result to the Supreme Court, and has neither paid the fine nor begun co-operating with B&D. Recently the Superintendency asked the Attorney General to institute a criminal action against CAESS for its failure to comply.

Motor Fuels

This is the most important and the most publicised dominance case brought by the Superintendency to date. It was initiated in April 2006 by a complaint lodged with the Superintendency by an association of gasoline dealers. The Superintendency issued its decision in October 2007. The respondents in the case were three multinational oil companies, Exxon (doing business in El Salvador as Esso), Shell and Chevron (doing business in El Salvador as Texaco). The central element of the case was the practice, in which all three engaged, of creating geographic zones within which the retail prices of motor fuel were almost identical. Prices varied as between zones, however.¹⁸

There is one oil refinery in El Salvador, which is jointly owned by Esso and Shell. This same entity also imports refined oil products and stores them at the facility. Texaco separately imports and distributes refined products, as does a fourth entity. Esso, Shell and Texaco account for more than 90% of wholesale distribution of motor fuels; their branded gasoline stations also have large shares of the retail sector.

In a long and carefully written decision, the Superintendency's Board of Directors determined that there were three separate product markets: premium gasoline, regular gasoline and diesel fuel. The Board concluded that there were 15 relevant geographic markets, consisting of the seven largest cities and metropolitan areas (of which the San

Salvador metro area was by far the largest) and eight highway corridors linking the major cities. The theory behind this construction was that of “linked markets.” While many buyers in an area or neighbourhood find it convenient to purchase their fuel only from local stations, other buyers, because of commuting or personal driving patterns, may also find convenient sources of supply in an adjacent area, and some buyers in the second area also shop in a third, and so on. In this way, sellers in one area may be influenced by pricing decisions of sellers located some distance away.

Esso and Shell together had retail sales exceeding 50% in several of these markets. Because they jointly owned and operated the refinery and storage facility, the Board concluded that it could consider them as a single entity for purposes of the dominance analysis. The Board concluded that Esso and Shell were dominant, given their large joint market share and high entry barriers, among other things. Texaco, on the other hand, operated separately from the other two, and for that reason the Board concluded that Texaco could not be considered dominant.

Esso and Shell could effectively control the retail prices charged by their station operators by adjusting, in various ways, the dealers’ wholesale prices. The pricing systems were not identical, however, and there was no evidence that the two firms had colluded in setting these prices. The same was true of the zoning systems of the two firms; while they both engaged in the practice, the zones that they created were not coterminous, and there was no evidence of collusion in this regard. Thus, the Board concluded that it could not find an unlawful horizontal agreement between the two.

It did conclude that the firms’ zoning practices were an abuse of their dominant position, however. The zones that the companies established were much smaller than the relevant geographic markets determined by the Board. (Esso had 15-20 zones in the San Salvador metropolitan area, for example, and Shell had even more.) The effect, said the Board, was to inhibit price competition. A station could not respond to a lower price charged by stations in an adjacent zone by lowering its price, because of its supplier’s control over its prices. In this way, concluded the Board, competition offered by a discounter in one zone “will not be transferred . . . to nearby zones, or to the rest of the relevant geographic market.” The Board also concluded that the zoning system had the effect of raising barriers to entry in the retail market.

The Board of Directors fined each of the two firms the maximum fine then available, 5000 monthly minimum monthly salaries in the industrial sector, which translated into USD 852 000. It also ordered the firms to cease the pricing and zoning practices that were the subject of the case. Esso and Shell immediately appealed to the Salvadoran Supreme Court. (The relevant appellate procedures are described below in Section 3.3) In an interim decision rendered a few weeks after the appeal the Court suspended the remedial order. It did not suspend the fines, but the companies have not yet paid them. The Court has not ruled further on the case.

Until the wheat flour case this case was the most visible of any brought by the Superintendency. It received a significant amount of public attention, involving as it did a common consumer product, well known multinational companies and the imposition of large fines. There was criticism of the case in some quarters, however. The theory of the case was novel and complex, seeming to involve in some form the concept of joint dominance, though that term was not used by the Board. Also, the respondents voiced objections about certain procedures, which are discussed in Section 3.2 below. Finally, the case highlighted issues relating to the judicial appeals process, which are also discussed below.

2.4 *Mergers*

The Salvadoran law, unlike those of some of its Latin American neighbours, includes merger control. The relevant legal standard is “significantly limit competition.”¹⁹ The Regulation contains several articles expanding on various substantive and procedural aspects of the merger review.²⁰ The Superintendency has not yet published guidelines describing its method of analysis of mergers, but the Superintendency states that it employs a methodology like that used in many countries today. It begins with market definition and an assessment of concentration. Conditions of entry are then determined, after which the probable competitive effects of the proposed merger are considered. The law and the Regulation require that the Superintendency consider, among other things, possible efficiencies generated by the proposed transaction. The fact that a party may be insolvent or in danger of failing is also relevant.

Importantly, the merger control provisions extend to mergers in regulated sectors. The Superintendency’s decision is binding upon the sector regulator, though the regulator may also have the power to prevent a merger on regulatory grounds.

2.4.1 *Notification and review procedures*

El Salvador requires pre-merger notification. Article 33 states:

Concentrations whose combined total assets exceed fifty thousand minimum urban annual wages in the industrial sector or whose total income exceeds sixty thousand minimum urban annual wages in the industrial sector should request [from] the Superintendency their prior authorization.

Currently these asset and revenue size thresholds translate into USD 112 860 000 and 135 432 000, respectively, relatively high for a small economy like El Salvador. Neither the law nor the Regulation state specifically that the relevant assets or revenues be located in or derived from El Salvador. The Superintendency has concluded that a requirement of “local nexus” does exist, however, and is operating on the assumption that the relevant assets or revenues must be local. Also, the terms of the law and Regulation require only that the combined assets or revenues of the merging parties reach the specified levels; there is no minimum requirement for one party, creating the possibility that a merger involving one very large entity and another of de minimus size would have to be notified, notwithstanding that such a transaction would be unlikely to have any significant anticompetitive effects.²¹

The law provides that the Superintendency has 90 calendar days after notification to issue a decision. If no decision is issued within that period, the merger is deemed to have been approved. If the Superintendency requires additional information about the transaction or it considers that the notification is deficient in some respect, it must make its request to the parties within 15 days after notification. The running of the 90 day period is suspended by such a request, resuming when the information requested is supplied.

The Superintendency does not assess notification fees.

2.4.2 *Investigations and cases*

The Superintendency has not denied or conditioned any merger to date. It received 16 notifications through May of 2008, but nine of these were not required to be notified for various reasons. One was abandoned and the remaining six were approved. The Superintendency almost always exercised its option to request additional information within 15 days, but most of these requests

had to do with deficiencies in the notification. Five of the six relevant notifications involved firms in the financial sector, perhaps not surprising given the high notification thresholds and the relatively large size of financial enterprises.²²

It is obvious that the business community and the corporate bar have had little experience with the notification procedures thus far. The Superintendency has published a guide to merger control, but it is relatively general, and does not deal with the intricacies that inevitably arise in the merger notification context. The Regulation (Art. 78) created a procedure by which parties, including government agencies, could apply in writing to the Superintendency for a consultation or opinion. The procedure was employed a total of 15 times through the first quarter of 2008, five of which were for the purpose of determining whether a merger had to be notified. The consultation procedure can no longer be employed for this purpose, however, because the 2007 amendments limit its use to two circumstances: comments on proposed legislation and on procedures for public procurement.

