Theory and practice of competitive tenders in passenger railway services

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Introduction

During the past 15 years competitive tenders have become a common procedure to procure and organise passenger railway services in European Union member countries. Different models have been developed in different countries, spanning from the British radical privatisation and franchising of the railway services to the more incremental processes in countries like Sweden, the Netherlands and Germany. The variety of tendering models has occurred for a number of reasons. For example, EU legislation permits different models of organising tenders, member countries have had different goals with the introduction of tenders and other reforms, and within countries we find trial-and-error processes aiming at reducing earlier flaws.

A firm that wins a contract after a competitive tender in the passenger railway market may become the only supplier for as long as seven years in Sweden compared to up to fifteen years in Great Britain. Contracts are regularly prolonged with a couple of years. Once the contract has been signed there may also be some possibilities for the winning firm to renegotiate the contract. These circumstances, and the fact that firms that don’t win a contract sometimes leave the market altogether, give the incumbent firm a substantial advantage in later public tenders.

In this paper we outline four theoretical approaches used in explaining competitive tenders. In an earlier empirically oriented article (Alexandersson and Hultén, 2006) we compared four countries experiences of competitive tenders, this paper draws on that article but will focus on a conceptual and theoretical analysis of the tendered markets for public services. We will on the one hand address practise oriented issues such as tender designs, radical or incremental deployment of tenders, and gross or net contracts, and on the other hand address more theoretically oriented problems such as what types of transaction costs are important, how do scale economies, strategy and information impinge on bids in tenders.

The process of “Europeanisation”, the creation of European institutions and markets, of the former national economies in Europe, has increasingly affected the competition policy in the union’s member states (see e.g. Vickers, 2001, Morgan, 2001, and Dabbah, 2003). Public procurement by competitive tendering is an important part of these policies. It is supposed to increase competition, save taxpayers’ money and safeguard equal treatment for competing firms, regardless of nationality (European Commission 1996). The European transportation
industry, not least the railway sector, has been particularly affected by this development, implying important structural changes in several countries. The European Directive 91/440 on the separation of accounts for infrastructure from operations has commonly functioned as a starting point for railway reforms, although specific problems and events at the national level have also played an important role.

**Public and Private Ownership and Public-Private Partnerships**

Privatisation refers to the transfer of public ownership and management to the private sector. Since privatisations are often the effect of a market transition that originates in a deregulation, the words deregulation and privatisation are sometimes mistakenly used as synonyms. According to Vickers and Yarrow (1991) privatisation of former public enterprises and services can take three forms:

1. Privatisation of competitive firms – the transfer to the private sector of state-owned enterprises operating in competitive markets.

2. Privatisation of monopolies – transfer to the private sector of state-owned enterprises with substantial market power. These firms can either be natural monopolies (like electricity transmission) or “artificial” monopolies, where competition from foreign or domestic firms could exist.

3. Contracting out of publicly financed services, previously performed by public sector organisations.

The economic motives for privatising a public monopoly compared to replacing a public monopoly with competition are quite different. There is a widespread agreement that the replacement of a public or publicly guaranteed private monopoly with competition between competing firms results in improved efficiency. The efficiency gains are less clear for the transfer of a public monopoly to private ownership. In this case, it seems that the regulatory policy is crucial for preventing negative effects of monopoly power (Vickers and Yarrow, 1991; Alexandersson et al, 1998). One must also consider the distinction between productive and allocative efficiency. Competition generally fosters gains in productive efficiency, for example through increased labour productivity, while a transition to a state of better allocation of resources and optimum output may be less straightforward and take longer time (see e.g. Preston, 1996).
Some monopolised markets may be better suited to the introduction of competition for the market (for example by means of tendering), rather than competition in the market. In theory, this is advantageous when some resources of production are fixed or otherwise limited in terms of capacity, making them difficult to be used by more than one firm at a time (for example a time slot in a railway time table), when there is a need for coordinated planning of production in order to make use of network effects, and when many competing companies would create a fragmentised and possibly irregular supply over time – making it difficult for consumers to get the necessary information.

