



Brief 2

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Public Procurement

Economic Issues in Public Procurement

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Centralised or decentralised procurement approach

Effective procurement strategies, which control costs and streamline processes, are vital to all contracting authorities. Pursuing the best value for money in public procurement, while keeping the process management costs controlled, requires several crucial decisions, including the decision on the “optimal” mixture of centralised and decentralised procurement. A number of closely interlinked economic factors come into play in this decision. The following points highlight where centralised procurement may be of benefit.

Efficiency through cost control: All contracting authorities need to control their spending. Centralisation may help to increase efficiency and reduce purchasing costs, mainly due to economies of scale, reducing work duplication, increased specialisation and better sharing of knowledge and resources.

Reducing local favouritism: The need for relevant local information in setting quality standards and local delivery requirements may favour decentralised procurement, but it may also give rise to local favouritism, especially towards local economic operators. Favouritism may also take place at central level. However, the higher visibility of centralised procurement makes “tailored” procurement strategies that favour particular economic operators more difficult to implement.

Strategic procurement requirements: Procurement is “strategic” when it involves items or activities that have a considerable impact on business or on national socio-economic policies. The higher the importance of those activities, the more centralised decisions tend to be, since each purchasing decision is likely to exert a significant impact on the entire organisation. Governments usually consider the following areas as strategic activities: defence – due to its national importance and sensitivities; public health – due to the need to co-ordinate actions and enforce minimum quality standards; and environment – due to the need to promote consistent, countrywide policies and common standards.

Networks and standards: When purchasing decisions are decentralised, switching to potentially superior technologies may become difficult, if not impossible. Key network industries are telecommunications, internet services, computer software, and some aspects of modern banking, such as ATM networks and e-markets. Goods or services are said to display network effects if their value to any user increases with the number of users already using them. When the number of users of a certain product with network effects is large enough, that product may in fact become a standard. A potentially serious problem may arise when another standard is available, although consumers (including local purchasers), while inclined to consider the latter technologically superior to the former, are unwilling to switch because they are afraid that most of the other users will not follow them.

Emergencies: There are several reasons for favouring a centralised rather than a decentralised approach to procurement in the case of genuine emergencies, such as natural disasters: the need for co-ordinated interventions, which reduce the risk of providing essential goods/services of different quality and the risk of corruption when additional funds are handled.

E-procurement: The term e-procurement (electronic procurement) is often associated with e-auctions, which constitute an e-procurement tool used as the final tendering phase of the procurement process. Another e-procurement tool is the dynamic purchasing system. The coverage of e-procurement is in principle much wider, ranging from e-notices and e-catalogues to e-invoicing and e-payment systems. The 2014 Directives¹ place a much greater emphasis

¹ Directive 2014/24/EU on public procurement and repealing Directive 2004/18/EC, 26 February 2014, and Directive 2014/25/EU on procurement by entities in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC, 26 February 2014.

than previous procurement Directives did on the use of e-procurement in the procurement process. They require tender processes to be carried out by using certain forms of e-procurement, such as e-notices, the option for economic operators to use the European Single Procurement Document, e-communication and e-submission of tenders.

The cost of running and participating in an e-procurement process is likely to be lower than that of a paper-based procedure. Local purchasing units may be able to set up e-procurement systems relatively inexpensively themselves, which may favour a decentralised approach. However, there is no unique technological standard for running e-auctions or e-procurement systems. Therefore, the more independently local purchasing units behave, the more likely that technological choices will turn out to be not entirely compatible, thus raising the costs that firms will incur in order to become acquainted with different standards. A centralised procurement strategy that imposes a single standard across an organisation reduces these costs and may encourage participation by small and medium-sized enterprises (SMEs). The facilitation of SME participation in public procurement is a primary concern of the 2014 Directives. Various measures in the Directives, including e-procurement, are aimed at encouraging SME participation.