It appears that so far the high thresholds established in the law have served their purpose – that of limiting the number of notifications that the new competition agency has to review. It can happen in countries just beginning merger control that the competition agency is swamped with merger notifications, most or all of which present no competitive problem but which divert the agency's scarce resources away from more important matters. Another useful provision in the law is that the thresholds are effectively indexed to inflation, by means of a link to a minimum annual wage. This obviates the problem of having to raise the thresholds in the future because inflation has rendered them too small.²³

Of course, it is possible that mergers that fall below the notification thresholds could still harm competition, and the Superintendency might want to control these, if necessary. It seems that the merger control provisions of the law would not apply to such mergers, but by their terms the articles prohibiting anticompetitive agreements and abuse of dominance could. The Superintendency has not yet had occasion to consider this question.

2.5 *Unfair competition and consumer protection*

The Superintendency has no enforcement responsibility for unfair competition or consumer protection. The Salvadoran commercial code has provisions prohibiting various types of unfair competition, including bribery, providing false information about the origin or quality of products or about a competitor and misuse of intellectual property. These laws are enforced in civil court.

Consumer protection is robust in El Salvador. As noted above, a consumer protection law was enacted well before the competition law. The current consumer protection law, enacted in 2005, is a lengthy and comprehensive document. It addresses a wide range of practices, including the sale of unhealthful or dangerous products, toxic substances, various contractual provisions, the sale of defective goods, providing false and misleading information and other advertising practices. The law is enforced by an independent consumer protection agency, La Defensoría del Consumidor (Defensoría). The Defensoría has broad investigatory and enforcement powers. Through a three person tribunal it can impose fines of up to USD 940 500, depending upon the severity of the offence and the magnitude of its effect.

The 2005 law created what is called the National System for Consumer Protection, composed of the Defensoría and representatives of the executive branch and other government institutions. The Superintendency is not represented in this body, apparently because it does not have a specific sectoral responsibility. Co-ordinated by the Defensoría, the National System has responsibility for strategic planning and other co-ordinating activities in the field. Further, the law created a Consultative

Council to advise the Defensoría (Consejo Consultivo de la Defensoría del Consumidor). Members of the Council include the Superintendent of Competition and representatives of Salvadoran consumer NGOs.

Consumer protection is popular and has a high profile in El Salvador. The public understands the actions taken on its behalf by consumer agencies; such cases are relatively numerous and can be resolved quickly. The Defensoría is well funded; its budget is substantially larger than the Superintendency's. Consumer NGOs are also active in El Salvador, the largest of which is the Center for the Defence of the Consumer. The Superintendency could benefit from this good will by associating more closely with the Defensoría. Similarly, the Defensoría would benefit from the Superintendency's participation on the National System for Consumer Protection. The two agencies could also co-operate in appropriate cases, to good effect.²⁴ The Superintendency has proposed to the Defensoría that the agencies enter into a co-operation agreement, much like those that the Superintendency has concluded with other government agencies (described further below in Section 4). Thus far the Defensoría has not responded, however. It has also been invited to participate in some of the Superintendency's cases, but it usually has not done so.

3. Institutional issues: enforcement structure and practices

3.1 Competition policy institutions

The Superintendency of Competition is one of several independent superintendencies in El Salvador.²⁵ Some sector regulators take that form, as do other public institutions such as hospitals. The Superintendency is part of the executive branch; it has a separate budget, which is submitted through the Ministry of the Economy to the Ministry of Finance.

The Superintendent of Competition, currently Lic. Celina Escolán Suay, is the head of the agency. She directs a staff of lawyers, economists and administrative personnel. The professional members of the staff are organised into two "intendencies," legal and economic. Other offices within the Superintendency include a Secretary General, internal and external auditors, and international, communications, information, financial and administration units.

The Superintendent, with the assistance of her staff, makes enforcement recommendations to a three person Board of Directors. The Board makes the final enforcement decisions and imposes sanctions, if any. Article 9 of the competition law sets out the necessary qualifications for a board member:

The Superintendent and the Directors should be Salvadorian nationals, over thirty years of age, with a diploma in economy, law, business administration or other related professions, well known for his or her honorability, notorious probity and knowledge and experience on issues related to his /her job, in full enjoyment of all citizen rights in the last five years before being appointed for the job.

The Superintendent is *ex officio* a member of the Board. The other directors serve part time. The Superintendent and the Board members are appointed by the Salvadoran President for terms of five years. They can be reappointed. In addition to the three voting members of the Board, three alternate members are also appointed, to serve when a voting member cannot. The alternate members also attend the meetings of the Board. The terms of all of the Board members expire at the same time.²⁶ This could create a problem at the time of the turnover. There would be a sudden loss of expertise and continuity, and the opportunity to appoint an entire new Board could invite political intervention into the Superintendency's work.²⁷

The Board is required by law to meet at least once a month. In practice it meets more often, usually once a week. Meetings typically take three to four hours. Directors often have to spend extra time preparing for meetings - reviewing files, and so forth. The Ministry of Finance sets the compensation rates for the directors other than the Superintendent.²⁸ Here the fees seem quite low. In 2006 the directors' fees were set at \$45.72 per meeting, not to exceed \$182.88 per month (four meetings). In 2007 they were raised to \$75 per meeting, maximum \$300 per month.²⁹

These rates compare unfavourably with those in other superintendencies; board members of the financial system superintendency receive \$320 per meeting, for example; the Central Bank, \$250, and the securities industry, \$225. Moreover, the directors of the Competition Superintendency point out that they have a comprehensive role in the operation of the agency, approving all official actions of the agency. Some of the other superintendencies apparently have more of an oversight or appellate function, and consequently their work requires less time.

Because the directors serve part time, except for the Superintendent, they of course have other full time employment. To date the five directors have come either from the academic community or from other government agencies. Currently, one member is from a university, two from the Technical Secretariat, which performs oversight and advisory functions for the President, one is from the Central Bank and one is from the Ministry of Economy. This raises potential issues relating both to the independence of the agency and to possible conflicts of interest.

The fact that a majority of the Board could come from another branch of government could compromise the Board's independence. There is no indication that this has occurred, however; the Board's decisions seem to have been reached without any outside interference. The outside directors say that their agency has never attempted to exert any influence on them in a case. They point out that it can be an advantage for their agencies' perspective to be represented. Still, it would seem that in different circumstance outside influence might be exerted. A related issue is potential conflicts of interest. A case or investigation could involve a matter that is also before a ministry or agency for which a Board member works full time. This problem could probably be addressed by means of a rigorous set of rules governing disqualification from a given case.

3.2 *Enforcement processes and powers*

The procedures relating to merger notification and review are described in section 2.4.1 above. Procedures relating to conduct cases are set forth in articles 40-49 of the law and articles 24-77 of the Regulation.

