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Public Procurement as Auction

Theoretical Models and Practical Problems

THE PAPER TOOK 1ST PLACE AT
THE FIRST PHD COMPETITION
OF THE PUBLIC FINANCE
QUARTERLY.

SUMMARY: This paper aims to show how the theory of optimal auctions can be applied to modelling public procurement. The first part of the paper focuses on the problem of choosing the optimal procurement method. Our hypothesis is that it could improve social welfare if buyers had a wider set of procedures to choose from. The second part of the paper discusses the Hungarian practice of bidders and purchasers manipulating the outcome of the process by withdrawing from contracts after they have been awarded. We show that there is no economic reason for making this possible without a charge, and that penalising this behaviour would also reduce the risk of corruption.¹

KEYWORDS: auctions, public procurement

JEL CODES: D44, H57, K12

In Hungary, annual public procurement spending corresponds to 5 to 10 per cent of GDP. In literature, a distinction is made between two basic types of procedure: competition and negotiation. The first may be conceived of as the “reverse” of traditional auctions: the parties essentially do not communicate with one another, while bids are easily comparable. Public procurement law, including that of Hungary, generally prefers this type of procedure as it offers fewer opportunities for collusion. At the same time, negotiations may have considerable advantages in the case of a complex task where, for example, the buyer insists on special professional considerations. Literature is divided as to which type of procedure is optimal in which situation from the

point of view of the buyer or social welfare, and also very little empirical evidence has been produced to help answer the question. Over the past ten years in Hungary, negotiated procedures accounted for an average of 28.3 per cent of all procedures in number and 38.3 per cent in value, with the latter exceeding 60 per cent of total public procurement value in 2007 (*see Charts 1 and 2* for distribution by type of procedure).

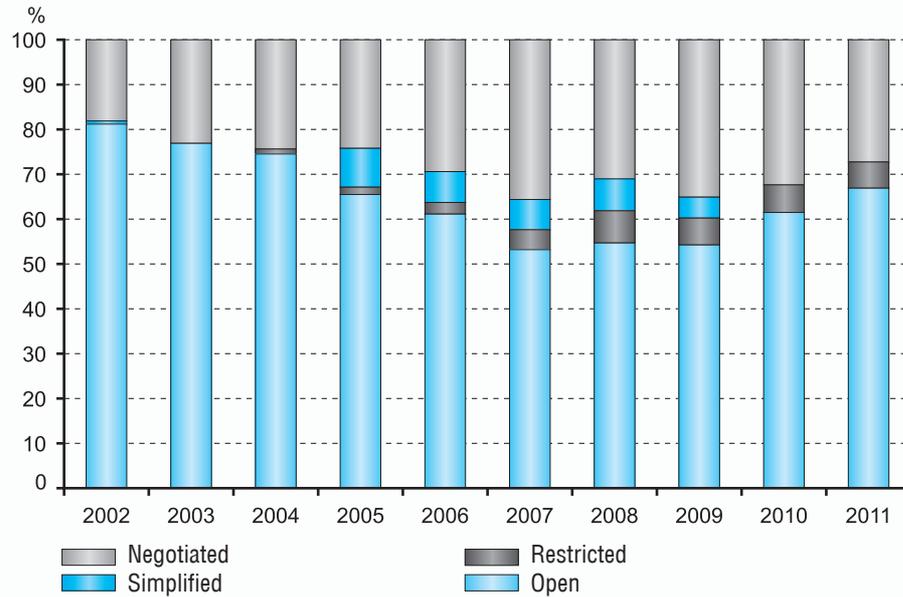
According to the findings of the questionnaire surveys conducted in 2006 and 2007 as reported in *Tátrai* (2009), one of the greatest problems with the Hungarian system of public procurement is withdrawal. Competition usually takes a long time owing partly to legal remedy proceedings, which are taken in over a fifth of cases (with infringement of law established in only less than a half of those proceedings). The law therefore allows either party, following the lengthy procedure and before the contract is concluded with the awarded bidder, to with-

