Chapter 10

AN EXPLORATORY ANALYSIS OF PUBLIC PROCUREMENT PRACTICES IN EUROPE[1]

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INTRODUCTION

Public procurement is becoming increasingly important within the European Union. Its trend towards electronic support causes a significant process simplification and, at the same time, allows a better channel through which Governments try to monitor public expenditure. Procurement entities face almost similar problems and difficulties related to new technology adoption, market supply transformation and change management complexity. There exist, therefore, reasons to suggest that some coordination among procurement entities might be useful.

The EU Public Procurement Learning Lab has been developed in this context in order to share experiences and information in the field of public procurement. As the EU Lab has agreed in fostering internal debate through confidentiality, names of countries have been withheld from the discussion and randomly replaced with alphabet letters. This means that there is not a logical relationship between the alphabet letter and the name of the country. Confidentiality mattered in specific instances; for example when a country was asked to describe the relationship across national institutions.

EU PUBLIC PROCUREMENT LEARNING LAB: TASK AND STRUCTURE

History

During the Greek Presidency of the European Union, the 10th meeting of Ministers and the 40th meeting of Directors Generals of the Public Administration took place in Rhodes, June 6th 2003. Participant ministers considered of vital importance to meet on a regular basis, in order to exchange practices and ideas in the areas of cooperation and give overall direction to activities within the network. In this context the "EU Lab" instrument was considered the ideal tool in order to promote informal exchange of information and to establish a network among participants.

During the Italian Semester of Presidency, the Italian Department of Public Administration, jointly with the Ministry of Economy and Finance, launched a EU Lab on Public Procurement, named "EU Public Procurement Learning Lab." The objective of this initiative is to compare the activities and to share useful knowledge among the European procurement entities, in accordance to the resolution of 11th meeting of European Ministers responsible for Public Administration.[2]

The kick-off meeting took place on November 28, 2003 in Rome. Nineteen institutions, representative of sixteen countries, participated in the meeting.[3] During the event, the working programme of the initiative was defined. In order to achieve some results by the end of 2004, participants agreed to focus their activities on a limited number of topics. After a general overview among participants, three topics were chosen: procurement with small and medium enterprise, technical issues of procurement, auctions design and competitive issues.

In order to reduce the work of all participants it was decided to set up three Working Groups related to the topics chosen, in which participant **i**Institutions choose to participate according to their interest. The composition of the working groups is explained in the second paragraph.

The expected results from each Working Group will be reports outlining the EU situation, studies that analyse the high or low efficiency on specific practices, databases, and possible suggestions to the Ministers to enhance/update EU Directives, etc. Each Working Group will be responsible for defining results to be achieved, by developing issues on the chosen topic and sharing results with all the institutions that are not directly involved in the group.

In order to establish a timeframe for 2004, three meetings have been agreed. The first meeting was held in London in April 2004. During the meeting participants, representative of sixteen countries and eighteen institutions had the opportunity to assist in the presentation of three case studies (made from A, U and R) and to learn about progress of each working group. During the event, R agreed to host the next meeting on October 4, 2004. Over all, twenty-six institutions representative of twenty countries have participated in the meetings in Rome and London.[4]

Description of Participants

In order to understand results obtained from the questionnaire distributed, it is important to describe the governance organisation of the EU

Lab participants because each of the three governance organisations that we identified reflects specific activities in the field of public procurement:[5]

Large Administrations. Their purchasing activity is essentially addressed to their own organisation. Product categories and services are consistent with own requirements of each institution. Two EU Lab members are considered 'large administrations.'

Central Purchasing Bodies. Their purchasing activity is directed to buy not only for they own interests but also for the one of other public administrations. Product categories purchases are generally differentiated: paper and stationary; ITC products and services (including hardware and software, printers, desktop and PCs, maintenance); photocopiers; telephone services; cars; facility management; transport and postal services; furniture; oil and energy; travel services; food and meal coupons, etc… Ten EU Lab members are considered "central purchasing bodies."

Authorities. Their interest in public procurement is not due to direct purchase activity since their main object is to set rules for the public sector procurement. Their tasks are to assist the Public Administrations, verify correct use of procurement procedures and practices, make recommendations, promote competition and transparency, collect and publish statistical data on Public Procurement; implement the procurement legislation. We consider seven members among the authorities [6]

Working Groups Composition

The EU Lab activity is defined by three working groups, which try to focus the main aspects and issues related to public procurement (see Table 1 for Working Groups participants).[7]

The working group on 'Auction Design and Competitive Issues' aims at studying how different member institutions apply procurement auctions with the objective of finding a best practice. In order to achieve this result, this working group analyses every aspect that a procurement entity should consider in designing an auction. In fact, this choice has important consequences in terms of number of participants, kind of participants, savings obtained, etc. Moreover, this group considers the consequences of public procurement auctions in terms of competition among bidders.

TABLE 1

Small and Medium Enterprises	Auction Design and Competitive Issues	Technical Issues
C, F, I, I1, M, O, R, S, T	A, B, D, H, H1, I, K, L, M, Q, U, Y, Y1	D1, D2, E, F, G, P, P1, V, Z

Note: More than one institution sometimes represents one country. In this case we name institutions through the letter of the country followed by an Arabian number.

The working group on 'Technical issues' aims at sharing information among EU Lab members about those technical aspects related to public procurement. The main objective of the working group is to collect information about requirements that are necessary in each country for the suppliers willing to participate to electronic auctions. Examples of technicalities analysed are: the introduction of digital signature in e-auction, to increase the involvement of users in frame contracts,[8] the coordination of platforms compatibilities and so on.