Conduct investigations can be initiated either by a formal complaint filed with the Superintendency by a private party or by the Superintendency *ex officio*. If the Superintendency determines that a private complaint does not comply with the information requirements set forth in the law and Regulation it must notify the complainant of that fact within 15 days of the filing of the complaint. The complainant has five business days to remedy the problem. Also, within the 15 day period the Superintendency can determine that the complaint does not describe a possible violation of the law and declare it improper.

If the complaint is considered valid, the Superintendency may conduct a preliminary investigation to determine if a full investigation is warranted. If it is not, the complaint is dismissed. If the preliminary investigation indicates that there is sufficient evidence of a possible anticompetitive practice the Superintendency initiates a formal investigation. (A preliminary investigation is not required; the Superintendency can proceed directly to a full investigation if the facts warrant.) The party or parties that were the subject of the complaint are given formal written notice of the

investigation; the notice includes a summary of the relevant facts, the type of infraction that may have occurred and the sanctions that could be imposed.

This triggers the beginning of a 30 calendar day period within which the Superintendency and the respondent gather evidence. Following that, the respondent has a period of 20 business days within which to present its evidence and arguments to the Superintendency. At this stage all proceedings are in writing. The Superintendency then prepares its report and recommendation to the Board of Directors. The respondent also has the opportunity to present its arguments to the Board in writing.

After deliberation the Board makes its decision and directs the Superintendency to draft its resolution, which is made public. The resolution describes fully the relevant facts and the Board's analysis.³⁰ The respondent has a period of five working days within which to request a review by the Board of its decision.³¹ The Board then has ten business days within which to make its decision on the review. The law requires the Board to issue a decision within 12 months from the date that a complaint was filed or an *ex officio* investigation was begun. This period can be extended once, for a maximum of 12 months. In only one case, the motor fuels case, has the 12 month period been extended, that for an additional seven months.

The Superintendent has the authority to classify information or documents that the Superintendency has obtained as confidential, and to restrict access to that information as she considers appropriate. Any party providing information can make such a request. A respondent has access to the Superintendency's evidentiary file but not to the Superintendency's report to the Board.

The motor fuels case generated some discussion about the procedures employed in the decision making process. The respondents in that case acknowledge that they had sufficient access to the Superintendency's evidentiary file and there were no restrictions on their ability to present evidence and arguments to the Board. They complain, however, that they were not fully aware of the Superintendency's theory of the case, and hence were not able to address it completely, until the Board issued its decision. Following that they had the opportunity to request a review by the Board of its decision, which they did, but they would have preferred to have been able to address the issues more specifically in the first stage.

Another criticism of the decision making process has been voiced: that the Superintendency's prosecutorial and adjudicative functions are insufficiently separated. The Superintendent supervises the preparation of cases and is also one of three voting members of the Board (unless she is disqualified because of a personal conflict). Critics say that the Superintendent would not be wholly impartial and that she might have undue influence on the Board. Competition agencies in many countries are structured similarly to El Salvador's, however, employing a system in which an independent commission both develops cases and is the decision maker of first instance. El Salvador's is somewhat unique in that there are only three voting members on the Board – most countries have five or more – and there are three additional members who participate fully in reviewing cases but who do not vote on them, unless one or more of the voting members is disqualified. Of course, the fact that the Board's decisions can be appealed to the courts is an important factor in securing due process.

Apart from these procedures that govern contested cases, there are currently no procedures in place through which the Superintendency could "settle" cases, that is, reach agreement with the parties on an appropriate remedy. Settling cases in some fashion would obviate the need for appeal to the courts. As discussed in Section 3.3 below, the appeals process is slow and uncertain, creating a significant impediment to final resolution of the Superintendency's cases. The original law included a provision permitting a party to provide a guarantee to the Superintendent that it would cease or modify

the allegedly anticompetitive conduct sufficiently to restore competition in the relevant market, in exchange for which it would receive no penalty. There was one case in which this procedure was used successfully. The procedure was eliminated by the 2007 amendments, however. The Board can take any voluntary modification of conduct by a respondent into account in assessing fines.

There is no provision for private parties to pursue remedies for a violation of the competition law apart from their right to petition the Superintendency to conduct an investigation. Thus far it seems that the rules governing this procedure are appropriately balanced, avoiding the possible situation in which the Superintendency might have to devote too many resources to processing meritless private complaints. The Superintendent has the power, as described above, to summarily declare a complaint as inadmissible or improper. To date there have been 20 private complaints lodged with the Superintendency. Of the 18 that have been finally resolved, ten were summarily dismissed by the Superintendent. One complainant appealed that decision to the Board of Directors, which upheld the Superintendent.

The Superintendency has all of the investigatory powers that are normally given to a competition agency.³² It can request any party, including any government agency or body, to provide information and documents. It can issue summons for witnesses. It can carry out inspections at the premises of a person, examining documents and taking statements. These inspections, which require the Superintendency to give advance notice of 24 hours, are apart from the power to conduct dawn raids, which must be authorised by a court. As noted above, the 2007 amendments provided the Superintendency with the power to conduct dawn raids and to implement a leniency programme. They also gave to the Superintendent the power to issue preliminary orders, temporarily suspending an activity or impose other conditions,

. . . when an imminent risk to the market exists which may limit competition, the access of an economic agent to the market, or the movement of an economic agent, or that the detected conduct may result in damages to third parties or in damages to public or collective interests.³³

Such an order can be appealed to the Supreme Court, but appeal rights are limited because the order is not a final one. No such orders have yet been issued.

These powers collectively are not unusual for competition agencies, but they are not common in El Salvador. Perhaps no other superintendency has such an array.

The Superintendency's fining power is also significant.³⁴ Before the 2007 amendments it could impose a maximum fine of 5 000 minimum monthly urban wages in the industrial sector, which currently translates to USD 940 500. The amendments added higher fines for "particularly grave" offences. The Superintendency can impose the greater of

- up to 6% of a firm's total annual sales in El Salvador;
- up to 6% of a firm's total assets in El Salvador;
- between two times and ten times the estimated gain resulting from the unlawful practice.

In calculating fines the Superintendency must take into account:

. . . the severity of the infringement, and also the damage caused, the effect on third parties, the duration of the anticompetitive practice, the size of the market, and whether it is dealing with a repeat offender.³⁵

As noted above, the largest fines imposed by the Superintendency so far were those in the wheat flour case, about USD 4 million. They were also the first under the new particularly grave provision. When assessing fines the law requires that all fines be paid within eight days of the issuance of the Board's final resolution. As described below in Section 3.3, however, most of the fines assessed to date have not been paid because of judicial appeals.

These same maximums, including the alternative higher fines, also apply to situations in which the parties to a merger that should have been notified consummate their merger without having notified, and in which a complainant files a complaint containing false information "with the purpose to limit, restrict or impede competition." Also, a party who does not comply with a final resolution of the Board in a merger case can be fined up to 5 000 minimum monthly urban wages for each day that it is in non-compliance, and a party who fails to supply information requested by the Superintendency or intentionally or negligently provides false or incomplete information can be fined up to ten minimum monthly urban wages for each day that it is non-compliance.