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Chart 1

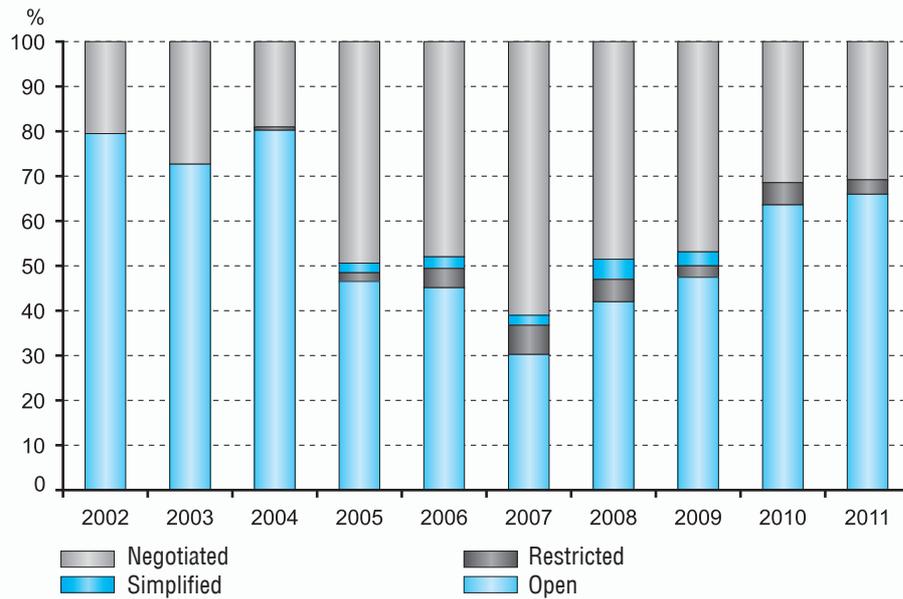
NUMBER OF PUBLIC PROCUREMENT PROCEDURES BY TYPE, 2002–2011



Source: based on reports by the Public Procurement Council to the National Assembly

Chart 2

VALUE OF PUBLIC PROCUREMENT PROCEDURES BY TYPE, 2002–2011



Source: based on reports by the Public Procurement Council to the National Assembly

draw from the contract on grounds of “reasons unforeseen and beyond its control”. Withdrawal in bad faith would be difficult to prove, which practically means that there are always loopholes that both parties may be inclined to exploit. Withdrawal may be a means of collusion between competing sellers (withdrawing for the benefit of another party), or between the buyer and particular sellers (where the buyer’s preferred seller could not be awarded, forcing the buyer to announce a new procedure).

This paper explains how the findings of auction theory can be applied to model public procurement, then takes a closer look at two practical problems which are not entirely independent: choice of the optimal type of procedure, and withdrawal from contracts. It will be shown that rather than insisting on simple first-price auctions, a variety of procedures including negotiated or even combined procedures should also be allowed in the field of public procurement. Therefore, from a social viewpoint, it may be desirable for contracting authorities to be granted greater freedom in their choice of procedure types. Of course, it should be taken into account that such freedom would automatically entail problems of a different nature, for example an increased risk of corruption. Drawing on the law and economics of contracts, it is also pointed out how it is not obvious at all that public procurement should allow the parties to withdraw free of charge. Using the logic of economics, consideration should be given to which party to each procedure is the risk bearer incurring the lower cost, and decisions on the enforcement of promises and possible damages should be made accordingly. Even this may not prevent collusion completely, but its extent can certainly be reduced.

This paper is structured as follows: the next chapter explains how public procurement models rely on specific findings of auction theory.

A separate chapter deals with the problem of choosing the optimal type of procedure. Then, our position on withdrawal is stated, and finally a summary of our conclusions is offered in the last chapter.

PUBLIC PROCUREMENT AS AUCTION

From a modelling perspective, issues relating to public procurement belong to the theory of optimal auctions. Underlying the term *auction* is the concept of purchase and sale, because auction as a method of exchange may not only be used for a seller to choose from a number of potential buyers to deal with (traditionally referred to as auction), but also for a buyer to choose the appropriate supplier or service provider. For an analysis of public procurement, familiarity with the literature of auctions is essential for several reasons. On the one hand, the two problems of procurement and selling stem from the same source; on the other hand, the selling problem has been addressed more extensively, as a result of which there is a good chance that, with certain restrictions, the findings available in this field may be adapted to procurement problems as well.

The following is an overview of the achievements made by various researchers in the comprehensive development of auction theory, as well as of the ways to use those achievements for an analysis of public procurement.

Auction theory

For a number of reasons including increased access to the Internet, technical advancements and simplified implementation, auctions have gained great popularity. They are used extensively in a variety of situations from the simple sale of used furniture through the sale of art treasures to the allocation of radio frequencies.

A question central to the implementation of auctions is how a monopolist (a seller imposing the rules of sale) should achieve optimal price discrimination with an information problem at hand. The information problem stems from the fact that the seller has no knowledge of the reservation prices of potential buyers, which prevents it from achieving the same price discrimination as it would if it had perfect information. Generally, the seller aims to maximise its revenue from the sale. In certain cases, for instance when the seller is the government, it may also pursue other objectives in the course of the sale. While aiming to maximise its revenue, the seller may, for example, consider it important to prevent the auction from causing a monopoly in the market, or aim to establish a pre-specified market structure.