Best type of contract

There are three broad categories of procurement contracts from an economic perspective: cost-reimbursement (or cost-plus), fixed-price, and incentive contracts. Each contract solution generates different behaviour on the economic operator's side in particular and may consequently have a different impact in terms of perceived or actual levels of quality and overall costs. Many procurement contracts are variants or a combination of these categories.

Cost-reimbursement (or cost plus) contracts: The distinguishing feature of cost-reimbursement contracts is that the contracting authority agrees to reimburse all documented production costs related to the project and may also agree to pay a fee for supervision. While fully ensuring against cost overruns, cost-reimbursement contracts do not provide the economic operator with any incentive to deliver cost savings or other benefits.

Fixed-price contracts: Under a fixed-price contract the economic operator is paid a fixed price for delivering according to predetermined quality standards. The economic operator receives no additional payment for achieving higher quality standards. Penalties are typically included in the contract so as to protect the contracting authority from the risk of delivery of lower-quality standards than those laid down in the contract. A fixed-price contract does not generally protect the economic operator against cost overruns, but the economic operator enjoys the benefit of possible cost savings while fulfilling quality standards as agreed.

Incentive contracts: Incentive contracts lie on the spectrum between cost-reimbursement contracts and fixed-price contracts.

Allocation of risk: The different types of contract involve a different allocation of risks between the parties. The appropriate allocation of risk in a contract between the contracting authority and the economic operator is a key practical issue and impacts on both cost and efficiency. This is best illustrated by way of an example, as follows:

Cost-reimbursement contracts are a good idea where:

- The project is highly complex.
- There are unforeseen contingencies, that is, events out of the control of contracting parties that may lead to serious project disruptions.
- Contract flexibility is needed.

- The relevance of quality dimensions is difficult to measure (e.g. proactiveness of a management consultant, user-friendliness of computer software).

Fixed-price contracts are a good idea where:

- The contracting authority wishes to buy goods/services that satisfy only a minimum level of technical specifications.
- The economic operator has full control over most of the events affecting production costs.
- The economic operator's needs remain unchanged throughout the execution of the contract.

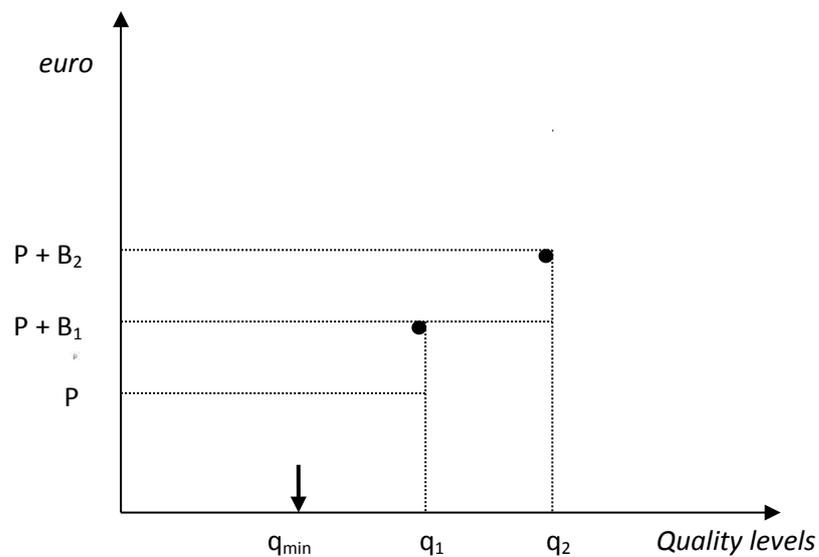
Heterogeneous tasks

In practice, particularly for more complex contracts, elements of the two types of contracts outlined above will be incorporated into a single contract. Incentive contracts enable the combination of these elements.

Incentive contracts – cost-incentive and quality-incentive contracts: Incentive contracts lie on the spectrum between cost-reimbursement and fixed-price contracts. The economic operator receives a two-part payment: a fixed component and a variable component, where the latter depends upon performance-enhancing targets. Cost-incentive contracts are mainly used in public works or in the procurement of high-tech products. Quality-incentive contracts are more commonly used for the procurement of off-the-shelf goods and services.