The working group on SMEs aims at identifying problems related to experiences of different EU Lab members in terms of participation of small and medium enterprises to public procurement auctions. In fact, the co-ordination of government procurement and purchasing activities may create entry barriers for small and medium enterprise, which is problematic since one of the most important aspects of procurement design is to promote entry. Are frame contracts systems, framework agreements,[9] etc. poor in this respect? What are the experiences of the different EU countries with regard to this issue? How can the design of public procurement using frame contracts, framework agreements, etc. be improved to promote entry of small and medium enterprise? These are some of the questions that the working group on public procurement and SMEs will focus on.

QUESTIONNAIRES

Structure of the Questionnaire

Within the working group on auction design and competitive issues it has been decided to produce a questionnaire in order to collect information about member organisations and practices used running procurement auctions. The questionnaire is composed of six main parts:

Preliminary remarks. It stresses the objective of the questionnaire and gives a very general definition of 'auction.'

Glossary. It aims at facilitating the understanding of questions and at stimulating the attention of the reader. We provide a full list of the most common terms used in the field of auction theory in order to establish a common reference vocabulary.

General information about the organisation. In this part, questions are related to the main activities run by the entity, the number of employees, the institution for which the organisation buys, the value purchased during 2003, product categories purchased, the number of auctions performed by year, relevant legal aspects and other information considered of potential interest.

Recommendation. The objective of this part is to give advice on filling in the questionnaire correctly.

The next two parts represent the final objective of the questionnaire and contain questions related to the design of auction and competitive issues.

Auction design. This part contains questions about the main aspects that a procurement entity has to consider when designing procurement auctions. We submitted questions focused on eight aspects: Awarding procedures, number of lots, length of the contract, reserve price, participation requirements, awarding criteria, disclosure policies, and subcontracting.

Competition. This part contains questions related to the level of competition registered by the central purchasing body, methods to avoid collusion, and their own experience about participants' collusive behaviour.

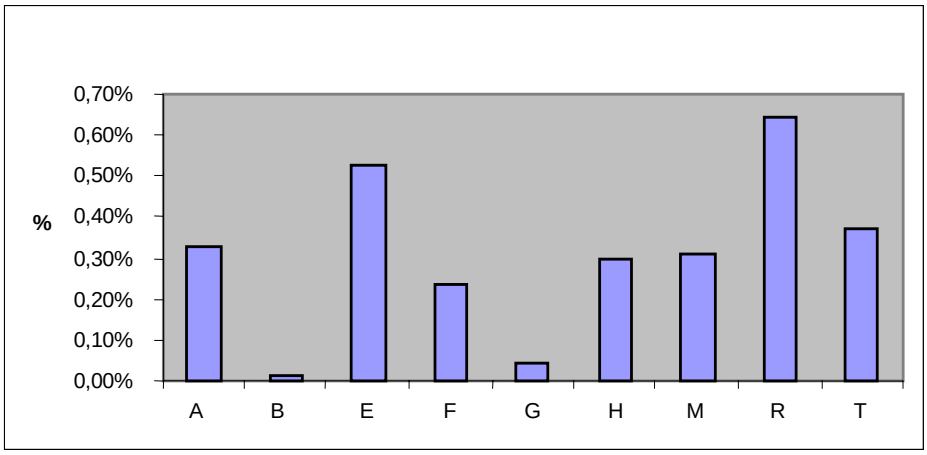
Description of Feedback Received

Questionnaires have been sent to thirty members of the EU Lab representing twenty-four countries and we received responses from eighteen institutions representing eighteen countries. According to the case of D, the questionnaire received represents two other institutions of the same country. As we already pointed out, members of the EU Lab are organisations that have different governance and we had evidence of the fact that usually central purchasing bodies have been more precise in describing the procurement activity (an exception is C an Authority that provided very precise responses). The main part of the questionnaire is related to procurement auctions and for this reason it is interesting to analyse for each organisation the economic value of auctions performed during 2003.

Since we are considering organisations from different countries (in terms of dimension) we calculated the value of goods and services purchased in respect to the total general expenditure of each country (see Figure 1). In this way it is possible to compare different organisations in order to understand the relative importance, in terms of purchases, that they have in their own country.[10] Data show that E and R purchase higher amount of goods and services in respect to the total general government expenditure. Instead, the percentage of purchased value over the total general government expenditure of A, H, M, T and F is around 0.3%. After having analysed the general aspects related to auctions, we are going to evaluate answers we had about the eight main aspects that a central purchasing body has to consider in designing a procurement auction.

FIGURE 1

Purchased value/Total General Government Expenditure



Source: Eurostat for expenditure and questionnaire for purchase value.

Awarding Procedures

Questions related to this aspect were aimed at assessing how different procurement entities award frame contracts, framework agreements and procurement contracts.[11] First of all we specify that by Auction we refer to what in the EU directives is defined 'open procedure' and 'restricted procedure' as well as to transposition of these procedures in domestic laws

of EU Member States. In an auction, the competing firms cut the price until no one is prepared to offer any lower (aspect that the competition is played in a single round, that bids are secret, and that the price goes down rather than up does not change the nature of "auction" of these procedures). Responses from the questionnaire point out that all organisations usually involved award frame contracts applying the 'sealed bid pay as you bid auction' (information about O is not available). In this case bidders submit bids in sealed envelopes; the person submitting the best bid, that meets the highest discount or the best offer, wins the prize and pays what he bid. This kind of auction can be implemented on-line also. In this case bidders submit their offers using an informatics tool and the auctioneer will 'open' the offers like he would have done in the paper based sealed bid auction. Reasons that lead to this choice are:

- It may reduce collusion, since bids and participants are kept secret until offers are publicly opened (A, M, T, E, C, N, G, P).
- It is very simple, transparent, ensures equal treatment to all bidders and reduces the participant's legal claim (A, M, T, E, C, N, G, P).
- The product can be specified very clearly, so the needed goods can be compared and offers based on the technical specification (A).