Since it is primarily practical applications that are relevant to this paper, we need to consider basic findings as well as their extensions. The key importance of small differences in model specifications is well exemplified by the revenue equivalence theorem, a major achievement relating to auctions (see Myerson, 1981, p. 65). This holds that if buyers are risk neutral and their evaluations are independent of one another, then any two direct mechanisms of sale that award the object to the buyer of the highest evaluation (above the seller's reservation price) will generate the same revenue for the seller. That is, the various forms of auction are equivalent in terms of revenue, while the ex ante value of the highest possible revenue will correspond to the second highest price offered by bidders. The difference between the highest and the second reservation prices is the information rent paid to the well-informed party (see also Eső, 1997, p. 609; Szatmári, 1996, p. 310). However, this becomes invalid where buyers are risk averse and only the seller is risk neutral (Maskin – Riley, 1984). In such a case, the seller also protects buyers against risk, as a result of which the performance of second-price auctions (where the

party making the highest bid pays a price corresponding to the second highest bid) is poorer than that of first-price auctions (where the party making the highest bid pays a price corresponding to its own bid).

In connection with the implementation of auctions, *Klemperer* (2002), himself a contributor to the design of various auctions (mobile phone licences, gold, etc.), points out some practical issues that are important to consider. One such issue concerns the prevention of collusion between buyers, or at least the minimisation of their opportunities. In an ascending-bid (English) auction, for example, the initial bids may indicate the object each bidder intends to buy, providing an opportunity for tacit collusion. Where interactions are repeated, as is typical in the electricity market, the parties have even more opportunity to chart each other out and collude, and punish any actor deviating from the arrangement simply by means of their behaviour.

Another key aspect is the disadvantage to the seller in auctions involving very few buyers. With some models, the number of buyers is exogenous and this problem does not arise; in reality, however, the number of bidders is endogenous and can be influenced through the rules of the selling mechanism. In certain cases, traditional ascending-bid auctions allow some of the bidders to deter others from entering the competition, especially where barriers to entry exist (bidding is costly). *Klemperer* (2002, p. 172) refers to the merger of Glaxo and Wellcome as an example, where, although Wellcome had a number of potential buyers, bidding stopped at a lower initial value due to the high costs involved in bidding. As a result, Glaxo acquired the company one or two billion pounds cheaper than what Wellcome's shareholders could have got if others had also entered the competition. Similarly, potential competitors may be deterred if they think the winner is obvious; for example, in the case of

mobile broadband networks, this could be an incumbent operator with a local landline network. In auctions, buyers believed to be potential winners could make a huge advantage out of a small one. Such a small advantage could be, for example, an attempt to create a reputation of being an aggressive bidder that wants to acquire the object in question at all costs. An indication of this could be a toehold in the target company in the case of an acquisition, or that the buyer is known to possess goods which are complemented by the object of the auction (that is, they are genuinely committed to aggression, as it were).

In determining the auction mechanism, problems of a political nature may arise. A traditional sealed-bid procedure, where each of the buyers makes a single bid which is not known to the others, is not attractive to bidders. This is because the managers of the awarded company may indeed feel embarrassed with shareholders if their bid is subsequently found to be much higher than the second highest bid. Klemperer (2002, p. 175) mentions Spanish bank BSCH, which acquired Brazilian Banespa in a sealed-bid auction, but subsequently found that they had paid about 2.5 billion dollars more than the next best bid. By contrast, a second-price auction, the object of which is awarded to the bidder making the highest bid but the awarded bidder is only required to pay the second highest price, may be unfavourable for the seller, even if it had chosen the best auction method in terms of ex ante value. In a New Zealand auction, for example, the awarded bidder placed a 7 million dollar bid but under the rules, it was only required to pay 5,000, the amount of the second highest bid. This case also highlights the potential significance of the seller's failure to set an appropriate reservation price before the auction begins.

Changing or violating the rules is a similar problem. In certain cases, one of the parties

may have an interest in changing the rules or in not enforcing compliance with them (Klemperer, 2002, pp. 176–177). Ascending-bid auctions sooner or later get to a point where only a few buyers remain in competition, and if it is not required that bids immediately follow one another, competitors will have the opportunity to make threats or violate the rules in other ways. Moreover, in sealed-bid auctions, the seller itself may be inclined to circumvent the rules and invite a second round of bids if it learns that certain buyers would be willing to offer more than the current best bid, having realised a “miscalculation” in their previous bid, so to speak.

Apparently, there are a number of possibilities for the design of an auction to go off course. Naturally, there is no single solution to eliminate all of these problems simultaneously. Trade-offs exist between the desirable features of each form of auction and its exposure to fraud or adverse circumstances (collusion, threat, insufficient number of bidders, etc.). Out of these, two deserve particular attention: collusion and subsequent rule changes. As explained later, these also pose serious problems in public procurement and may undermine the original objective of exploiting the benefits of competition in the field of purchasing.