In one case the Superintendency imposed fines for failure to supply requested information. In connection with a study of the pharmaceutical industry the Superintendency requested information from several laboratories. Some of the respondents did not respond, while others claimed that the Superintendency did not have legal authority to request such information. To the latter the Superintendency responded with citations to the applicable provisions of the competition law. Five respondents persisted in not supplying the information, however, and the Superintendency initiated procedures under another law to require the respondents to provide the information.³⁶ The five ultimately did so, but the Board assessed fines based upon the length of time that the respondents were not in compliance totalling approximately USD 52 500. Three respondents have paid their fines; two have appealed.

In addition to its fining powers the Superintendency can issue remedial orders requiring the cessation of the unlawful practices and/or imposing other terms or obligations, both behavioural and structural. This ability to impose behavioural and structural remedies, in addition to simple prohibitions, was another addition provided by the 2007 amendments. The order in the wheat flour case was the first issued under this new provision.

3.3 *Judicial review*

There are four levels in Salvadoran judicial system: justices of the peace, courts of first instance, intermediate appellate courts and the Supreme Court. The Supreme Court is structured into four chambers: Constitutional, Civil, Criminal and Administrative. There are 15 justices on the Supreme Court, each assigned to one of the chambers (they can also meet in plenary session). Justices are appointed by the Legislative Assembly for terms of nine years (one-third of the justices are appointed every three years).

Appeals of decisions of the Superintendency, and of all administrative bodies, are made directly to the Administrative Chamber of the Supreme Court (specifically, Sala de lo Contencioso Administrativo). There are four justices in this Chamber. In a case against a government institution, such as the Superintendency, the Attorney general participates as the representative of the state and of the public; the institution is represented by its own attorneys. In general the Chamber's procedures are as follows: upon receipt of the petition it conducts a preliminary study to determine if the appeal satisfies the requisite procedural requirements. Upon admitting the case, the Chamber can issue an interim or preliminary order if necessary. Then follows consideration of the merits of the case, which includes reports from both sides and, if necessary, the gathering of new evidence. The Chamber then reaches its decision.

The Chamber's decision cannot be appealed to the plenary Court, but if there is a constitutional issue raised in the case it could be appealed to the Constitutional Chamber, under a procedure known as *amparo*.

As noted above, the Superintendency has issued sanctions in only a few cases thus far, but in all but one, the television cable case, at least some of the respondents have appealed. None of those cases has been finally decided. Most of the cases have been accepted for review by the Court; in the others, acceptance is pending. In one case a petition to suspend the fine that was imposed, pending review, has been granted. In the others, however, including the motor fuels case, the fines have not been suspended, but they have not yet been paid. The Superintendency has requested the Attorney General to proceed against the parties to collect the fines. The Attorney General has not yet begun that process.

Thus, judicial appeals have thus far frustrated the Superintendency's efforts to finally resolve its cases. The appeals process is slow. It can take a year or more for the Court to accept a case. Reaching a final decision can take two years from the date of the appeal, sometimes longer, and then there is the possibility of an *amparo* appeal.³⁷

3.4 *International issues*

As a small economy and one whose markets are relatively open, competition in El Salvador is inevitably affected by international forces. The law and Regulation are silent on this topic, but there does not seem to exist any restriction on the Superintendency's ability to give full effect to foreign influences in its competitive analysis. So far the issue has not arisen directly in the Superintendency's cases.

The Superintendency has no role in the implementation of trade policy, including anti-dumping measures.

The Superintendency has been active since the beginning in building relations with other competition agencies and international competition policy organisations. It has signed co-operation agreements with competition agencies in Chile, Costa Rica, Honduras, Mexico, Panama, Peru and Spain. Three of the agreements – those with Chile, Mexico and Spain – focus on technical assistance – the exchange of personnel and sponsorship of conferences and seminars. The others also address co-operation and information exchanges. The Superintendency regularly communicates with its counterparts in other countries in the region on specific matters or issues. Brazil and Chile have provided technical assistance on conducting dawn raids, and Chile has provided technical assistance in two of the Superintendency's cases.

The Superintendent is adept at attracting funding from outside sources for special projects.³⁸ The agency participates, for example, in COMPAL, a project that provides technical assistance in competition and consumer protection policies for the countries of Bolivia, Costa Rica, El Salvador, Nicaragua and Peru, financed by the government of Switzerland and administered by UNCTAD. Through COMPAL, Superintendency staff has participated in internships at competition agencies in other countries. The Superintendency also participates in the technical assistance programme offered by Spain and Portugal through the Ibero American Competition Forum.

The Superintendency also participates actively in international competition organisations, including the OECD (through its Global Forum on Competition), the ICN and UNCTAD. In its brief history it has already acted as host of the fourth meeting of the Latin American Competition Forum and of an ICN cartel workshop.

There is a broad diplomatic effort underway to integrate the economies in the region. Currently there are negotiations underway to create a Central American customs union. All countries in the region except Guatemala now have competition laws. In 2006 the Central American Competition Forum was created. El Salvador recently acted as host for the second meeting of that group.

3.5 *Resources and priorities*

One of the Superintendency's first tasks in 2006 was to prepare a five-year plan for the period 2006-11.³⁹ The plan articulated strategic objectives for the agency and it set out specific, numerical goals for various types of activities, for example, "number of cases on anticompetitive practices resolved," and "reports containing recommendations on laws and regulations." The shape of the plan was to emphasise competition advocacy, especially that relating to educating the public about competition policy, in the first years, while increasing the output of enforcement actions in the later years. The agency has followed this plan, though in some cases the numerical goals proved to be too ambitious.

The following table describes the output of the Superintendency in enforcement actions for the first 33 months of its existence.

	Horizontal Agreements	Vertical Agreements	Abuse of Dominance	Mergers	Failure to Supply Information
Files Opened	4	3	13	18	6
Orders or Sanctions Imposed	2	-	3	-	6
Fines Imposed (USD)	4 063 093.36	-	1 985 160	-	52 714

In the Superintendency's first two years its staff averaged 25 persons. Currently its staff numbers 30, including 6 lawyers and 7 economists. The agency's budget in 2006 and in 2007 was USD 1 500 000.⁴⁰ It was increased to \$1 800 000 in 2008. Spending caps have prevented the agency from spending its full allotted amount, however. In 2006 only \$1 350 000 was actually spent. In 2008 there was a government-wide 10% reduction in the amounts that could be spent on goods and services – non-salary expenses such as computers. A further restriction is that the Superintendency can spend only 65% of its budget on personnel, which has constrained its ability to hire staff, by far its most important input.⁴¹ The Superintendency has been notified that its budget for 2009 will be reduced to approximately \$1 700 000.

The Superintendency's agenda is broad, and its leaders ambitious. Their accomplishments, especially in competition advocacy as described below in Sections 4 and 5, have been significant. They contend that more resources are required, however, as the agency becomes more intensively involved in case work. They note that the Superintendency's budget is substantially less than that of other Salvadoran agencies that it considers to be its peers.

There are positive aspects to the Superintendency's resource situation, however. It seems to have adequate office space and equipment for the size of its current staff. Most important, its staff, while young, is widely considered to be capable and hard working. Its current Superintendent is highly respected, as is the Board of Directors. Salary levels for superintendencies are higher than those in the central government. The Superintendency attracts good people; university graduates consider it a good place to work. While there will be turnover of professionals from the agency to the private sector, as in many government agencies, it seems that turnover will not be a critical problem in the near term.