Most procurement entities use sealed bid auctions because information cannot circulate and this hinders the coordination among bidders during the procurement process. Moreover, since a participant could conveniently deviate from the cartel because no one has the possibility to punish him, the competition during the auction should be consistent. Another reason that makes sealed bid auctions appreciated by procurement entities is connected with their simplicity and transparency: the less complicated is the awarding procedure, the lower will be the probability that losing participants appealing in court will win.

Another point that we wanted to stress is whether procurement entities apply combinatorial auction with package bidding in multi-unit auctions. In an auction for multiple items, this allows bids made up of a 'package' (i.e., a set of items) and an associated payment. A bid is interpretable as an all-or-nothing offer for the specified package at the associated payment. This particular format could be useful when there are potential economies of scales in bidding for more than one lot and when splitting the supply contract into many lots can enforce participation in the auction. In fact, when a bundled contract is split into many lots, requirements to bid for each lot will be lower (since the value of the single lot is lower) and this should facilitate SMEs to enter the auction. However, it will not damage larger

enterprises that can exploit synergies bidding on a package of lots. Three institutions apply this format: A, B and M.

The new *EU Directive on the Coordination of Procedures for the Award of Public Works Contracts, Public Supply Contracts and Public Service Contracts* (whereas, No. 14), issued in March 2004, acknowledges the application of online auction and affirms that "Since use of the technique of electronic auctions is likely to increase, such auctions should be given a Community definition and governed by specific rules." For this reason, we decided to collect information about this new technique which is not necessarily a new procurement format (as mentioned earlier, it is possible to perform online auction applying the standard sealed bid format). Seven institutions (A, E, F, G, M, P and T) have taken advantages of online auctions.[12] All these organisations started applying online auctions between 2001 and 2004. The first institution was M (September 2001). Generally, online auctions are used in order to award both procurement contracts and frame contracts for goods and services. Different from the standard paper-based auctions, it is a 'common feeling' that this new technique is very useful because it permits the use of different kinds of auction formats. In fact, the electronic way allows many bids to be managed in a very short time. Usually web-based online auction enable efficient bidding between pre-qualified suppliers. Two different formats have generally been used:

- Descending auction also called reverse auction (M, T, G, F); and
- Multiple round descending auction (M).

In the first case, competing bidders cut the starting price[13] until no-one is prepared to bid any lower, and the final bidder then wins the prize at the final price he bid. Descending multiple round auctions are similar to descending ones, but the price decreases not continuously but round by round. A multiple round auction is the discrete version of the descending one. Each solution provides different functionalities such as:

- ***Bid decrements***. The minimum level by which a supplier can reduce the bid compared to the previous lowest one. The decrement varies depending on contract value and type of goods/services that will be purchased.
- ***Extensions***. This aspect is related only to the descending auction format. This auction can have a fixed time period (e.g., two hours), or it can operate with extension. T, for example, runs online auction of a certain planned duration (e.g., thirty minutes) but if any bids are received within the last five minutes then the online auction is given a five minutes

extension. This continues until there is a five-minute period of inactivity.

- ***Weightings***. More complex online auction will allow suppliers to update their bids in respect to any issue including, but not restricted to price, for example quality that is objectively measurable.
- ***Limited or unlimited number of rounds***. In the multiple-round format the number of rounds can be decided before the beginning of the procedure or can depend on the bidding activity of participants. In this case, it will be very important to fix a bid decrement in order to reduce the possible number of rounds.

Number of Lots

Procurement contracts can be awarded as single lot or multiple lots depending on several factors, e.g., market concentration, geographical distribution of supplier, participation of SMEs, etc. Answers to our questionnaire show that seventeen procurement entities divide the contract into lots[14] while the L does not usually split procurement contracts into lots.

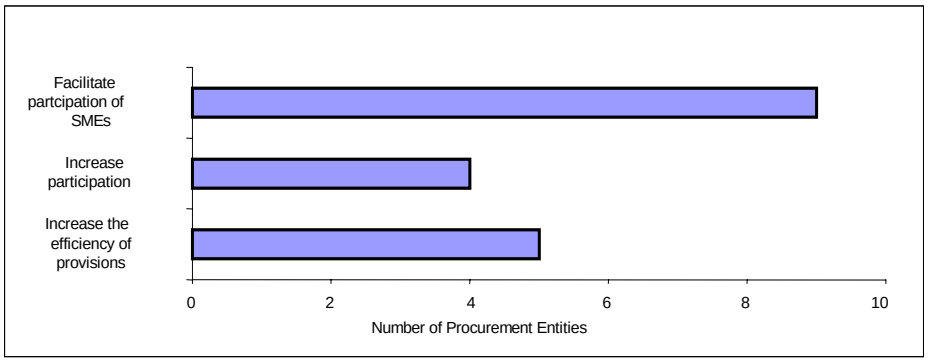
It is interesting to analyse the most important reasons that lead an agency not to award a contract as a single lot but through a certain number of lots. From the survey, we sorted out three main reasons:

- To facilitate the participation of SMEs in the auction (nine organisations): bundled contracts can hinder SMEs' participation to the auction because they could not be affordable in terms of dimension of supply, bank guarantees, delivery on the territory. B, given that the largest number of companies is SMEs, ensures that this group of companies have a maximum chance of getting government contracts. Eighty-five percent of private firms in this country are SME's and 80% of national contractors are SMEs. In an auction, the number of lots determines the function of the capacity of the SME's. If large quantities have to be split into small lots for this purpose, then B takes this step. B then stipulates that the bidders, if they wish, can submit a bid for several lots. By doing so the division of large quantities into various items does not act to the disadvantage of large companies. It is self evident that the right choice can only be made after a thorough market survey. Good communication with the business world is therefore necessary. It is therefore the outcome of the market survey that determines how many lots B will provide for the schedule of conditions.
- To increase the participation to the auction (four organisations): smaller lots give suppliers the opportunity to bid on just a part of the contract.