The contracting out of public passenger railway services may lead to a large variety of contracts, ranging from relatively simple and short-term management contracts to complex and long-term concession agreements. At a general level, they all imply the introduction of one form of public-private partnership.

According to Bennett et al (1999) service contracts are generally the most competitive form of “privatisation”. They provide a relatively low risk option for expanding the role of the private sector, and the awarding procedure can help governments gain a more complete understanding of their infrastructure systems. Service contracts have potential to provide better system operation, allowing the government to obtain improvements in performance and efficiency through technology transfer and the acquisition of technical and/or managerial capacity. Since the contracts are reissued rather frequently, contractors should be under continuous pressure to keep costs low. Also, because service contracts are limited in scope, the barriers to entry should be fairly low.

The disadvantages of service contracts are that they do not involve significant infusions of private capital, nor do they necessarily create a base from which to optimise entire infrastructure systems. In consequence, the contractor’s effectiveness in improving the service performance is limited by the government’s ability to provide the necessary capital investments and direction. Another potential disadvantage is that service contracts leave the government in charge of many of the most explosive political issues and do little to separate the operator from political intervention.

Long-term contracts like BOT projects can be an effective way to bring private money into the construction of new infrastructure facilities or into the substantial renewal of existing ones. BOT agreements tend to reduce market and credit risks for the private sector because the government is the only customer, reducing the risks associated with insufficient demand
and ability to pay. Private actors will avoid BOT projects if the government is unwilling to provide assurances that the private sector investment will be paid back (Bennett et al, 1999).

**The tendering procedure**

The following description of a tendering procedure draws on Swedish experiences, but is applicable to most EU member states using competitive tenders.

The conditions stipulated in the procuring authority’s invitation to tender form the basis for a firm’s bid calculation. The invitation defines the type and amount of traffic that is to be produced, and a number of characteristics and demands related to the rolling stock, maintenance, performance and quality. Although the specific demands differ from tender to tender, they generally define the minimum standard of the traffic. Depending on the type of contract tendered – gross cost contracts or net cost contracts (where ticket revenues also become an important source of the operator’s income) – the bidder may be more or less inclined to offer a service level or standard above the minimum requirements. Promising higher quality may result in a more favourable evaluation from the procurer, and possibly also increased travelling and ticket revenues.

Based upon how much and what traffic that is to be produced, the bidder has to combine a set of inputs to construct its bid. Among the many questions to be answered are: What type of rolling stock is needed? Should it be rented or bought? How much maintenance is expected and where to get it? How much personnel is needed and on what positions? What are the costs of electricity (or other types of fuel), track access fees, cleaning, marketing and (when applicable) administration of ticket sales? In addition to this, possible revenues from ticket sales must be calculated in bids for net cost contracts, based upon projections on the development of demand. In many ways, calculating a bid in a tender for train services is similar to planning a start-up of a new business operation from scratch. It is difficult to get the true prices of all the factors of production beforehand. The impact of unexpected events and breakdowns must also be taken into account, influencing the need for spare vehicles and alternative ways of transportation, e.g. buses.

The resulting bid is not only a specified price, but also a presentation of how the bidder intends to perform the services, as well as showing that it is committed to this and has the means and capabilities to deliver. Therefore, many tenders may be viewed as hybrids of reverse closed auctions and beauty contests.
**Scale economies, natural monopolies and contestable markets**

Scale economies in the railway industry depend on the size of the network. The more factors that are lumpy, the more difficult will it be to find an optimal mix of factors to be used in the operation of the railway system. The bigger the size of the railway system the less difficult will it be for a firm to achieve an optimal production system. Whenever an input of production switches from being lumpy and discontinuous to becoming variable and continuous the cost curve becomes flatter. Eventually all inputs can be treated as variable costs. This means that indivisibilities and lumpiness are sources of economies of scale. According to the indivisibility thesis, small-scale production is inefficient due to failure to obtain the lumpy factor in fractional units having proportionate efficiency. If an input of production had perfect divisibility, the optimum could be achieved for any aggregate; hence, economies of scale are due to indivisibilities (Blaug, 1985, p. 455).