4. Limits of competition policy: exclusions and sectoral regimes

There are almost no exclusions from the competition law. It applies fully to the private sector, including regulated sectors, and to publicly owned enterprises. Article 2 of the competition law states:

The provisions herein are binding to every economic agent, be they natural or juristic person, state or local government, enterprises with state participation, cooperatives associations, and any other organization participating in economic activities. Notwithstanding the above, this law shall not be binding upon those economic activities that the Constitution and the laws reserve exclusively to the State and municipalities.

As noted above, there are regional (departmental) and municipal governments in El Salvador. These governments have no competition law enforcement responsibilities. The municipal code does reserve to municipalities the right to operate and regulate local markets, slaughterhouses, solid waste collection, cemeteries and funeral services and lotteries. If a municipality performs these services it is not subject to the competition law, but a private contractor performing the services is subject to the law. There are no special rules or exemptions for small and medium sized businesses.

Following are brief descriptions of regulatory regimes and market structures in selected sectors.

4.1 Electricity

The electricity sector, like other infrastructure sectors, was privatised in the mid and late 1990s. Competition exists in generation and distribution; the transmission company is a state owned monopoly. There are six generating companies operating a total of 12 plants. Hydroelectric is the leading source of power, with about 40% of total capacity. One entity controls all of the hydro facilities. Geothermal is a growing source, currently with about 14% of capacity. The remainder is thermal. In distribution there are several small players, and some generators are integrated into distribution, with minimal shares. One Group, AES, which includes CAESS, the respondent in the competition case described above, has a 68% share of sales nationwide. The sector regulator is General Superintendency for Electricity and Telecommunications (SIGET). As its name indicates, SIGET also has responsibility for the telecommunications sector.

4.2 Telecommunications

Fixed telephony remains highly concentrated after privatisation, but it is facing competition from other technologies, including mobile, Internet and cable TV. Long distance service is competitive, with 12 operators currently providing service. SIGET sets maximum rates in fixed local telephony. Mobile telephony has grown rapidly in recent years; usage increased about 450% between 2002 and 2007. There are currently five mobile telephone operators. Mobile rates are not regulated. A recent study showed that mobile rates in El Salvador are among the highest in Latin America, however, to which the Superintendency responded with some recommendations to SIGET, described in Section 5 below. Internet service has also grown rapidly in the past few years. That market appears to be competitive, and is unregulated. Cable TV service is likewise mostly unregulated. Two large providers serve most of the country, but several small competitors also exist. There are no regulatory barriers to entry in cable TV.

4.3 Petroleum

As noted above in the discussion of the motor fuels case, there is only one refinery in the country, which, together with imports stored on the same property, was for many years the source of most

petroleum products in the country. Prices were regulated until 1994, when a wholesale price cap system was introduced. As imports grew, and particularly with the entry of Texaco as a major importer, most of the sector was fully deregulated in 2002. Prices for liquid petroleum gas, the most important fuel for households, are still regulated. The Ministry of the Economy has regulatory responsibility for this sector.

4.4 Banking

In 1980 the sector was nationalised, but in the early and mid-1990s it was again privatised. Entry by foreign banks was encouraged. Today there are 14 banks in the country; most of them are foreign. Citibank is the largest bank in the country, with market shares approaching 40%. There have been several mergers in the sector in recent years. Oversight of the industry is provided by the Superintendency of the Financial System..

4.5 Agriculture

As in most countries where agriculture is significant, competition in this sector is subject to some government-imposed distortions. Markets for most products are reasonably competitive, however. Tariffs generally are low, and CAFTA will result in the complete elimination of agricultural tariffs as between those countries. Sugar, one of El Salvador's principal crops, is an exception. Sugar is mostly excluded from CAFTA⁴²; tariffs are high in El Salvador – 40% – but other economies, including the United States and Europe, also substantially restrict sugar imports in various ways. Domestic production is subject to a quota system, which limits price competition, leading to a call from some to apply the competition law more vigorously to this sector.

5. Competition Advocacy

The Superintendency made a conscious effort at the beginning of its work to concentrate on this important function, and the results have been impressive. There are both advisory and educational aspects to competition advocacy. The advisory function involves providing comments and recommendations to other parts of government, especially sector regulators, on their policies that affect competition. In executing its educational responsibilities, the competition agency interacts with the public in various ways for the purpose of fostering an understanding of competition policy and support for the agency's agenda. The Superintendency has been active on both fronts. The agency continues to devote significant resources – currently about 40% – to competition advocacy.

5.1 Intra-government advocacy

The competition law provides the Superintendency, through the Board of Directors, with full power to conduct this activity.⁴³ It can conduct market studies, advise sector regulators on the effects of their regulation on competition, issue opinions on the competitive effects of legislation and issue opinions on procedures for public procurement.⁴⁴

The Superintendency has entered into co-operation agreements with several regulators and government agencies: electricity and telecommunications, ports, civil aviation, financial system superintendency, pensions, securities, science and technology, Central Bank and Ministry of the Economy. The agreements provide for the exchange of information, for technical assistance and for co-operation in various forms in the execution of the agencies' missions.

The Superintendency has completed six in-depth studies of economic sectors in El Salvador: ground freight transportation; combustible liquids (gasoline, diesel fuel, kerosene and fuel oil),

electricity, poultry and eggs, liquid petroleum gas and telecommunications. The first stage of a report on pharmaceuticals has been completed and a second stage is in progress. The studies had a two-fold purpose: to identify possible anticompetitive practices that could be the subject of enforcement action by the Superintendency, and to identify structural and regulatory features that could benefit from advocacy by the Superintendency. Of the two, the second has been more fruitful; the studies have supported several comments and recommendations by the Superintendency to the regulator involved.⁴⁵

The Superintendency has established an especially close relationship with SIGET, the electricity and telecommunications regulator. The Superintendency's study of the electricity sector found a lack of competition between generators in the wholesale electricity market, though it could not conclude that there had been a violation of the competition law. SIGET had conducted a similar study independently of the Superintendency's, and came to similar conclusions. As a result, the two agencies jointly authored a lengthy document in which they agreed on a new method for determining wholesale prices that would limit the ability of generators to manage capacity strategically. The Superintendency has also commented to SIGET on draft regulations governing auctions for long term contracts for the sale of electricity, and on the terms of a proposed long term contract involving a large distributor.

The Superintendency's telecommunications study also prompted several recommendations to SIGET in this sector. Among other things, the Superintendency recommended that SIGET adopt a regulation establishing a framework for interconnection, containing principles and rules for negotiations between private parties for this purpose; that it take measures to enhance transparency in interconnection agreements between operators; that it address a problem of inequality of termination charges as between fixed to mobile and mobile to mobile calls; that it improve conditions for number portability as between mobile providers; and that it consider issuing a regulation governing service quality in mobile services. Finally, the Superintendency has also made recommendations to SIGET on cable television, especially regarding the relationships between the programming provider and the cable operator.