Public procurement models

The increased use of auctions in market liberalisation has contributed to competition becoming a requirement in public procurement as well. The competition of bidders may have benefits: it may improve efficiency, provide equal opportunities to every company, and also reduce corruption. By comparison, Hungarian experience suggests that the system fails to meet such requirements, which in theory are legitimate expectations. Transparency International's position in 2008 was that there were too many loopholes and

exceptions in Hungarian statutory provisions, leading to the circumvention of the legislator's original intention, providing opportunities for abuse, and preventing the system of legal remedies from operating efficiently. Before moving on to practical problems, we should consider the theoretical findings available for the choice or description of the optimal public procurement mechanism.

A purchasing problem may be interpreted as the reverse of the basic situation of auctions. The problem involves one buyer and a number of potential sellers from which it wants to choose the best for its purposes. In terms of the method of choice, a distinction is commonly made between two groups of procedure:

- traditional auctions, where the buyer is not engaged in any substantive communication with bidders other than announcing the public procurement tender, and
- negotiations, where the buyer and the sellers essentially cooperate in specifying the parameters of the tender, and the buyer negotiates with each individually to obtain the best possible bid.

Note that although in terms of its key features, the procurement problem is equal to the reverse of the selling problem discussed earlier, the findings related to auctions cannot be adapted directly to public procurement situations.

The question is generally asked whether a given object should be purchased by means of auction or negotiations, but even within the group of auctions, there is such a degree of variety that it is difficult to find the best mechanism. In looking for a socially optimal mechanism for a relatively general case, *Eső* (1997) considers auction forms. He finds, surprisingly at first glance, that society may benefit from restricted competition. The phenomenon is caused by adverse selection, i.e. the buyer's inability to determine the actual cost conditions of the sellers. Where the buyer is not

fully able to verify the quality or other desirable parameters of the procured object, information asymmetry may cause it to choose the cheapest bid and thus receive quality that is either the worst or insufficient. Where a company implementing public procurement is required to contract the bidder that has made the cheapest bid, it will be placed under the burden of specifying the tender as accurately as possible. Focusing on low price, sellers will not price in items which the buyer has not specifically requested, i.e. overall they will be motivated to keep the quality of implementation to a minimum. Such motivation is not always expedient or in the buyer's interest.

Individual cases should therefore be distinguished according to the type of goods being procured. Two types allow reversal of the findings of auction theory to be applied directly. One option is that the object of procurement is an ordinary good, the quality of which is constant without regard to its producer, or at least it can be examined free of charge by the consumer prior to purchase. The other group comprises search goods, where information on quality is available prior to the purchase but is costly, or, where quality is only ascertained after the fact, even then it can be proven (tasting is a good example of ascertaining quality). With these product types, quality can therefore be verified either in advance or subsequently, and can thus be included in a contract at the time of the purchase. Consequently, there is no information asymmetry either, and the findings of Myerson (1981) are applicable to the problem. With risk neutral sellers that are ex ante identical, the ideal procurement mechanism in terms of revenue is auction (whatever its form).

Eső (1997) seeks a socially optimal mechanism for a third type of goods. The key features of experience goods cannot be observed in advance and their quality can only be ascertained over a longer period when it can no

longer be proven (typical with pharmaceuticals), or there is no difference between their tasting and consumption. In the model presented in Esó (1997), the buyer is impartial, i.e. their utility does not depend on who they have purchased from, the parties are risk neutral, and the buyer wants to procure one good only. In such conditions, the optimal mechanism is a second-price sealed-bid auction, in which the buyer sets a single price ceiling and price floors specific to individual sellers.

Even from this brief theoretical overview, it is apparent that the choice of the optimal procurement mechanism is a rather complex task. For the time being, there is no single answer to the problem; therefore the regulator must be very careful in determining the procedure to be used for the procurement of each object or service. Reducing the possibility of corruption is an important goal, but experience (see e.g. Transparency International, 2008) shows that excluding negotiations in itself will not ensure its achievement. Even where auction is used for procurement, withdrawal offers an excellent opportunity for collusion; therefore the rest of this paper focuses on these two aspects of public procurement.

CHOICE OF THE OPTIMAL TYPE OF PROCEDURE

As shown in the previous chapter, even within the group of auctions it is not necessarily easy to determine the optimal procurement mechanism owing to information asymmetry. Taking a step “back”, let us consider the factors that may determine whether a certain object should be procured by means of auction or negotiation.

In general, regulation recognises only a small number of procedure types, and the choice between these is typically limited to choosing between one specific type of auction and one specific type of negotiated procedure

rather than between various types of auction. However, regulation can be amended; therefore consideration should be given to the types of procedure from which contracting authorities should be allowed to choose. The basic question, therefore, is “auction or negotiation”, and determining the particular types of auction or negotiation that should be encouraged or prohibited is a secondary aspect of this problem.