Another source of economies of scale is increased productivity of variable inputs. Often a firm can get economies of scale from both lumpy inputs and specialization. According to Haldi and Whitcomb (1967), economies of scale in basic industries occur mostly in the initial investment cost and in operating labor cost, with no significant economies observed in raw material cost. Scale economies can also result from learning curve effects, spreading of set-up costs, and certain stochastic processes associated with inventories.

In the railway industry, presupposed scale economies in production, marketing, purchasing and co-ordination, for a long time implied that the provision of vertically integrated railway services was by definition viewed as a “natural” monopoly (see for example Beesley and Littlechild, 1992). Today, it is primarily the rail infrastructure that continues to be viewed as having characteristics of being a natural monopoly, forming the basis for vertical separation of infrastructure from operations as applied in several European countries. However, there is a persistent debate concerning the merits of vertical separation versus integration. Preston (1996) shows that the economic evidence for vertical separation is not entirely convincing. For example, there may be economies of scope related to vertically integrated planning of infrastructure and operations. It is possible that some scale economies in the European railway sector, which might have been possible to exploit before, are no longer available due to asset stripping and separation of previously integrated businesses and lines. Some researchers have therefore argued that vertical separation should never have been applied at all (see e.g. Bruzelius, 1998).
In addition to the discussion on the pros and cons of vertical separation, there has also been a long-lived debate concerning the importance of various types of scale economies in railway operations. Empirical evidence from the U.S. suggests that there are constant returns to scale, but increasing returns to density in the railway sector. In other words, a railway company may only gain from running more trains on its existing network of lines, rather than both increasing the number of trains and expanding the network. Studies performed in Europe provide a more complex picture. According to Preston (1996), there are important economies of scale in network operation, but there is probably also an optimal size above which diseconomies set in. The smallest operators in Europe are affected by increasing returns to scale, the medium-sized operators experience constant returns and the largest appear to be affected by decreasing returns to scale. However, almost all railway companies, regardless of size, exhibit increasing returns to density (Preston, 1996). There are several possible sources to these economies, for example, increased amounts of services may lead to better use of terminal facilities, rolling stock and labour. But in the end, these economies may reach a point where they get exhausted and diseconomies of scale start to become apparent. This may be due to increased *agency costs* as companies become very large and possibly more difficult to manage and control.

It is important to note that this discussion on scale economies is limited to the effect of size upon variable costs. If demand-side complementarities are weighted in, such as co-ordinated timetables and marketing, the case for large railway companies probably gets stronger. However, very large firms may also have greater difficulties than small to respond quickly to shifts in customer needs.

While most U.S. railroads are focussed on freight, European railways have traditionally been involved in both passenger and freight operations. This raises the question of economies of scope between passenger and freight operations. Although empirical findings are not entirely consistent, there is evidence of diseconomies of scope from studies on European as well as Japanese railways, suggesting that passenger and freight services may gain from being separated (Preston, 1996).

The existence of scale economies in railway operations has sometimes been used to defend a regulatory framework that maintains a close-to-monopoly position of national operators in some European countries. But it has also been argued that scale economies are not automatically being advantageous to these operators. Rather, they need to be exploited, and firms may very well differ in their skills to do that. Large incumbents, lacking intra-modal
competition for a very long time, may previously have experienced a rather limited pressure to rationalise their operations, especially if it was easy to get additional subsidies from the Government or other public authorities (Alexandersson et al, 2000). In theory, the introduction of a more open and competitive market should reveal the true economies of scale, enabling the most efficient firms to grow to their optimal size.

To some extent related to the discussion on scale economics, we find an important theory development regarding how competition influences markets. With studies of the preconditions for when monopoly firms may actually be good for society, Baumol and other researchers came to formulate a theory on a new type of idealised market, the contestable market. Such a market is characterised by possibilities for easy and fast entry and exit of firms, which should all be affected by the same regulatory framework and have equal access to market knowledge and technology. Scale or scope economies may exist, but this is not a necessary condition. Sunk costs, rather than scale economies, make up the barrier to entry that gives a monopolist harmful power. The implications are that an industry may be efficient even in the case of a monopoly or oligopoly, provided that the threat from future competition is considered to be real. Regulations should therefore aim at facilitating entry and exit (Baumol et al, 1982). Shires et al (1994) have studied the British railway industry from a contestable market approach, finding some conditions to be fulfilled, but easy and fast entry and exit is still limited by several types of barriers, categorised as innocent, strategic or predatory.