The Superintendency has issued many other recommendations to public entities on various topics:

- to the Ministry of the Economy on liquid petroleum gas (on rules for cylinder exchange and on access to maritime storage facilities);
- to the Ministry of the Economy on liquid fuels (gasoline, diesel, kerosene – on conducting studies relating to competition in these markets, on reducing regulatory barriers to entry and on promoting imports of these products);
- to two municipalities and the public hospital sector on their procurement practices;
- to the Ministry for Agriculture and Livestock on the development of rules for standardising poultry products and eggs;
- to the consumer defence authority on consumer education regarding poultry and eggs and on improving transparency in mobile telephone pricing;
- to the Finance Ministry on rules for tax exemptions that could affect competition; and
- to the stock exchange on improving transparency.

Public procurement is an important topic in El Salvador, as it is elsewhere in Latin America.⁴⁶ An agency in the Ministry of Finance (UNAC) oversees the procurement policies of some 384 public

agencies and NGOs in the country. It establishes the rules that apply to the procurement process, according to standards set out in a procurement law. The law requires, among other things, the use of the tender process, the publication of tenders and of the results, the registration of bidders, and the opening of tenders to all qualified bidders. The agency has established a relationship with the Superintendency, with which it exchanges information. The Superintendency has provided some training for officials from the UNAC on detecting bid rigging. The country's criminal laws apply to bid rigging in public procurement, as does of course the competition law. Few bid rigging cases have been prosecuted, however.

The Superintendency is currently focusing on the pharmaceuticals sector, because medicines are a major input for the country's public health providers. Studies have shown that pharmaceutical prices in El Salvador are higher than in neighbouring countries. This has prompted the Superintendency's study of this sector noted above. So far the study has not resulted in the initiation of any investigations under the competition law, but it will certainly result in additional recommendations by the Superintendency to health care agencies and others on the topic.

5.2 *Education: developing a competition culture*

The Superintendency encounters the public in a variety of ways. It regularly communicates to the press by means of press releases and articles written by staff members.⁴⁷ The Superintendent and her staff members often appear before groups of interested persons to explain and discuss the competition law. In any given month there are between two and eight such events.⁴⁸ There have been meetings with representatives of various business associations, individual businesses, law firms, government agencies and superintendencies. The Superintendency has been especially active in the university community. It has entered into co-operation agreements with three universities providing for internships at the Superintendency for students in law and economics. Representatives of the Superintendency regularly conduct lectures and seminars at universities and schools.

The Superintendency has also been working with judges. It participates in the country's judicial training centre, where it offers workshops on competition topics. The judges welcome such training opportunities. To date, however, there has been little opportunity for them to apply this training; as noted above, no competition case has been finally decided by a court.

The Superintendency publishes all interim and final decisions in a case, which are posted on the agency's web site. The web site is quite complete. In addition to the competition law, the Regulation and the agency's decisions, the web site contains speeches, articles, guidelines, a glossary of terms, a manual of operations, the sectoral studies described above, press releases, co-operation agreements and more. The Superintendency has not yet published easy-to-read written materials about the agency and the competition law, such as a pamphlet for consumption by the general public. Such a project is underway, however.

Still, despite this level of activity by the Superintendency, anecdotal evidence suggests that the public is mostly uninformed about the competition law and the activities of the Superintendency. This seems to be true in the business community as well, except possibly at the level of the largest companies. As the Superintendency becomes more active in case work the legal community is correspondingly becoming more active in the field, but at present this is confined to a few large law firms. Counselling by lawyers of their business clients about their responsibilities under the competition law is not yet being done regularly.

It is difficult to think of any aspect of the Superintendency's advocacy programme that is lacking. That knowledge about competition policy and the competition agency has not yet penetrated to a

deeper level within Salvadoran society is probably a function of two things: time – the agency has been active for less than three years; and a lack of important cases instituted so far by the Superintendency. The second is also a function of time – with effort more cases will come – but it also points up an indisputable fact about competition advocacy: it cannot be fully successful in the absence of credible enforcement by the competition agency.

6. Conclusions and recommendations

Competition policy in El Salvador is off to a good – one might say excellent – start. El Salvador's experience can serve, in some ways at least, as an example of an effective way to begin to implement a competition policy. Those responsible for drafting the competition law took time to study the laws of other countries and to learn from their experience. They sought and received assistance from outside sources in this endeavour. Advocates for the law then built an effective political consensus for it, which included the business community, and succeeded in enacting the law with strong support. Before the law had been in force even two years a consensus was again created for some amendments to it, providing the Superintendency with some important and necessary powers. The result is a law that is sound in most respects.

At the beginning of its work the Superintendency sought to arrange its priorities for its first few years. It initially focused on developing supporting regulations and guidelines to round out the structure provided by the law. It quickly developed an effective competition advocacy programme, both in providing advice to government agencies and regulators and in educating the public about the law. In these endeavours it was successful in enlisting outside assistance, both financial and substantive. In years two and three of its existence the Superintendency began shifting more resources to enforcement of the law – finding and prosecuting violations – but this aspect of its work took shape more slowly, which is to be expected. The Superintendency attracted qualified young professionals and it built a reputation for efficiency and hard work. The Superintendent proved to be aggressive and politically adept.

The main challenge now is for the Superintendency to demonstrate success in its law enforcement function, especially in anti-cartel enforcement. In addition, there are certain adjustments in procedures that it might consider in order to improve enforcement. It may also be useful to consider certain structural adjustments to the Board of Directors. The Superintendency's resource situation is not precarious, but there are improvements that could be made. It must address, to the extent that it can, the delays that result from appeals of its decisions to the courts. While it has been successful in competition advocacy, it should build on those efforts, especially for the purpose of strengthening the competition culture in the country.

Finally, an important test of the strength of competition policy in a country is its ability to withstand partisan political influence, especially at a time of political change. Thus far competition policy has enjoyed bipartisan support within the Salvadoran political establishment. That support, for a sound, objective and independent competition policy free of political interference, must continue.

Some of these issues are more fundamental than others, involving parties and conditions not fully within the control of the Superintendency and, in some cases, amendments to the competition law. Others can be addressed by the Superintendency itself. The following recommendations address these points.

6.1 *Cartels*

6.1.1 *Concentrate on developing an effective anti-cartel programme. Consider focusing on bid rigging in public procurement.*

The OECD has long held the position that fighting hard core cartels should have top priority in a competition agency. Quite probably there are unlawful cartels operating in El Salvador, harming Salvadoran citizens. For the Superintendency a successful anti-cartel programme would also have the salutary effect of strengthening the public's awareness and support for competition policy and the agency. The Superintendency has the legal tools that it needs to implement a successful anti-cartel programme: effective investigative powers, including dawn raids and the ability to create a leniency programme, and the ability to impose significant fines on cartel operators.

It is not easy to be pro-active in anti-cartel work. Experience in other countries has shown, however, that concentrating on bid rigging in public procurement can be fruitful. Such conduct is quite common; it almost certainly exists in El Salvador. Successful prosecutions of this conduct are visible and easily understood by the public.