This should decrease the participation requirements and foster participation.

- To increase the efficiency in the provision of goods/services in terms of:
- Optimisation of transport's cost when the presence of relevant geographical dispersion of firms (three institutions);
- Qualitative differentiation existing in some product categories (three institutions) (see Figure 2).

FIGURE 2
Reasons to Split the Contract into Lots



When the contract is split into many lots, it is more difficult for a firm to exploit possible economies of scale because it does not know how many lots it will be able to win. This "uncertainty" will lead to higher bidding price. On the other hand, smaller lots are more affordable for smaller firms and this will foster participation. Since more firms will enter the auction, competition will be greater and participants should be more aggressive. Moreover, when the contract is split in qualitative or geographical lots the winning firm should be the only one able to supply the product with precise technicalities and in each defined area.

The number of lots depends on the market structure of the product auctioned (H, M, F, B and G). Regarding this aspect, M declares that the number of lots should be lower than the number of enterprises expected to enter in the auction, as suggested by the national Antitrust Authority. Generally, the market structures M, B, A and F allow for either geographical or qualitative lots. In the first case the contract could be split in many lots:

one lot for region, geographical area, etc. (let's think about food stuff auction where it could be useful to have different suppliers for different regions). Instead, in the second case, the contract is split in qualitatively different lots (let's think about a PCs supply, where the procurement entity is interested in purchasing high, medium and standard level PC.

Finally, almost all procurement agencies auction off lots simultaneously in order to promote a fair competitive environment and mitigate potential collusion occurring in sequential auctions. In fact, coordination among bidders is believed to be easier when lots are auctioned sequentially since suppliers can rotate in winning the auction. Also, F and E stress that awarding all lots at the same time allows easier budget and contract management, facilitates users and suppliers, reducing the quantity of administrative work and the costs and time related to the auction.

The Time Length of a Contract

The choice of contract time length may reflect particular characteristics of the good being auctioned and can have important consequences on bidders' behaviour. In fact, while longer contracts can be used to hinder collusion (short contracts can facilitate rotation among firms), they may constrain administrations to purchase good/services from the same firm for a long time, leading to undesirable lock-in (Milgrom, 2004). The administration should consider this trade-off and accurately choose the contract time length.

From the responses, we see that the length of contracts awarded varies from country to country and strictly depends on the object of the auction. Responses show that the contract's length depends on the requirement, dynamism and competitiveness of the market and the desired nature of the relationship with the supplier. Generally contracts for provision of goods are shorter while procurement contracts for services are relatively longer. This is quite logical since goods are obsolete (especially the technological one) and so it would be useful to have the possibility to change on time. Moreover, services often require high investment costs that need more time to be recuperated.

M provided data about the length of frame contracts auctioned until December 2003. Precisely, it affirms that the length of services' contracts varies from a minimum of six to a maximum of forty-eight months while that of goods' contracts from three to thirty-six. It makes it clear that Frame Contracts for services are long lasting in respect to the ones for goods (and this satisfies what we stressed above).

Reserve Price

The Reserve Price is the maximum amount the procurement entity is willing to pay for a certain good or service and reflects the perception of the procurement entity with respect to the expected discount. From our survey we find that many organisations consider the reserve price as an estimate that is not necessary to be disclosed to bidders (B, C, D, E, F, L, R, N). In fact, only six institutions (A, G, H, M, T and P) publish the reserve price before the auction. In establishing the reserve price five of them attach more weight to participation, fixing it at a sufficiently high level in order to foster participation. Moreover, having more participants to the auction means an increase in competition among bidders. However, institutions that usually do not disclose the reserve price have an internal expectation of the price that the result of an auction should not exceed. One of the reasons that leads to not disclose this price is expressed by F: "Disclosing the reserve price to participants can facilitate collusion." Nevertheless, even if the reserve price is not disclosed but bids exceed the expected price the procurement entity can:

- Request an explanation to the bidders; and
- Decide to declare the auction unsuccessful and rerun it (as underlined by B, referring to the Article 18 of the National law);

Usually, the reserve price (or the expected one) is calculated on the basis of average price that prevail in the market at the awarding date (resulting from thorough market analysis) and the previous awarding price (if available). Countries that do not have a reserve price will not be able to use a formula for evaluating the economical offer based on it. This has implications (see below) for the measurement of the worth in Euro of one technical point.

Participation Requirements and Grouping of Firms

Participation in the auction is usually conditional on specific requirements. Responses from the survey show that almost every organisation restricts the participation requiring technical, economical and legal qualifications. Among them, the four most important requirements that participants need to provide are (see Figure 3):

- Cumulative specific budget revenue;[15]
- Bank warranties;
- Ability to execute the contract; and

- Quality certificates.

In Figure 3 we did not mention participation requirements applied by one of the procurement entities, like: official documents for the digital certificate, international certificates, samples, catalogues, photographs of the good, adequate number of staff and equipment, volume of work relating to the subject of the procurement proceedings and references.