**Transaction Cost Theory**

The costs to carry out transactions depend on the frequency of the transaction, uncertainty, the degree of specificity in the investments, and the perceived need to insure against opportunistic behaviour in markets with few actors. As can be understood from these factors, any change in a market structure may result in opposite forces as regards the transaction costs. A reduced uncertainty in the price level when using the market can be off-set by co-dependence between buyers and sellers if there is a high degree of investment specificity.

When the former railway monopolies were dismantled in countries like Great Britain and Sweden, transactions that used to be managed internally were moved to a market with sellers and buyers. This type of shift has been interpreted in two contrasting ways by researchers. One group claims that the horizontal and vertical disintegration resulted in lower transaction costs because the transactions were made visible and exposed to market mechanisms. One of the architects behind the privatisation of British Rail claimed that the separation of large
vertically integrated firms into smaller specialised units lead to positive effects in terms of increased specialist knowledge of these firms (Foster, 1994). This division implied that a number of new contracts between the units had to be set up. Although the number of transactions in the system may have increased, the argument from this interpretation of transaction cost theory was that this does not necessarily imply higher transaction costs. In addition to the argument that transparency makes the transactions efficient, it has also been claimed that modern methods of management and control, auditing and computerisation decrease the costs of every transaction and make it easier to formulate the division of responsibility in contracts. Therefore, a clear separation of businesses into separate firms is necessary.

It is important to note that one precondition of this line of reasoning is the exposure to market mechanisms, which is not always easy to achieve, and has even been forgotten in some regulatory reforms involving disintegration. When splitting large railway companies into smaller units, some of them may become monopoly firms (such as providers of railway stations). Moreover, it can be argued that learning and efficiency gains are also linked to having several customers with partly different needs. If the companies of the new system are only serving the very same divisions as before – and perhaps only one each – the gains from separation could turn out to be minor at best. Another potential concern is that if the monopoly is broken up into many sub-markets for inputs as well as for operations, the post-deregulation industry may contain so many firms in each market that transaction costs will inevitably increase. For example, the British railway industry was broken up into more than 80 firms. To reduce the potential risks associated with breaking up a monopoly one may consider to increase the size of the average tendered business operation and to construct upstream markets that are not so specialised – for example by merging different activities into one market.

Some of those that oppose the idea of lowered transaction costs highlight the high asset specificity in the railway sector. They suggest that there is no such thing as an optimal way of organising competition in industries that have to rely on (monopoly) network facilities, and there is now a growing concern that the wrong design of the industry’s basic structural framework may have been chosen in the early days of the European regulatory reforms (Hultkrantz et al, 2005). One possible source for increasing transaction costs that may be more important than gains from competition is the misalignment of the mode of organisation. Misalignment refers to an arrangement in which the characteristics of the mode of
organisation do not fit the attributes of the transaction it has to organise. This problem can occur in any new market constructed after the deregulation of a former monopoly (Yvrande-Billon and Ménard, 2005).

**Auction Theory**

In a competitive tender in the European passenger railway market, a firm or a consortium may make promises about supplying a service at a defined quality level for either a subsidy or against payment. Therefore, using competitive tendering when contracting out public services is similar to performing common value auctions with a sealed-bid procedure. However, the price of the bidders may not be the only factor (although often the most important) to take into account. The procuring public authority typically evaluates the competing bids regarding both price and quality once the bidding process has ended. Hence, competitive tenders combine traits, advantages, disadvantages and risks, of both auctions and beauty contests. Hultkrantz and Nilsson (2001) claim that a pure auction is better than a beauty contest because it offers a more market-oriented, objective and transparent method for awarding licences. Their strongest argument in favour of auctions is that firms in the auction process, by means of offering more and more money, reveal information about their estimation of the value of the good. Hultkrantz and Nilsson (2001) point out several disadvantages with beauty contests: 1) the process is slow and cumbersome, in particular if the final decision is challenged in court, 2) it is difficult to achieve transparency, and 3) many criteria are not objective or difficult to quantify. They further suggest that, even when social concerns are important, an auction is a better alternative since it can also include minimum requirements and can allow both positive bids in attractive regions and negative bids in unattractive regions.