6.1.2 *Implement a leniency programme.*

The 2007 amendments explicitly authorised the Superintendency to create a leniency programme. Many countries have one, and in some, especially those in which the programme has existed for a period of time, it has proved to be a highly useful tool in the anti-cartel fight. While a leniency programme should be created, however, one could not expect that it will have immediate results in El Salvador. There must exist the incentive for cartel operators to defect from the cartel and co-operate with the authorities. That incentive takes the form of a credible threat of very high fines or, in countries where cartel conduct is criminal, criminal prosecution. The threat will not be credible until the Superintendency, supported by the courts, begins to impose such fines.

There is one aspect of the law authorising a leniency programme that may limit its effectiveness. The law does not authorise the Superintendency to completely excuse a leniency applicant from paying fines. The incentive for defecting from the cartel must be strong. Experience in some countries has shown that completely excusing an applicant from sanctions can enhance the likelihood that someone will apply. Of course, the Superintendency could reduce an applicant's fine to as little as \$1, but a would-be applicant cannot be certain that that would happen. The certainty of avoidance of sanctions can be important. In any case, it may be necessary for the Superintendency to modify its leniency programme after it gains experience with it, something that has occurred in many countries.

6.2 *Mergers*

By setting its merger notification thresholds high, El Salvador has so far avoided a problem that has confronted other countries that have included merger control in their new laws: having to review too many notifications of mergers that are unlikely to pose any significant competition issues. There is an additional step that could be taken that might further reduce the burden, if only slightly.

6.2.1 *Change the notification thresholds so that they are assessed on the basis of the activity of at least two parties to a transaction within the jurisdiction to be notified, or, in the alternative, on the activity of the party to be acquired.*

This is consistent with the International Competition Network's *Recommended Practices for Merger Notification Procedures*.⁴⁹ It would eliminate the situation in which, because the thresholds

are expressed only in terms of the combined assets or revenues of the merging parties, a proposed merger involving the acquisition by a very large business entity of one with a very small presence in El Salvador would have to be notified. Such a merger has a low probability of causing anticompetitive effects. Setting the threshold for the smaller entity would not be easy, of course; again it should be high enough to prevent capturing too many small acquisitions. Further, it might be necessary to amend the competition law in order to make such a change, although in another context the Superintendency has by interpretation injected a local nexus requirement into the thresholds that is not explicitly written in the law.

6.2.2 Consider whether anticompetitive mergers that fall below the notification thresholds could be controlled as restrictive agreements or abuses of dominance, and if so, how the Superintendency might do so.

El Salvador's economy is relatively small; the merger thresholds are high. It is conceivable that a merger that falls below the notification thresholds could be anticompetitive and harmful to consumers, for example in a market in which entry barriers are high. It seems that such a merger is not subject to the merger control provisions of the law, but it might be considered either an unlawful restrictive agreement (Art. 25) or an abuse of dominance (i.e., if the acquiring firm is already dominant – Art. 30). The difficulty with employing these provisions, of course, is that the Superintendency could be confronted with a consummated merger, which could significantly interfere with its ability to impose an effective remedy. Still, there are ways to control mergers in the absence of a notification and waiting regime. Perhaps the best example of such a programme in Latin America is Chile.⁵⁰ An important concern with extending merger control to transactions smaller than the notification thresholds, however, is again to avoid committing resources to reviewing too many of these transactions.

6.3 Case procedures

6.3.1 In cases in which the Superintendency is recommending that the Board impose sanctions, provide to respondents in advance of the initial decision of the Board of Directors a description of the Superintendency's theory of the case and the relevant evidence supporting it.

The Superintendency's procedures are generally considered to be transparent. Its evidentiary file is available to respondents, and the decisions of the Board of Directors are carefully drafted and comprehensive. Still, respondents may not be sufficiently informed of the Superintendency's theory of the case in advance of the submission of the case to the Board to permit them to fully address the issues at that important stage. While the Superintendency would justifiably resist disclosing its report to the Board, it could provide the respondents with a separate statement containing its theories at the appropriate time.

6.4 Resources

6.4.1 Provide the Superintendency with the resources that it requires to fulfil its broad responsibilities under the competition law.

Considering what the Superintendency has accomplished in its less than three years of existence, it cannot be said that resources were a serious constraint. The Superintendency has demonstrated its efficiency in using the resources that it has. The agency must be adequately funded, however. It must have the capability to attract and retain qualified professionals and provide them with the support that they require. The Superintendency's portfolio is a broad one. The resources available to it should be no less than those available to other agencies like it, having commensurate responsibilities. In

particular, there is concern that the Superintendency's budget will be reduced, if only slightly, in 2009, at a time at which the agency will be handling an increasing case load.

6.4.2 Set the compensation to the part time members of the Board of Directors at a level sufficient to compensate them for their efforts.

The part time members of the Board spend considerable time and effort in this task, while working full time in other positions. Their fees should adequately compensate them for their work and should be high enough to attract qualified professionals to the Board.

6.5 *Judicial appeals and final resolution of cases*

Of the problems facing the Superintendency this seems to be both the most serious and the most intractable. Only one of the cases instituted by the Superintendency in which it imposed sanctions has been finally decided to date, that because it was not appealed to the courts. The others are suspended in some form in the Supreme Court. It does not appear that the delays can be traced to competition cases specifically or to the Superintendency. If a solution requires a reform or restructuring of the judiciary, that is beyond the scope of this study. The Superintendency must continue and strengthen the efforts that it is making in this area: education and training of judges, working closely with the Attorney General, who participates in Supreme Court cases and who enforces the Superintendency's orders, and providing well reasoned arguments and pleadings to the Court. It should also consider any procedures that could reduce the likelihood that respondents will appeal to the Court.

6.5.1 Consider adopting procedures for settling cases.

Settling cases – reaching agreement with respondents on an appropriate remedy – has obvious appeal as an efficient way to resolve cases; it eliminates the possibility for judicial appeals. In some jurisdictions, notably the United States, most competition cases are resolved that way. The European Commission recently introduced a new procedure for settling cartel cases.⁵¹ Of course, every country's law and jurisprudence is different; a settlement procedure in El Salvador, if one were possible at all, would have to conform to the country's legal norms. In any case it probably would not be an immediate solution to the problem in El Salvador. Respondents' incentives to settle depend at least in part on the perceived risk of proceeding to litigation in court. In El Salvador those risks are mostly unknown at this stage. Settlement would be a more attractive option to parties in merger cases, however, because of the need to consummate mergers quickly.

6.6 *Competition advocacy and consumer protection*

Despite a vigorous competition advocacy programme by the Superintendency a competition culture is not well established in El Salvador. One area that has not been fully developed in this regard is the interface between competition policy and consumer protection. Consumer protection is popular in El Salvador. Competition policy is another form of consumer protection, and the enforcement entities in both fields would benefit from working more closely together. The Superintendency has proposed to the Defensoría del Consumidor that the two develop a working relationship, but the Defensoría has not yet responded.

6.6.1 *The competition and consumer protection agencies should work more closely together; both would benefit. Also, the Superintendency should be permitted to participate in the National System for Consumer Protection.*⁵²

6.7 *Independence and impartiality of the Board of Directors*

6.7.1 *Select part time Board members who do not hold full time positions in other government agencies or ministries. In any case, Board members should disqualify themselves from any matter in which another employer has a role or interest.*

The Board members except the Superintendent serve part time in their positions, and some work full time in other government positions. This has the potential to compromise the independence of the Board from other parts of government, though it has not yet happened. Presumably there are qualified people from elsewhere in the private and public sectors who could serve in these important positions.⁵³ In any case, Board members, whatever their full time position, should apply strict rules that would disqualify them from a case in which another employer has any involvement.