FIGURE 3
Participation Requirements

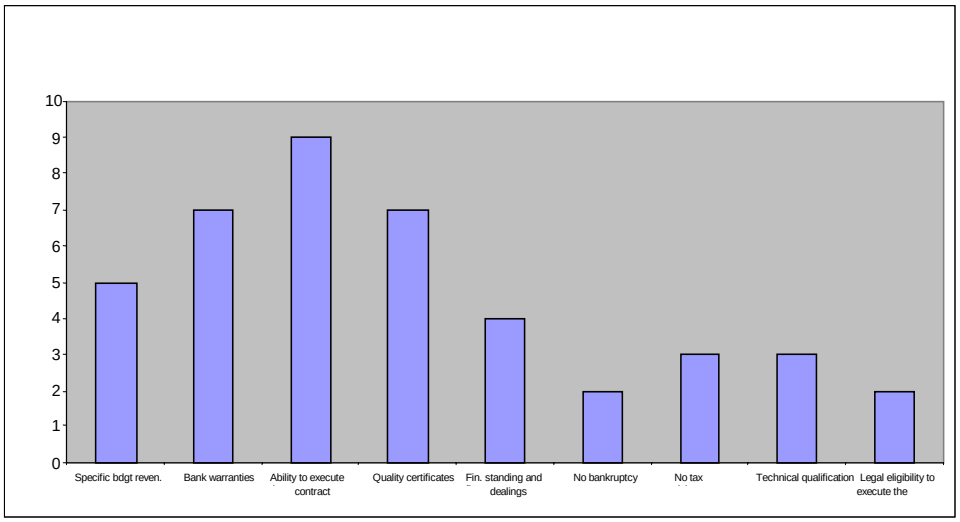
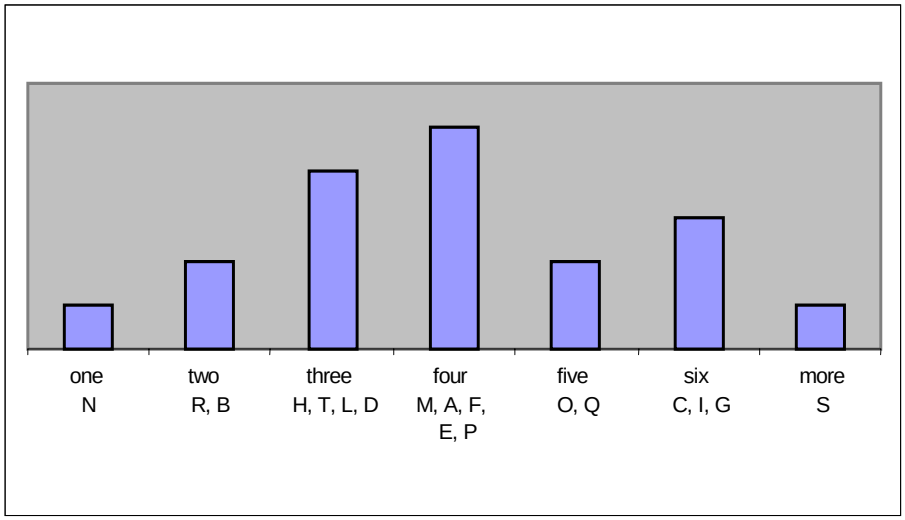


Figure 4 shows the number of participation requirements that each procurement institution use in order to guarantee legal and technical qualifications of tenderers. 50% of the survey requires four or five parameters in order to enter the auction. N is the only procurement entity to ask only one participation requirement (bank guarantees).

F and O underline that requirements change depending on the object of the auction, while several institutions (M, B, and R) affirmed they define participation requirements in order to facilitate the participation to the auction (particularly referring to SMEs), taking into account the competition aspect. B sustains that in order to obtain an auction result at the estimated price level, they want to allow only firms that have competences,

FIGURE 4
Number of Participation Requirements Requested by Institutions



guaranteeing a perfect execution of the contract. To achieve that result, they carefully select bidders and choose the level of barriers only after a thorough market investigation. Selection criteria always are justified in a written document meant for the functionaries who have to approve the tender. B also contacts a lot of suppliers or firms and shows them some fragments of the tender. They can give their opinion. B always asks them to justify their answers.

When requirements prevent participation, two or more firms can group together in a single larger entity, which satisfies the requirement for the auction. From our survey we see that almost each country in the survey lets firms aggregate together in order to submit a common bid. Once firms are grouped together they are considered as a single participant. National and European laws do not establish particular restrictions to grouping. Restrictions are eventually imposed via discretionary manner and they can vary case by case. In this contest M and P follow the indication provided by the national antitrust authority, which noted that, in order to obtain sufficient levels of competition in the auction, grouping should be prevented between two or more suppliers able to bid individually. In the same contest, the A cartel law covers grouping of firms whereby grouping should be prevented

between two or more firms able to bid individually. For other institutions, grouping of firms are not regulated and suppliers may group if they are able to bid by themselves as long as the aim or the effect of grouping is not a restriction of competition: genuine consortia bidding is allowed whereas collusive bidding is subjected to challenge and legal proceedings. For the L and P each member of a group has to meet the minimum financial, legal and technical capacity requirements as appropriate.

Awarding Constraints

Awarding constraints limit the fraction of supply that each firm can be awarded. Six procurement entities affirmed to use this procedure. M and A sustained that this choice has been mainly due to prevent one firm from becoming the monopolist in the market. Other motivations are:

- Increase participation, in particular for SME's which can only afford small lots;
- Increase competition: the constraints increase the possibility for each participant to be a winner and this fosters participation. If there are more participants the probability of winning is lower and this will induce firms to submit more aggressive bids; and
- Avoid lock-in; multiple-winners auctions do not constrain public administrations to purchase from only one firm.

Awarding Criteria

- Usually, contracts can be awarded on the basis of two different awarding criteria: the lowest price and the most economically advantageous offer. In the last case other aspects rather than price are taken into account. Responses pointed out that the majority of institutions use both the lowest price and the most economically advantageous offer and the last one is the most commonly used (H 65%, M 78%, I 90% and O 61%). The ratio behind this choice is that the price is not sufficient to identify the best offer, because there are other relevant aspects to be considered. For this reason, as the object auctioned becomes more complex, the weight of technical aspects is increased. This is to secure that all the relevant aspects of the offers are taken into consideration: price is still a focus point but product details like the range of products, geographical coverage, services (for example, electronic commerce solutions) and environmental issues are also taken into consideration.