Auctions also present some notable risks and potential disadvantages. In many auctions, as well as in many competitive tenders, firms have made unrealistically optimistic forecasts about future revenues and costs. In auction theory, the concept of *winner’s curse* is used to explain why winning bids may be based upon judgmental failures. In particular, *common value auctions* – in which the participating bidders value items differently based upon their judgment of uncertain prospects – tend to be won by the bidder with the most optimistic estimate of the item’s value (see e.g. Kagel and Levin, 1986). Adnett (1998) discusses winner’s curse in relation to such tendering procedures. He argues that a low number of bidders, and in particular if they are inexperienced as in the first round of tendering in a certain business, will increase the importance of winner’s curse in competitive tenders. One way to limit the problem of winner’s curse is to alter the auctioning procedure. An open
English auction, in which the bidders continuously follow the bids of their rivals, may stimulate aggressive bidding but yet decrease the risk of too optimistic bids and the related winner’s curse (Milgrom and Weber 1982). However, there is an increased risk of collusion in open auctions (see e.g. Robinson 1985). It should also be noted that winner’s curse in tenders of public services may also be related to the bidders’ attitude towards risk, for example their view of whether the government will be willing to bail them out or renegotiate the contract if they fail.

**High and Low Bids in Tenders**

Ideally, all firms participating in tenders of public railway services place bids that relate to their best estimates of costs and revenues. A realistic bid from the most efficient firm would then win the tender and force the others to improve their competitiveness in order to stand a better chance in the next tender. However, we suggest that firms bidding in these tenders on some occasions place very low or very high bids, not necessarily related to actual costs or revenues. It should be remembered that since we are dealing with public procurement tenders, it is the lowest bid that will win a tender, all else being equal.

The presence of very low or very high prices offered by certain firms is of course not unseen in other markets. The peculiarity of the market for public tenders of passenger railway transportation is that a firm that charges a very low or a very high price makes a long-term commitment that, at least in theory, is not possible to forego. If the firm wins with a very low bid it is forced by the contract to supply the services regardless if it will make big losses. Naturally, a firm that wins a tender with a very high bid will earn a high profit level.

We will consider a number of possible reasons why firms may place low or high bids in tenders. As a basis for the discussion, we have organized them into three major categories: production-based reasons, strategic reasons and information-based reasons. We will also look at how some strategic behaviour may result in cooperative schemes or games in an industry.

**Low Bids in Tenders**¹

Firms that place very low bids in tenders due to strictly production-based reasons may be regarded as the desirable case from a socio-economic point of view. The explanation is that some firms do have a unique competence on production methods that result in a completely different cost structure or possibilities for additional income compared to their competitors.

¹ This text partly draws from Alexandersson and Hultén (2006a).
One important factor may be that some firms are able to gain from economies of scale or scope.

There are several strategic reasons for low bids in tenders. Used strategically, low bids may aim at ousting out or at least weaken competitors. A firm may practice dumped prices with a consciously calculated loss, or is able to use profits gained in other branches of its business through cross-subsidization. This bidding behaviour is analogous to a strategy of predatory pricing. One major problem is the difficulty to separate predatory pricing from the sometimes fierce but legitimate price competition between firms (see e.g. Niels and Ten Kate 2000). While some industrial economists have based their analyses on historical evidence, advocates of the Chicago School have claimed that predatory pricing should be rare – if existing at all. Their main argument is that such a strategy is seldom or never rational from an economic point of view, since it is costly (compared to e.g. acquiring competitors) and often difficult to recoup by future monopoly profits due to entry of new competitors (Ten Kate and Niels 2002). However, during the past 20 years, the views on predatory pricing have changed. The development within the fields of decision theory and game theory has shown that the strategy may be rational in the presence of asymmetric information between different actors, for instance between incumbents and entrants or between management and investors. Small firms with very competitive and innovative products appear to be particularly susceptible to successful attacks of predatory pricing, since their lenders typically have stronger incentives to pull the plug than to run with the risk (Grout 2000). Moreover, aggressive pricing and other practices may function as strong signals to new firms, deterring entry to certain markets (Roberts 1986). Whether predatory pricing is a rational strategy or not will depend on the objectives of the firm using this type of strategy. Something that appears to be irrational from a profit-maximizing perspective may be rational when other objectives are taken into account (Ten Kate and Niels 2002).