Theoretical models

As shown in the previous chapter, where a company purchasing as part of public procurement is required to contract the bidder that has made the cheapest bid, bidders will be motivated to aim for the minimum quality of implementation within the limits of the tender specification. *Che* (1993) seeks to find a solution to this fundamental problem by constructing a “multidimensional” auction mechanism wherein the buyer evaluates price as well as quality with each bidder. A scoring system helps to aggregate evaluations. The findings of *Che* (1993) essentially constitute a multidimensional extension to the revenue equivalence theorem. Namely, if the buyer can genuinely commit to the “naive” scoring system that reflects its real preferences, the various forms of auction will be equivalent in terms of the ex ante utility of the buyer, but a quality decision concerning the awarded company will result in a higher-than-optimal standard of quality. At the same time, if the buyer can genuinely commit to any scoring system, then the optimal output will be implemented by procedures wherein the highest scoring company is awarded and is required to perform according to the undertaking of its own or of the second best bidder. Please note that on the one hand, achievement of the optimal output requires genuine commitment, which is not always easy from the buyer’s perspective. On

the other hand, although the use of scoring systems such as the one described above removes the buyer's burden and saves it the cost of producing the most accurate tender specification possible, it becomes possible to manipulate the outcome on the side of the buyer, who can choose virtually any winner by the choosing the right scoring system.

Along more than two dimensions, it is even more difficult to determine what the optimal procurement mechanism is. With complex tasks where the buyer might not even possess the knowledge and information required to invite the appropriate bids, it could be more reasonable to conduct negotiations with potential suppliers.

Also focusing on the problem of adverse selection, *Manelli and Vincent (1995)* were concerned with the choice of the optimal procurement mechanism where quality could not be included in a contract (the buyer cannot observe it *ex ante* and it is not possible to verify in court *ex post*). In fact, *Manelli and Vincent (1995)* compared second-price auction with a sequential bidding system of the take-it-or-leave-it type. In the latter, the buyer first chooses a seller and offers a price to it. If the seller accepts the price, a contract is concluded. If it declines, the buyer will make a new offer to another seller. Bargaining continues until either one of the sellers accepts the offer made to it, or all of them decline, in which case no procurement will be made. The authors attempted to use linear programming to develop necessary and sufficient conditions under which second-price auctions and the sequential bidding system explained above were optimal. Their conclusion was that the latter was optimal in a wider range of possible environments than auctions. They also found that environments existed in which neither procedure was optimal, i.e. other procurement mechanisms also needed to be taken into account in pursuit of a socially optimal public procurement procedure.

The above conclusion encouraged a number of researchers to develop procurement mechanisms that would combine the benefits of auctions and negotiations. In that spirit, *Huh and Park (2010)* looked at the possibilities of combining auctions and negotiations. Their analysis is based on the observation that in business practice, in the course of procurement, it is common for a buyer to invite bids from a few potential sellers, then to evaluate the bids and select one or more bidders for detailed negotiations. Such negotiations following the auction allow the parties to gain a better understanding of one another's knowledge, cost conditions, and in the case of complex tasks where a simple auction is not expedient, they may negotiate the parameters of the task itself and the technical possibilities for solving the problem. To a large extent, negotiations relieve the buyer from the burden of having to possess all the technical knowledge required for performance and thus specify a perfect tender. Based on *Huh and Park's (2010)* model, a risk neutral buyer will prefer a second-price to a first-price auction in the first round of auction, while overall a combined procedure (first- or second-price auction followed by negotiations with sellers) will result in a higher *ex ante* profit to the buyer than implementing procurement solely by means of either auction or negotiations.

Empirical analyses

A number of papers have been produced in the field with a view to exploring the process of determining the optimal procedure type based on actual procurement practice. Below we explain the – mostly consistent – findings of some of these.

Bajari, McMillan and Tadelis (2008) analysed the choice between auctions and negotiations. In the United States, public procurement regu-

lations allow the wide use of open competitive bidding, which is used in 97 per cent of the cases in the public sector, while the same rate is only 18 per cent in the private sector (Bajari – McMillan – Tadelis, 2008, p. 23). The authors sought to answer the questions of what explains this low rate in the private sector, and in what cases the preference of a negotiated procedure should be considered in the public sector. In their empirical analysis, they reviewed the selection procedures for construction contracts in Northern California between 1995 and 2001. The analysis showed that the more complex a project was, the more likely negotiations were with bidders, and the more potential constructors, the better it was to award a contract at auction.