The lowest price procedure is usually used when the good's features are well defined and price is the only element that can diversify offers. This type of procedure has been applied to IT services/equipment, Energy services, food, etc.

When there are other aspects rather than simply price relevant to award a contract they are considered in the Technical Offer. A certain number of technical points are decided (more technical points mean that technical aspects are more important) and they are distributed among different aspects. The awarding commission evaluates the different technical offers and gives relatives points. So, while participants decide among themselves on which technical aspects to focus their offer, points on the economical part are assigned using a particular formula.

From the questionnaire responses, we collected some formula:

- Recently, M mainly used the following formula: TP=PE+PT, and

$$PE = n * \frac{P_B - P_O}{P_B - P_S} \text{ when } P_O \geq P_S \; ; \; PE = n \text{ if } P_O \langle P_S$$

Where:
PE = Economical points (obtained as a function of offered price)
PT = Technical points
n = Maximum economical points available;
P_S = Threshold price (price that assigns the maximum number of points);
P_O = Offered price; and
P_B = Reserve price.

The formula used to calculate PE is mainly used because it is linear and so very simple. With this formula it is possible to calculate before the auction is run how many points an offer (in terms of price) will obtain. Moreover, it is possible to evaluate the economical value of one technical point. Last but not least, the economical points obtained do not depend on the other prices offered.

Also H generally awards contracts on the basis of the most economically advantageous offers. For this reason, as the object auctioned becomes more complex, they increase the weight of technical aspects. Each offer received obtains a technical score.

The formula proposed by C is the following one:

$$Total\ score = \frac{TPx}{TP\max} + \frac{Minimum\ price}{Px}$$

Where:
TPx: Technical points of the bidder x;
TPmax: Technical points of the best technical offer;
Minimum price: Lowest price offered;
Px: Price offered by the bidder x.

Disclosure Policy

The amount of information disclosed regarding the auction may have positive or negative effects in terms of risk of coordination and collusion among bidders. It is important to stress that each country has specific rules about the quantity of information to give to participants. Moreover, single institutions have the possibility of disclosing information that is not expressly mentioned by the law. For example M, before auctioning has to disclose all the information related to the auction in the Contract Notice as defined by the EU legislation, such as: the object/service auctioned, the number of lots, quantity or scope of the contract, length of the contract, conditions for participation, type of procedure, etc.[16] Moreover, in order to level informational asymmetries between new participants and incumbents, M chooses to disclose information about the needs of Public Administrations contacting potential participants, too. Once the contract is awarded, information related to prices offered and bidders are publicly disclosed and the winner is declared.

It is interesting to notice that the analysis of responses shows that there are differences among institutions in disclosing information, particularly considering prices and bidders. What kind of information is disclosed before the auction and after?

Before auctioning, responses to our survey make it clear that the number of expected bidders is not made public.[17] This decision is probably aimed at avoiding collusion among participants. But there is an exception: B decides to disclose the number of bidders before the auction and this is, according to the B's response, mainly directed to form a price.[18]

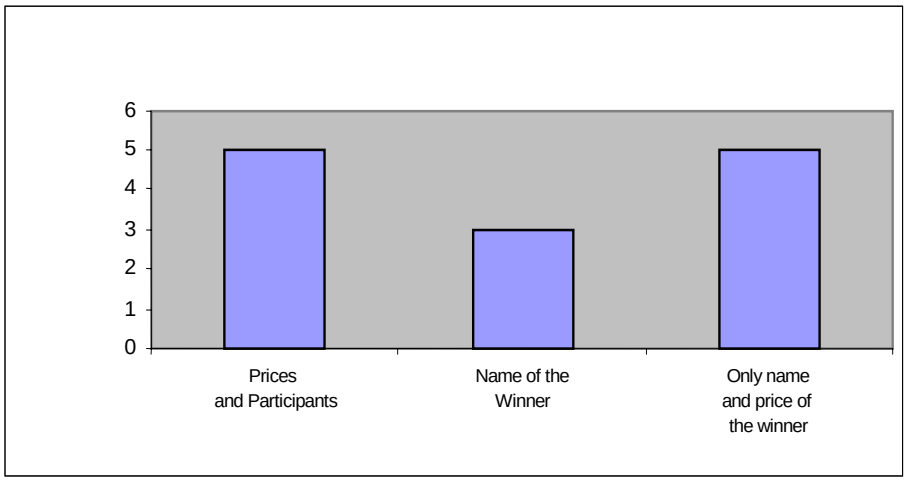
Information disclosed after the auction also makes it clear that there are relevant differences among institutions. More specifically, responses from three different kinds of information disclosed emerged (see Figure 5):

1. There are procurement entities that disclose names and prices offered by all supplier that participated in the auction (five institutions);

2. There are procurement entities that publish only the name and the price offered by the winning firms (five institutions);

3. And, finally, there are procurement entities that disclose only the name of the winning bidder (three institutions).

FIGURE 5
Information Disclosed after the Auction



Subcontracting

Subcontracting is considered of great importance. Allowing subcontracting can increase participation of SMEs otherwise potentially excluded. The recent European Directive considers that "in order to encourage the involvement of small and medium-sized undertakings in the public contracts procurement market, it is advisable to include provisions on subcontracting." So, it is important to underline that all institutions that sent back the questionnaire grant the possibility of subcontracting to winning firms. But the way in which they apply is quite different: for example 65% of institutions impose restrictions on firms that decide to subcontract, whereas 30% do not. Usually, firms have to provide all necessary documents to prove that potential subcontractors satisfy the requirements relative to subcontracted activities (45%). But not the whole value of frame contracts can be subcontracted: for example B underlines that the contracting authority wishes to keep control of crucial elements of the contract and only secondary activities are eligible for contracting. In this

context the quality of the good/service auctioned is considered of great importance.