Turning to the information-based reasons, it also happens that firms make more or less serious mistakes when calculating their bids. Some mistakes may be due to shortcomings of the internal information systems, producing false impressions of costs and revenues. The basic data provided by the procuring authority may sometimes contain incomplete or incorrect information on the tendered business, leading to faulty calculations. Firms may also have unrealistic expectations on the possibility to perform changes in a certain business, or underestimate the development of costs in the industry. This is probably more common among new entrants than incumbent firms. In particular, common value auctions – in which
the participating bidders value items differently based upon their judgment of uncertain prospects – tend to be won by the bidder with the most optimistic estimate of the item’s value – the so-called winner’s curse (see e.g. Kagel and Levin 1986).

The actual risks associated with placing very low bids in competitive tenders will naturally be less pronounced if there is a possibility to ex post renegotiation of contracts, for example if it turns out to be loss-making for the contracted company. Sometimes, the contract in itself may include some valid reasons for renegotiation, such as changes in taxation. There may even be clauses (as in some publicly procured infrastructure contracts) that protect a contracted firm to be weakened financially to the point of bankruptcy, forming the basis for renegotiations (Guasch, 2004). In addition to this, a procuring authority may also find itself forced to renegotiate terms if the contractor, once the bidding is over, makes use of its informational advantage and the fact that no alternative contractor may be available until after a time-consuming and costly new round of tendering.

In practice, renegotiation of publicly procured contracts seems to be rather common. Guasch et al (2002) consider common causes for renegotiations in their extensive study on concession contracts in Latin America. In Great Britain, several railway franchises were renegotiated as a consequence of the economic problems of Railtrack and the need for more investments in infrastructure (Nash, 2006). In Sweden, the legisatory framework (the law on public procurement and related EU directives) provide rather limited scope for renegotiations without a new tender.

As a rule of thumb, renegotiations in Sweden are not allowed if they seek to change the original contract in such a way that there is no longer a common “identity” between the former and latter contracts. For example, an ex post renegotiation leading to a 60% price increase was clearly not considered allowed and therefore the contract should have been retendered instead (NOU, 2001). However, if renegotiations are to be tried legally, they need to be challenged by a firm that finds itself discriminated. This rarely ever happens. In practice, some efforts to use ex post renegotiation have been done in the Swedish passenger rail market, but not all have succeeded. Keolis was able to renegotiate its contract in the Stockholm region as new lines were added and Connex got the permission to abort some train departures of its railway services to northern Sweden after renegotiations with Rikstrafiken. The entrepreneurial firm BK Tåg unsuccessfully tried to renegotiate a loss-making contract by suggesting that the firm’s assumptions about coordinating its trains with the national network.
were not fulfilled. When this and other complaints by BK Tåg were rejected the firm went into bankruptcy.

One lesson from the Swedish railway market is that a firm that needs a fast change in a contract stands a much smaller chance to achieve a successful renegotiation than a firm that can wait. Therefore, small companies, having less capital and being more vulnerable to extended periods of losses, appear to be less likely to succeed if they demand renegotiations. This implies that the options to renegotiate a low bid in a tender are not equal between all firms.

**High Bids in Tenders**

The *production-based explanation* for high bids in tenders would be that a bidder may have real cost disadvantages compared to its competitors. In general terms, such cost disadvantages may implicate that a firm has no economies of scale and scope in its operations compared to the competitors, or even experience diseconomies of scale, for example due to a big bureaucracy resulting in high overhead costs.