Using a database of procurements by Italian hospitals, *Bonaccorsi et al.* (2000) looked at the motivations behind the choice between various procedures. They identified four circumstances under which hospitals preferred auctions to negotiations. These are the following:

① administrative staff have a greater say in procurement decisions than those involved in medical care (the latter give priority to quality over cost considerations);

② the object concerned involves a high marginal cost of quality;

③ the marginal utility of quality is low;

④ the number of potential bidders is low (*Bonaccorsi et al.*, 2000, p. 15).

They too arrived at the overall conclusion that the more important quality was in procurement, the less likely auction was to be used.

Thomas and Wilson (2002) compared first-price auctions to a special “multilateral” negotiated procedure. In the course of the latter, the buyer first invites bids from a number of potential sellers, then plays them off against one another by negotiating with them one by one (the sellers have no means of communicating with each other), as part of which it

shows them the competitors’ bids, then chooses from the bids made more favourable this way. The authors conducted experiments primarily to look at how the number of potential bidders influenced which procedure was ultimately best for the buyer. They randomly paired buyers with two or four sellers, and found that with two sellers, the auctions yielded significantly lower prices, but there was no such difference where four sellers were involved. Unfortunately, as only these two arrangements were considered (two or four sellers), general conclusions cannot be drawn as to the number of sellers where the price differential disappears between the two procedures, or the circumstances under which multilateral negotiations could have more benefits than first-price auctions.

Other findings have also shown that auction will yield lower prices than negotiations only under certain circumstances. Looking at healthcare procurement, *Kjerstad* (2005) could not demonstrate a significant price differential between the two types of procedure. *Leffler, Rucker and Munn* (2003) found that in the sale of timber, the auctioneer came off worse at auction than in negotiations if they did not seek assistance from a forestry expert.

Based on the models explained and empirical evidence, it is apparent that rather than insisting on simple first-price auctions, a variety of procedures including negotiated or even combined procedures should also be allowed in the field of public procurement. Therefore, from a social viewpoint, it may be desirable for contracting authorities to be granted greater freedom in their choice of procedure types. Of course, it should be taken into account that such freedom would automatically entail problems of a different nature, for example an increased risk of corruption. However, this aspect of the issue is more relevant to the second practical problem we are addressing.

WITHDRAWAL

The findings reported in Tátrai (2009) suggest that one of the greatest problems with the Hungarian system of public procurement is withdrawal. The law allows the parties to withdraw because procedures usually take a long time, during which there is a greater probability of an unexpected event occurring than if decisions were reached quickly. Under the provisions of the law in effect, “The contracting authority may only be relieved of its obligation to conclude the public procurement contract with the successful entity (person) if – due to unforeseeable and unavoidable reasons beyond its control – material circumstances arise after the sending of the written summary on the evaluation of tenders, which make the contracting authority incapable to conclude or perform the contract.” [Act CVIII of 2011 on Public Procurement, Article 124(9)]

It is easy to see how difficult it is to verify the existence of such “unavoidable” conditions as would enable withdrawal from liabilities to the awarded bidder. For example, the buyer could always claim inability to pay. Similarly, the awarded bidder may also withdraw in certain procedures for the benefit of the second best bidder, creating an opportunity for collusion.

Apparently, the motivations leading to an authorisation of withdrawal provide an opportunity for both parties to manipulate results, who occasionally avail of the opportunity to do so (see Tátrai, 2009, p. 840 for examples). A healthy balance should therefore be struck between the authorisation of withdrawal and the prevention of collusion. To clarify the problem further, let us review the findings available in the field of law and economics that could help to resolve the problem.

With public procurement, withdrawal could be considered a breach of contract from a theoretical viewpoint, because even before the

specific contract is concluded, an agreement exists under which the contracting authority undertakes to contract the bidder selected according to the rules applicable, and each bidder undertakes to perform according to the terms of its bids should they be chosen by the buyer. A fundamental question addressed in the literature of contract law is what contracts should be enforceable, and when and under what terms the violating party should be liable for damages.

Theory recognises a number of reasons for cancelling a contract without enforcing its provisions. These include contracts with incapable persons, mutual error and fraud, as well as the impossibility of performance (where an unforeseen event makes performance impossible) and frustration of the purpose of the contract (where an unforeseen event frustrates the purpose of performance). In the latter two cases, the cancelling party acknowledges having undertaken commitments, but claims inability to fulfil those commitments on grounds of certain conditions existing, and denies liability for damages on the grounds of a breach of contract. Impossibility ought to be interpreted in a broad sense; it includes situations where performance would be physically possible but has become much more costly owing to an unforeseen circumstance, i.e. has become impossible in an economical sense.