6.7.2 *Stagger the terms of the Board members so that not all are appointed at the same time.*

A complete turnover of the Board of Directors, including the Superintendent, at one time creates a significant risk of a loss of continuity and momentum every five years in the Superintendency, and it makes more possible the exercise of political influence on the agency. Staggering the terms of the directors would solve this problem. An amendment to the competition law is probably required to accomplish this.

6.7.3 *Consider expanding the number of voting members on the Board to five.*

The current Board members are hard working and independent. All six participate fully in a case (unless disqualified), except that only three vote on the decision. Expanding that number to five would diminish concerns about undue influence from the Superintendent in Board decisions and it would be costless, since all six are compensated whether or not they vote. Of course, such a change would require an amendment to the law.

Notes

1. Central America is considered to include the countries of Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama and El Salvador.
2. The 1992 law was replaced by a new law in 1996 and again in 2005 (Legislative Decree No. 776).
3. CAFTA was in negotiation at this same time. There was no requirement in the agreement for a competition law, but it seemed to provide an indirect boost for the law, as the country was implementing other legal reforms to conform to the treaty's requirements.
4. Legislative Decree no. 436.
5. At: www.sc.gob.sv.
6. Presidential Decree No. 126, 5 December 2006. The Regulation has not yet been revised to reflect the 2007 amendments, but that revision is in progress.
7. Article 12.
8. The per se rule holds that it is necessary only to prove that there was an agreement of the requisite type among competitors and not that it resulted in a harmful effect, because it is considered that cartel agreements are always harmful.
9. The rule of reason requires a showing of anticompetitive effect.
10. Amended articles 38 and 39 of the competition law.
11. The two firms controlled 98% of the market for this product in El Salvador.
12. Press release, September 5, 2008, available on the Superintendency's web site.
13. A third type of agreement is included in Article 26, but the language describing it is not clear. It seems to apply to situations in which more than one party engage in a particular form of conduct by agreement.
14. Article 13.
15. It is not clear, however, whether the "acting individually or jointly" language would require an agreement, whether express or implied.
16. Article 15.
17. Article 17.
18. This practice of "zonification" in gasoline retailing is not limited to El Salvador. It has been the subject of study, and in some instances, of competition cases in other countries, which was noted in the Board's decision.
19. Article 34.
20. Articles 18-32.
21. The International Competition Network's *Recommended Practices for Merger Notification Procedures*, Recommendation I.C. (2003), available on the ICN website at www.internationalcompetitionnetwork.org/, recommends that local nexus should be established on the basis of the activity of at least two parties to a transaction within the jurisdiction to be notified, or, in the alternative, on the activity of the party to be acquired. See also, OECD, *Recommendation of the*

Council concerning merger review (2005), available on the OECD web site at www.oecd.org/competition

22. Interestingly, there was some merger activity in the country immediately before the competition law came into effect, including the merger of the only two cement manufacturers in the country.
23. Recently the Superintendency has encountered a related problem, however. A government agency charged with registering corporate mergers (but not asset acquisitions) has required the applicants to obtain from the Superintendency a certificate that the transaction does not have to be notified, or that if notified, it was approved. In the case of non-notifiable mergers, this has placed upon the Superintendency a burden of examining mergers that it would not otherwise have had to look at. At the writing of this report, the Superintendency is in negotiations with the registry on this matter. Its position is that the burden of failure to notify should be on the parties to the transaction, not on the registry or the Superintendency.
24. There was a roundtable discussion of this topic, the relationship between competition and consumer policies, in the OECD 2008 Global Forum. Documentation from the discussion is available on the OECD website.
www.oecd.org/competition/globalforum
25. Article 3 of the competition law “Create[s] the Competition Superintendency, a ‘publici juris’ Institution, with a legal status and its own equity, as a technical institution with administrative and budgetary autonomy to exercise the attributions and duties set forth herein, as well as all other applicable provisions.”
26. One Board member resigned about one year after he was appointed, but his successor was appointed to complete the original member’s term, not to serve a full five years.
27. The directors’ terms are not conterminous with that of the country’s President, however, whose term is also five years. The current directors’ terms expire at the end of 2010. The President’s term expires in 2009.
28. The alternate members are also paid for each meeting they attend, even though they may not vote.
29. In 2007 the Board met a total of 47 times, but they were not compensated for six of these meetings because they exceeded the four-per-month maximum.
30. The resolution in the motor fuels case was 152 pages long.
31. If there is a third party involved in the case, for example a private complainant, Article 77 of the Regulation provides that when there is a review the Board will grant that person three days to provide a written submission to the Board.
32. These are set forth in articles 13 and 14 of the competition law.
33. Article 41(A), as amended.
34. As provided in articles 37-39 of the law.
35. Article 37.
36. The competition law does not specifically provide for such a procedure.
37. A similar amparo procedure exists in Mexico, and it has proven to be a significant problem for the competition agency there. Many of its cases were appealed under that process, causing delays and resulting in unfavourable rulings. More recently the competition agency has been having better success in amparo cases. See, the Mexico peer review report, *Competition Law and Policy in Mexico* (2004), and a follow-up report on the five Latin American peer reviews, *Competition Law and Policy in Latin America* (2007), both available on the OECD website.
38. The Inter-American Development Bank has been a principal source of outside funds for this purpose. The Bank is also funding this peer review report.
39. The plan is available on the Superintendency’s website.

40. The Superintendency faced a budgetary crisis immediately after it began operation in 2006. The government cut its budget by 1/3, threatening all of the agency's programmes. The Superintendent intervened with vigour, and succeeded in having the cuts restored.
41. There is a government-wide rule restricting spending on personnel to 70% of an agency's budget, but the Superintendency is further restricted to 65%.
42. Corn was another.
43. Article 14.
44. The last two functions, providing opinions on legislation and on public procurement procedures, were added by the 2007 amendments.
45. The studies are available on the Superintendency's website.
46. That topic was the subject of a roundtable discussion in the 2007 Latin American Competition Forum. The documentation from that roundtable is available on the OECD website.
www.oecd.org/competition/latinamerica
47. Through May of 2008 the agency had issued more than 40 press releases announcing case decisions and competition policy events sponsored or attended by the Superintendency.
48. The Superintendency's calendar is posted on its web site.
49. Supra, n. 21.
50. See, OECD, *Peer Reviews of Competition Policy in Latin America: A Follow-up* (2007), at p.18.
51. See, press release issued by the European Commission on June 30, 2008, available on the Commission's web site at <http://ec.europa.eu/comm/competition>
52. It is not clear whether an amendment to the law is required for this purpose.
53. Article 10 of the competition law provides: "The following cannot be appointed as Board members: . . . (e) Directors, officials, administrators, empowered and legal representatives of the economic agents subject to the provisions herein." Interpreted most expansively, this provision would disqualify anyone with ties to a business, including lawyers who represent businesses. A more reasonable interpretation would apply the prohibition to those holding specific positions of authority in a business.

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