A bidder placing a high bid may *strategically* want to signal to its competitors that it has no interest in the market and expects the competitors to likewise signal back that they have no interest in other markets. It may also place a high bid in one period with the intention to present a much more competitive bid in a later period. It could be argued that a high bid, although not successful, may change the expectations of the competitors and drive up the price level in later tenders. Another strategic motive for handing in a high bid is that a firm wants to demonstrate a continuing market presence to the public agency.

Sometimes, the way bids with multiple criteria are evaluated open up the possibility for a clever use of strategically high bids. By placing a high bid a bidder will increase the overall difference between bids and thereby distort the relative importance of costs compared to quality factors in a competitive tender. This may occur when the procuring entity evaluates bids by means of awarding “points” based upon the relative position of each bid compared to the other bids. In such tenders, the end result may be very sensitive to the appearance of extreme bids, regardless of their underlying reasons. If there are several evaluation criteria treated in the same way, all adding to the total points of each bidder, the appearance of extreme bids may rather easily tilt the result in a direction that favours another bidder compared to a case where the extreme bidder had not been present at all (see for example Konkurrensverket, 2004, for a related discussion).
The information-based reasons behind high bids in tenders partly relate to the corresponding explanation for very low bids: the presence of faulty calculations or a lack of relevant knowledge of costs and revenues related to a certain business. Rational firms that are aware of the winner’s curse may also consciously place more conservative bids as the number of competitors increases (Hong and Shum, 2002, and Hendricks et al, 2003). According to Hong and Shum (2002) an increase in the number of bidders in a common value auction has two counteracting effects on equilibrium bidding behaviour. Increased competition leads to more aggressive bidding – the competitive effect, but at the same time the winner’s curse becomes more severe, and rational bidders will bid less aggressively in response – the winner’s curse effect.

A special case of information-based explanation behind high bids may occur if one firm (typically the incumbent) is absolutely confident that no other firm will take part in the tender. Under such conditions, placing a high bid will be a very attractive option.

**Pricing Strategies and Games**

Oligopolistic pricing share all the characteristics of a contest or a game. True, in the deregulated public passenger railway market the oligopolists face competition from different types of firms.

The firms that participate in the tenders know that this market is a repeated game in two ways. First, new tenders will appear for new railway systems, and second, the market that has just been tendered will be put up for tender again when the winning bidder’s contract has expired. An optimum strategy in repeated games is tit-for-tat (Axelrod, 1984; Dixit and Nalebuff, 1991). Since public tenders are winner-takes-all markets, the option to increase profits by being soft in all tenders is an untenable proposition for the individual oligopolist. The oligopolists have to come up with something smarter, for example a division of the markets. A firm cannot inform the competitors beforehand about its bid but “each firm recognizes that its own current and past actions will be treated by rivals as signals of its costs and intentions” (Scherer and Ross, 1990, p. 215).

To make the tit-for-tat rule work in repeated public tenders the oligopolistic firms need to arrive at playing a delayed tit-for-tat game. Firm #1 is soft in tender #1 and firm #2 is tough. In tender #2 firm #1 responds by being tough and firm #2 responds by being soft, and so on. Of course this system of sharing the markets may collapse for different reasons. Firstly, if all the oligopolistic firms play soft to increase profits in repeated tenders, they will attract new
entrants to the market. Secondly, if one firm plays tough in a market where it was supposed to play soft it will force the other to retaliate. Thirdly, haphazardly other firms may win tendered contracts and force the oligopolist that lost to change its strategy. Fourthly, small firms may also bid aggressively to win or retake lost market shares. However, their capacity to do so is limited by their relative lack of financial resources.

A functioning tit-for-tat game may be viewed as a sophisticated form of collusive behaviour. Collusion may also be more organized, taking the form of proper bid rigging among a group of firms (Porter and Zona, 1993). In such a scheme, the colluding parties cooperate to decide on a winning bid and which firm that will place it, while the others are supposed to place phantom bids or no bids at all.