- **Cost-incentive contracts** generally include a target cost, a target profit, and a profit adjustment formula, which ensures that (i) actual cost or quality that meets the target will result in the target profit or fee; (ii) actual cost that exceeds the target will result in a downward adjustment of the target profit or fee; and (iii) actual cost or quality that is below the target will result in an upward adjustment of the target profit or fee.
- **Quality-incentive contracts** normally set a baseline quality level and an improvement schedule, specifying how much the contracting authority buyer is willing to pay for quality targets that are higher than the baseline level. Figure 1 below illustrates a simple quality incentive scheme with two quality levels higher than the minimum performance. In this case, an incentive contract normally specifies a base payment P for minimum performance q_{min} , typically a quality measure, and additional higher target levels q_1, \dots, q_n with corresponding bonuses B_1, \dots, B_n .

Figure 1: A quality-incentive scheme



- There are two main categories of quality incentive schemes, depending on the extent to which contracting parties are able to define objective performance measures. These categories are 1) schemes involving verifiable quality dimensions that can be checked by third parties, including time of delivery of a product or speed of problem resolution by a help-desk service; and 2) schemes with non-verifiable quality dimensions that can be observed by both parties but cannot be verified by a third party, including a consultant's proactiveness, the degree of user-friendliness of software, or the kindness/courtesy of a help-desk operator.
- Internationally accepted statistical tools, such as the Customer Satisfaction Index, measure a user's perception of the quality dimensions of a product or service, but these tools are subjective and non-verifiable by anyone other than the user.

Format for tendering: is it better to use a competition with sealed bids or an electronic auction?

Contract costs: The cost of a contract is made up of a number of elements. It is helpful for contracting authorities to understand how economic operators cost contracts, the impact of uncertainty on cost estimates, and the mistakes that economic operators can make when estimating the cost of delivering a contract. Understanding these issues can help with deciding which is the best format for tendering a particular contract.

Private and common-cost dimensions: When estimating the cost of performing a contract, each economic operator has to consider at least two dimensions:

- **Private, firm-specific cost dimension:** This dimension concerns the economic operator's efficiency in performing each task specified in the contract. Efficiency results from the interaction between the experience of the economic operator's personnel in carrying out similar tasks and, more generally, the firm's managerial skills.

- **Common dimension:** This dimension relates to the economic operator's ability to correctly estimate the mix of the various tasks specified in the contract. This uncertainty is common to all economic operators.

Uncertainty about the common dimension can have a significant impact on tenders and contract delivery. For example, an economic operator that submits a bid on the basis of an overly optimistic estimate of the common component may then suffer from the "winner's curse". As a result, the economic operator may realise that the actual production costs are higher than the estimated costs and may reduce the quality of delivery. Uncertainty about the common component may also lead to concerns about potential running losses and may result in over-cautious bids and higher prices for the contracting authority.

Economic operators in a sealed-bid situation will rely on considerably different knowledge bases and experience in preparing their bids. In this situation, there is a danger that inexperienced bidders will underbid or overbid due to a number of factors, including uncertainty regarding the common component, as outlined above.

Can e-auctions help reduce uncertainty and improve outcomes?

An e-auction does not always resolve problems of underbidding or overbidding. However, the cost information produced and available to economic operators during an e-auction process can help them to adjust their estimates of the common component and to therefore do their costing more accurately. In doing so, they may avoid becoming victims of underbidding by underestimating the full cost of delivery of the contract or of overbidding when relying only on their estimates of the common component.