Another important aspect, that has to be taken into account when subcontracting, is the monitoring of how the subcontract is executed. In this context two possible solutions are presented: on the one hand, institutions that allow the frame contract can directly monitor how the subcontract is executed, otherwise this activity is under the responsibility of the purchasing entity. From the answers to our questionnaire we note that the last case is the most common among institutions: 46% leaves to purchasing entities the activity of monitoring subcontracting. Only the 22% do it directly. M and A monitor only subcontracting related to IT frame contracts.

In the context of subcontracting it is also important to consider when the decision of subcontract can be made, because, whether subcontracting is decided after the frame contract is allowed or before, collusion can occur among participants (e.g., the winner subcontracts to losers). The possibility to subcontract only before the auction is agreed upon represents 50% of cases, whereas 23% agreed with the possibility to agree before and after the auction. The case of C is remarkable, because participants are not required to subcontract before the auction. The winner of the auction is deemed solely responsible for the whole contract and the issue of subcontracting is usually left entirely up to him.

Competition

The key of a successful auction is deterring collusive behaviour among participants and promoting competition. Market structures vary across types of goods and services, thus influencing outcomes of the performed auctions. Usually, the level of competition is connected with economic conditions governing different segments of the market (e.g., strong competition on IT equipment, low competition on fuel) and, obviously, with the design of the procurement process.

It is not simple to find an indicator that defines the level of competition during the auction procedure but we may assume that the level of discount obtained and the number of participants in the auction can be seen as an indicator of the level of competition reached. However, it is important to keep in mind how the discount is calculated. A reliable indicator could express the discount as the difference between the awarding price and the market price. Some institutions that are central purchasing bodies provided the overall discount registered. Sometime discounts are calculated with respect to the initial reserve price. This value may not have, however, any meaningful implication for competition.

We assume that the higher the discount as well as the number of participants, the higher is the level of competition in the auction (in the case of the discount registered this is a very strong assumption because it is strictly related to the price used to compare the awarding price).

On average no one registers discounts lower than 10%, whereas the highest discounts are registered by M[19] and P (around 20%). But there are also cases of low discounts obtained: in two online auctions performed by G. The bids received showed a discount of 1-5% more than the before with the paper based procedure.[20] Furthermore, according to the answers to our questionnaire, high competition is registered in Telecommunication and IT sectors.

Table 2 shows data related to the number of bidders participants in auctions for different products. In detail F, R and I provided in the questionnaire the minimum and the maximum number of bidders participating to the auctions, whereas O offers the average number of bids received.

As showed in Table 2, auctions performed by the F related to services may obtain 200 candidates, whereas, an auction related to the car sector may receive only five bids. For O the highest number of participants is registered in public works.

TABLE 1
Number of Bidders Participants in Auctions for Different Products

Institution	Description of auctions	Minimum	Maximum
F	Goods	5 (cars)	15 (furniture)
	Works	20	30
	Services	20 (common)	200 (design)
R	All (average)	5	20
I	All (average)	6	7
O	Public works	5,1 (average)	
	Services	4,5 (average)	
	Supplies	3,6 (average)	

Mechanisms Adopted to Avoid Collusion

It is straightforward that to achieve a good level of competition in the auction it is important to apply mechanisms and strategies aimed at avoiding collusion among participants. According to responses, it emerges that the most important mechanism adopted to avoid collusion is the use of Sealed bids, mainly because it prevents the possibility that each participant may have information about the offers of other participants. G and T underline that this result may be obtained also by using online auctions, because each participant obtains online information just about his bid. Moreover online bidding has the effect of increasing the visibility of "non-collusive behaviour." According to the T's experience, the adoption of techniques like online bidding are expected to achieve the right market price in response to their requirement. Moreover, G underlines that a minimum of three or four participants is necessary in order to have an acceptable level of competition when single lot contract is auctioned.

Responses point out other methods used in order to limit collusion:

- Forbid controlled or affiliated suppliers to take part to the auction;
- Establish the number of lots not greater than the number of participants;
- Augment the length of contracts to avoid rotation among firms;
- Limit the grouping of enterprises;
- Try to facilitate entry of SMEs;
- Split the contracts into lots accessible to SMEs;
- Monitor responses against expectations based on knowledge of the marketplace; and
- Use the press to stimulate participation.

Interaction with the National Antitrust Authority

An issue we are interested is related to the interaction between the public procurement entity and national antitrust authorities. Responses show that the 55% of institutions considered interact with the national antitrust authority whereas the 33% confirmed that there is not interaction.

The main forms of interaction are:

- Adoption of advices in 40% of agencies surveyed: when institutions perform an auction they ask the Antitrust Authority to emit an

opinion/feedback. Even if opinions are not binding, institutions take them into account in designing auctions:

- Steering group about procurement strategy designs.
- Investigation of practices encountered or suspected on a segment or sub-segment of the market;
- Discussion of issues such as the new EU Directives and methods to carry out public procurement under the threshold values while at the same time meeting guidelines of the Directives;
- Sharing of information related to national guidelines; and
- Cooperation in order to identify whether collusive behaviour takes place.

Problems of Collusive Behaviour

The kind of goods/services auctioned can lead to different levels of competition among participants. The collusive behaviour may also depend on the auction format chosen.

Thiry-three percent EU Lab participants show that in the recent past they have not had problems related to collusive behaviour among auction's participants. Other procurement entities identified other risky sectors including fuel, energy, lunch coupon, and envelopes.