Therefore, the question is whether the promisor should be liable for or exempt from damages if performance has been made impossible by contingency. In a perfect contract, the parties would provide for any and all possible events and contingencies and clarify who should bear the risk of each. In reality, however, these negotiations are costly, thus there will be contingencies which are not provided for in the contract, as the cost of negotiating improbable risks exceeds the benefits of such negotiations. Contract law should fill this gap to save the parties the costs of negotiation to

the extent they wish to stay within the confines of the law.

Who should bear the risk of unforeseen events? The answer based on the logic of economics is that it should be the party which can bear this risk at a lower cost. In such a case, aware of its liability, the party bearing the risk could, for example, attempt to prevent unforeseen events from occurring. However, the inability of a party to prevent a contingency (by incurring reasonable costs) does not necessarily mean that it should be exempted from its contractual obligations (Posner – Rosenfield, 1977, p. 90). Prevention is only one way; insurance is another option. The parties could provide for their own insurance (e.g. by diversifying their portfolios against the insolvency of a customer) or buy insurance in the market (e.g. to cover the death of a performing artist). To determine which party is the lower-cost risk bearer, two types of cost should be taken into account (Posner – Rosenfield, 1977, p. 91). The first type is an estimate of expected damage, including the probability of the event occurring and the damage incurred should the event occur. The second type is transaction cost, which is the cost of eliminating or minimising risk, i.e. that of insurance. In general, where there are good opportunities for diversification, self-insurance is cheaper than market insurance.

The principle is apparently obvious. Consideration should be given to who can better estimate the extent of damage and the probability of occurrence, and who can obtain cheaper insurance to cover it; that party should bear the risks, and depending on whether it is the promisee or the promisor, the contract should be cancelled or enforced. However, the solution is not always simple; it may happen that one cost is lower to one party and another cost to another party, which is a case where the analysis of the two costs indicates opposite directions, and it is not possible to determine the risk bearer of the lower cost. However, it is

generally true that it is possible for the promisor to bear the cost cheaper; therefore, it could be considered a general rule that the promisor is liable to fulfil its promise, and is exempted from its commitments only in rare cases.

Therefore, it is not at all obvious that public procurement should allow the parties to withdraw free of charge. It is not appropriate, for example, that the awarded bidder should bear the risk of the buyer subsequently realising an error in announcing the tender, and wishing to withdraw as a result. Consideration should be given to which party to each procedure is the risk bearer incurring the lower cost, and decisions on the enforcement of promises and possible damages should be made accordingly. Even that cannot guarantee that collusion is eliminated entirely, but efforts to that end are not necessarily rational either. However, the arguments of economics should not, by any means, be ignored in regulating withdrawals.

SUMMARY

In procurement, auctions have the benefit of allowing the buyer to obtain the best price as a result of competition. Their drawback is that the desired effect can be achieved only if certain conditions apply (for example, an adequate number of bidders need to participate), and that competition can easily become detrimental to quality where it cannot be included in a contract. The advantage of a negotiated procedure is that it relieves the contracting authority from the burden of producing the most perfect tender specifications possible; however, regulators are generally reluctant to allow it because the bids made in negotiations are not necessarily comparable, and collusion may be suspected on grounds of communication between the buyer and the seller. For that reason, public procurement laws in most cases require contracting

authorities to implement first-price auctions. Yet, neither theoretical models nor empirical analyses support the prominence of auctions over negotiations. Our enquiry has led us to conclude that, from a social viewpoint, it would be desirable for contracting authorities to be granted greater freedom in their choice of procedure types.

Hungarian experience is that the parties have a tendency to withdraw after the results have been announced. The law allows this because procedures are lengthy (an unforeseen event may make performance impossible), while giv-

ing the parties an opportunity for collusion (between one or more sellers and the buyer). Drawing on the law and economics of contracts, we have pointed out that enforcement of a contract should depend on which party is the lower-cost bearer of the risk of the unforeseen event on the grounds of which cancellation is requested. In themselves, the length of a procedure and the impossibility of preventing an unforeseen event do not justify exempting either party from the fulfilment of its promise. Moreover, collusion could also be reduced if withdrawal were not allowed free of charge.