**Concluding Remarks**

Competitive tenders have become an important tool for procuring authorities to increase competition between suppliers of products and services. Ideally, the most efficient firm would win a tender with a bid based upon realistic assumptions on costs and revenues. However, for a number of reasons, this may not always be the case. The peculiar characteristics of public competitive tenders may a) influence the possibilities for the firms to calculate realistic bids, and b) make strategic pricing an attractive option because in these markets it is more advantageous to become an incumbent compared to other competitive markets.

We constructed three basic reasons behind bids that are either very high or low. The first, production-based, reason is that the firm bases its calculation on different assumptions than its competitors, concerning the costs of inputs, the lumpiness of inputs, economies of scale of variable inputs, and market revenues. The second reason is strategic bidding, for example that a firm offers an aggressive low bid to win a market or wants to signal with a high bid that it is soft in a market. The third, information-based, reason is that firms have incomplete information on the behaviour of the competitors and on their true costs when placing bids.

Our analysis indicate that primarily large oligopolistic firms will be able to practice strategic bidding, since they are less restricted financially. For the same reason, they are also better suited to endure a loss-making period and succeed to reach a renegotiation without a new tender, thereby reducing the actual risk of placing low bids in tenders.

The introduction of competitive tendering has been theoretically motivated by a general belief that the private sector is more effective than the public sector and that competition fosters efficiency. Advocates of PPP solutions typically state that long-term private sector
involvement like BOT arrangements offer more advantages than e.g. short-term service or management contracts. Their basic argument is that the bundling of activities in a BOT enables a private firm or consortium to optimise the total project. In the case of passenger railway services, it is evident that European Union member states have been more interested in using competition either as a threat or as a mean to increase efficiency in the railway market. The number of BOT projects is very limited.

A possible increase in transaction costs has not been seen as a major obstacle for the introduction of competitive tendering or the vertical separation of the former national railway monopolies. Generally speaking, there has been a clear trend towards the use of more and more contracts to formalise the obligations of different actors in the European railway industry. However, recent research suggests that transaction costs may be higher than expected. The evidence is both theoretical and empirical. Asset specificity may have produced problems when designing the contracts in the British case. A lack of bidders (the small numbers problem) has been apparent in some countries. Contract costs seem to be inherent in the competitive tenders, in auctions as well as beauty contests. Many winning bids have been too optimistic, the combined evaluation of price and quality has often resulted in legal processes, and renegotiations have turned out to be necessary when costs and revenues didn’t develop according to plans.

We see at least four suggestions for future research. First, a comparative European study directed towards measuring the effects of competitive tendering and testing the relative contribution of different factors, such as network size, number of bidders, contract length, how many times the services have been tendered, type of contract (net or gross cost), upstream competitive markets or vertical monopoly, and so on. Second, research projects that include both statistical and qualitative data, comparing railway systems using competitive tendering to railway systems using either negotiated contracts or a monopoly regime. Such a study could shed some light on the relative merits of the different regimes after nearly two decades of experimentation with railway deregulation in Europe. A third suggestion is to investigate if more bidders or a threat of more bidders may result in a winner’s curse effect, partly offsetting the competitive effect (Hong and Shum, 2002). This would require the collection of data on economic outcomes of different contracts and compare these with the different bids. A fourth suggestion is to combine the data on bids with company information on their strategy in general and regarding some contracts in particular. This kind of research would make it possible to measure the impact of strategic bidding on bid levels and bid
variation. In our experience, it should be feasible to get this kind of company information concerning expired or non-sensitive contracts.

We find it notable that data on competitive tenders is so difficult to get access to. The official policy of the European Union as regards competition and liberalization may be expressed by the following citation: “If a company is awarded the monopoly over a public service that any one of a number of companies could provide, the selection process must be transparent” (Europa, 2004). In our opinion, the common practice of secrecy applied by the procuring authorities in several countries belies this policy of transparency. It pulls public procurement of railway services even further away from being normal markets, ultimately increasing the firms’ perceived gains from strategic bidding. Thereby, there is an increased risk of experiencing more of the socio-economic problems related to such strategies.
References