The downsides of e-auctions: There are two primary sources of concern for a contracting authority when opting for an e-auction:

- Information circulation may increase the risk of collusion, especially in e-auctions for multiple contracts: economic operators can exploit the openness of the e-auction format to send signals to each other (through prices) in order to co-ordinate their bids. An e-auction may also enable members of a bidding ring to detect deviation from a collusive scheme and to therefore punish deviating economic operators.
- The transparency and openness of an e-auction format may induce some economic operators to adopt bidding strategies in order to conceal their information from rivals or to bluff.

Splitting a contract into lots

One of the main decisions in public procurement concerns whether a requirement for works, supplies or services should be acquired by using one contract or a number of separate contracts or lots. The decision is not an easy one, as savings derived from economies of scale may lead to a decision to use a single contract, while the diversity resulting from multiple contracts can encourage competition and efficiency.

The Public Sector Directive² encourages contracting authorities to divide contracts into lots as one of the means of facilitating SME participation in public procurement. Article 46(1) obliges contracting authorities to provide an indication of the main reasons for their decision not to subdivide into lots. According to Article 46(2), contracting authorities must indicate, in either the contract notice or the invitation to confirm interest, whether tenders may be submitted for one, several, or all of the lots. Contracting authorities may limit the number of lots that may be

² Directive 2014/24/EU on public procurement and repealing Directive 2004/18/EC, 26 February 2014.

awarded to one tenderer, even where tenders may be submitted for several or all lots, provided that the maximum number of lots per tenderer is stated in the contract notice or in the invitation to confirm interest.

When deciding on the number and configuration of lots, the contracting authority needs to know its market and consider a number of factors, including:

- **Relevance of economies of scale:** for example, production costs may be lower if a number of lots are bundled and delivered by a single contractor. Bundling is to be preferred when strong synergies in production are expected (due, for example, to high fixed costs).
- **Number of potential participants and their degree of specialisation in production:** for example, if there are only a few economic operators capable of competing for several lots, competition among them can be increased by bundling the lots.
- **After-market trade (subcontracting):** bundling may exclude smaller firms from bidding directly for the procurement contract, but it does not necessarily prevent them from executing part of the contract. Bundling lots is not generally harmful from a savings perspective in the presence of efficient after-market trade (subcontracting), but where there is an inefficient after-market trade it can impact on savings.

Division into lots and participation: The size of each lot determines which potential economic operators can deliver the requirements and thus participate in the process. In general, a firm will participate in a procurement process if its expected profit from the tendering process is high enough in relation to its bidding cost and to the other options available to it. So how can a contracting authority best split a contract into lots in order to increase the expected profit of potentially new economic operators, while at the same time retaining incentives for incumbent economic operators to participate?

The question is not an easy one, since economic operators are heterogeneous and therefore driven to participate by quite different incentives. However, economic operators can generally be distinguished by:

- their size (large or small);
- their position in the market (if they already have an established position as incumbents or if they are entrants).
 - **Size:** SMEs do not usually have sufficient capacity to execute a large contract on their own, and thus by designing large lots, a contracting authority may exclude smaller firms from the competitive process. However, in many cases the participation of SMEs is desirable; often highly specialised smaller firms 1) are more efficient than large firms in executing at least certain parts of the project; 2) they increase competition on the lots on which they bid, which lowers the expected cost; and 3) the existence of smaller economic operators may hamper collusive strategies among bigger players in the market. These arguments favour the division of the procurement contract into many small lots. On the other hand, the existence of complementarities between lots may induce economic operators to bid more aggressively for a bundle. This argument favours a bundled contract. The two opposite forces should be appropriately weighed case by case in order to reach the most appropriate contract strategy.
 - **Incumbent economic operators and new entrants:** If the group of potential economic operators that will compete comprises both well-established firms and new entrants, the tendering process should be designed so that new entrants perceive a reasonable chance of success. It may be that the

contracting authority is uncertain whether new entrants will be more efficient than incumbents, and therefore designing the competitive process in order to ensure equal entry does not necessarily sound attractive in terms of expected purchasing cost. However, if experience plays any role in correctly executing the procurement contract, then learning-by-doing might put new smaller economic operators in a position to be more competitive in the future. Consequently, splitting the contract into several lots may achieve two goals at the same time: fostering current participation and increasing competition in the future. Contracting authorities must ensure that decisions on division into lots and also on bundling do not favour national suppliers, are non-discriminatory, and ensure equal treatment of all participants in the tendering process.