LITERATURE

- BAJARI, P. – McMILLAN, R. – TADELIS, S. (2008): Auctions Versus Negotiations in Procurement: An Empirical Analysis. *The Journal of Law, Economics and Organization*. pp. 1–28
- BONACCORSI, A. – LYON, T. P. – PAMMOLLI, F. – TURCHETTI, G. (2000): Auctions vs. Bargaining: An Empirical Analysis of Medical Device Procurement. (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=224263, downloaded 1 July 2010)
- BULOW, J. – KLEMPERER, P. (1996): Auctions versus Negotiations. *American Economic Review*. 86. pp. 180–194
- CHE, Y-K. (1993): Design Competition through Multidimensional Auctions. *Rand Journal of Economics*. 24. pp. 668–680
- ESŐ, P. (1997): Árverés és verseny a közbeszerzésben (Auction and Competition in Public Procurement). *Közgazdasági Szemle (Economic Review)*. 44. pp. 597–611
- FISHMAN, M. J. (1988): A Theory of Preemptive Takeover Bidding. *Rand Journal of Economics*. 19. pp. 88–101
- HENDRICKS, K. – PORTER, R. H. (1988): An Empirical Study of an Auction with Asymmetric Information. *American Economic Review*. 78. pp. 865–883
- HERMALIN, B. E. – KATZ, A. W. – CRASWELL, R. (2006): The Law and Economics of Contracts. Handbook of Law and Economics, Forthcoming. (<http://ssrn.com/abstract=907678>, downloaded 24 August 2009)
- HUH, W. T. – PARK, K. S. (2010): A Sequential Auction-Bargaining Procurement Model. *Naval Research Logistics*. 57. pp. 13–32
- KJERSTAD, E. (2005): Auctions vs negotiations: A study of price differentials. *Health Economics*. 14. pp. 1239–1251
- KLEMPERER, P. (1999): Auction Theory: A Guide to the Literature. *Journal of Economic Surveys*. 13. pp. 227–286
- KLEMPERER, P. (2002): What Really Matters in Auction Design. *Journal of Economic Perspectives*. 16. pp. 169–189

- LAFFONT, J.-J. – TIROLE, J. (1987): Auctioning Incentive Contracts. *Journal of Political Economy*. 95. pp. 921–937
- LEFFLER, K. B. – RUCKER, R. R. – MUNN, I. A. (2003): The choice among sales procedures: Auction vs. negotiated sales of private timber. *Working Paper, Department of Economics, University of Washington*
- MANELLI, A. M. – VINCENT, D. R. (1995). Optimal Procurement Mechanisms. *Econometrica*. 63. pp. 591–620
- MASKIN, E. S. – RILEY, J. G. (1984): Optimal Auctions with Risk Averse Buyers. *Econometrica*. 52. pp. 1473–1518
- MASKIN, E. S. – TIROLE, J. (2008): Public-Private Partnerships and Government Spending Limits. *International Journal of Industrial Organization*. 26. pp. 412–420
- MCAFEE, R. P. – MCMILLAN, J. (1987): Auctions and Bidding. *Journal of Economic Literature*. pp. 699–738
- MCAFEE, R. P. – MCMILLAN, J. (1992): Bidding Rings. *American Economic Review*. 82. pp. 579–599
- MYERSON, R. B. (1981). Optimal Auction Design. *Mathematics of Operations Research*. 6. pp. 58–71
- PEKEC, A. – ROTHKOPF, M. H. (2003). Combinatorial Auction Design. *Management Science*. 49. pp. 1485–1503
- POSNER, R. A. – ROSENFELD, A. M. (1977): Impossibility and Related Doctrines in Contract Law: An Economic Analysis. *Journal of Legal Studies*. 6. pp. 83–118.
- SMYTHE, D. J. (2009): Impossibility and Impracticability. *Encyclopedia of Law and Economics*, Forthcoming. (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1439922, downloaded 1 June 2010)
- SZATMÁRI, A. (1996): Aukciók, avagy a képbe kerül, ha a Louvre a képbe kerül? (Auctions: Will It Cost the Picture with Louvre on the Scene?) *Közgazdasági Szemle (Economic Review)*. 43. pp. 303–314
- TÁTRAI, T. (2006). A közbeszerzés mint sajátos beszerzési tevékenység és fejlődési lehetőségei Magyarországon (Public Procurement as a Particular Procurement Activity and the Possibilities for its Development in Hungary). PhD thesis (<http://phd.lib.uni-corvinus.hu/5/>, downloaded 10 February 2010)
- TÁTRAI, T. (2009): Verseny a közbeszerzési piacon. (Competition in the Public Procurement Market). *Közgazdasági Szemle (Economic Review)*. 56. pp. 835–848
- THOMAS, C. J. – WILSON, B. J. (2002). A comparison of auctions and multilateral negotiations. *Rand Journal of Economics*. 33. pp. 140–155
- State Audit Office of Hungary (2008): Jelentés a közbeszerzési rendszer működésének ellenőrzéséről (Summary of the Audit of the Operation of the Public Procurement System). ([http://www.asz.hu/ASZ/jeltar.nsf/0/EF2A44F5115DD750C12574C5004E1461/\\$File/0831J000.pdf](http://www.asz.hu/ASZ/jeltar.nsf/0/EF2A44F5115DD750C12574C5004E1461/$File/0831J000.pdf), downloaded 10 February 2010)
- Transparency International (2008): Position on the Situation of Public Procurement. (<http://www.transparency.hu/allasfoglalasaink>, downloaded 25 January 2010)