Division into lots and collusion: The award of lots provides a method of splitting the lots between potential competitors, and it therefore makes it easy for bidders to achieve and sustain implicit or explicit collusive agreements so as to share the supply at inflated prices.

Broadly speaking, collusive agreements among economic operators aim to soften price competition. There are several collusive strategies for achieving such an outcome. When procurement contracts are split into several lots, colluding economic operators attempt to decide in advance which firm is going to bid on which lot as well as which financial offers are to be submitted. Intuitively, each cartel member has to obtain a contract at a price that is high enough to deter it from cheating, that is, from winning all of the contracts by undercutting its fellow conspirators.

Successful collusive co-operation between economic operators requires three main ingredients:

- agreement on prices/quantities
- effective monitoring of rivals' actions
- enforcement, that is, the ability to punish deviant behaviour.

Enforcement is a crucial dimension. Conspiring economic operators have to find it more profitable to adhere to the collusive strategy rather than cheating on the other conspiring economic operators in order to get a bigger share of the pie. Adherence to a collusive strategy can be maintained only if cheating triggers retaliation in future market interactions. Thus collusion requires repeated interactions over time.

The effect of division into lots on the risk of collusion among economic operators is influenced by a number of factors. Here are some pointers:

- **Number of participants:** Generally, the larger the number of participants the lower the risk of collusion, as the difficulties involved in agreeing within a cartel on how lots are to be "won" increase with the number of participants. Contracting authorities concerned about collusion therefore need to pick the optimum number of lots to ensure as many participants as possible.
- **Symmetry:** Symmetric economic operators (i.e. of similar capacity/dimension/market shares) find it easier to split symmetric lots of a similar economic value. In contrast, they find it more difficult to split asymmetric lots. In general, each conspirator's bargaining power within the cartel is proportional to its relative position in the relevant market. Therefore, to prevent collusion, the contracting authority should split the contract in such a way as to create some asymmetries between economic operators and between lots.
- **Number of lots:** Where there are more lots than participants, collusive allocation of lots then generally becomes more difficult for a cartel (although principles of rotation

or multi-procurement collusion may be agreed within a cartel where procurement procedures are repeated). In a more predictable market, a contracting authority may try to split a contract into more lots than the number of expected tenderers.

- **Nature of tendering format – simultaneous or sequential format in award of multiple lots:** Once contracting authorities have decided on the most appropriate division into lots, one additional issue has to be addressed: should the lots be awarded simultaneously or sequentially?

There are two ways in which a sequential format may facilitate collusion between economic operators when compared to a simultaneous one. The first, intuitive collusive drawback, is linked to the ability of cartel members to identify defections from the collusive agreement and to react quickly, within the same sequential award. The second is linked to the possible asymmetry within a cartel of colluding economic operators. The viability of cartels is often limited by the presence of “mavericks”, i.e. firms that are difficult to discipline as they have more to gain from undercutting a cartel (or less to gain from being part of it). If economic operators are asymmetric, a sequential competitive tendering can facilitate collusion if it allows the cartel to soften the maverick’s aggressiveness by allocating to that economic operator the last lot in a sequential tender. This action minimises the maverick’s incentive to defect and strengthens the viability of the cartel.

Further information

Publications

SIGMA (2015), *Public Procurement Training Manual* – Modules A1, A2 and A3, OECD Publishing, Paris, <http://www.sigmaweb.org/publications/public-procurement-training-manual.htm>

Public Procurement Briefs

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SIGMA (2016), *Division of Contracts into Lots*, Brief 36, OECD Publishing, Paris

SIGMA (2016), *E-Procurement*, Brief 17, OECD Publishing, Paris