Trade off between the Strength of Competition and the Quality Provided by the Supplier

Competition among participants determines final awarded prices and, in turn, impacts the quality provided by the winners. Reduced profit margins due to low awarding prices may be recovered by reducing the quality of aspects not negotiated in the contract. In this context it interesting to know whether institutions have the feeling that there is a trade off between the strength of competition and the quality provided by the supplier.

Fifty-five percent of institutions surveyed do not consider that low awarding price can lead to low quality. T confirms that by using the most economically advantageous offer as the award criteria and not emphasising price as the most important factor grants the possibility to seek the optimum combination without quality suffering. The F considers that for common supplies there should be no trade-off since firms are not going to launch a new production process to deliver a special low-quality product different

from what they sell to other customers. That would cost them much more than the cost of the low margin they had to concede to win the auction.

*Four institutions underlined, instead, that there exists a trade off between the strength of competition and the quality provided by the supplier. This problem is accentuated when public works are auctioned. This is the case of C and F. The F underlined that the answ*er *to the problem lies on the capacity of the public administration in awarding the contract to the best tender instead of to the cheapest one, but also to convince the candidates in advance that their effort in providing high quality will be rewarded. This is not an easy thing to do, especially during periods of strong budget constraints.*

CONCLUDING REMARKS

The answers to our questionnaire gave us a first impression regarding methods and instruments that European public procurement institutions use in order to implement procurement auctions. Many institutions apply different criteria and are regulated by different rules but we can underline some common features. First of all, what emerges is that the most common auction format used is the 'sealed-bid-pay-as-you-bid' auction. More than 90% of the survey generally applies this procedure. Basically, there are three main reasons that lead to this choice: it is expected to hinder collusion; it is perceived as very simple and transparent and it permits to specify products clearly. Moreover, this auction format can be implemented also in the online auction.

Up to now, seven institutions have applied this "new" procedure for auctioning goods and services. This online technique is useful because it allows institutions to take advantage of different kinds of auction format. In fact, aside from the standard sealed bid online auction, two more formats have been used: the descending auction (also called reverse auction) and the multi-round descending auction.

Another common strategy used by all institutions considered in our questionnaire is the division into lots of the supply contract. Also in this case we point out three main reasons that lie behind this choice: it facilitates the participation of small and medium enterprises; it increases the participation; it augments the efficiency in the provision of goods and services. Almost all procurement entities auction off lots simultaneously in order to mitigate potential collusion in sequential auctions.

Related to the length of the contract, responses show that usually contracts for provision of goods are shorter than the procurement services

ones because of the obsolescence of goods and the longer time needed to recuperate the initial investment. The reserve price, considered as the maximum amount the procurement entity is willing to pay, is published only by six agencies and five of them fix it sufficiently high to foster participation to the auction. The majority of institutions that answered our questionnaire restrict participation to at least three participation requirements representing technical, economical and legal qualifications. They are seen as a form of guarantee for the execution of the contract. Related to the awarding criteria used in order to define the auction winner, the "most economically advantageous offer" seems to be the most common. Usually, only very standardised products are awarded through the criteria of the lowest price. Responses underlined the existence of several different formulae that are usually applied to assign points to offers composed by the price and the technical part too. Regarding the information disclosed by the auctioneer, it is important to say that each country has specific rules about the quantity of information to be given to participants. Before auctioning, the procurement agency usually discloses as much information as they can and sometimes they directly contact potential participants to better design the auction. After the auction, instead, only five institutions over eighteen disclose participant's names and prices, mainly in order to avoid negative implication related to collusion. All institutions of our survey allow subcontracting but the way in which it is regulated varies among countries: 65% of institutions impose some kind of restriction on firms that decide to subcontract while 30% do not. Moreover, almost 50% of procurement entities leave to purchasing entities the activity of monitoring subcontracting while 22% do it directly.

Since promoting competition among participants should be one of the most important objectives of the auction design, we wanted to understand which practices each country applies in order to avoid and detect collusive behaviour. First of all we tried to find a robust indicator to measure the level of competition in an auction. We started considering the average discount obtained by each country but we realised that this index could be misleading because the way it is calculated may induce misrepresentation in the level of competition. As we did not have uniform data, further investigation is needed on this front. However we found that usually higher discounts are registered in the IT sector. Then we considered the number of firms that participated in the auction. In this case, we had little reliable data. After that, we analysed mechanisms adopted to avoid collusion. Once again, we found that institutions believe that the most important mechanism adopted is the use of the sealed bid auction (either in the standard paper based auction or in the online one). Other common methods used are: to

augment the length of the contract in order to avoid rotation among firms; to facilitate entry of SMEs; to forbid controlled or affiliated suppliers to take part to the auction, etc. From the answers to our questionnaire we also found that more than 50% of institutions consider the interaction between the procurement entity and the National Antitrust Authority as a useful tool in order to detect collusion.

Finally, we would like to stress that from the answers to the questionnaires received regarding the issue of the participation in the auction of the SMEs tends to be vigorous. The majority of institutions contacted pointed out this issue and actively try to involve SMEs into auction procedure. Procurement entities aim at enforcing SMEs participation through different mechanisms such as: using particular auction format (like the combinatorial auction with package bidding); splitting the supply contract in many smaller lots; setting the reserve price at sufficiently high level; defining less restrictive participation requirements; promoting grouping of enterprises among small firms; using awarding constraints in order to have more than one winning supplier; disclosing as much information as possible to level informational asymmetries; promoting subcontracting.

The general trend in Europe toward aggregating purchases in a small number of Agencies increases further the relevance of such an issue and will be the object of another group of countries in the EU Lab.

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NOTES

1. While this report draws on the inputs of the EU Public Procurement Learning Lab the authors bear full responsibility for the content of this paper, which is not to be considered as an official paper from any EU country.
2. Rome, 1 December 2003. During the meeting participants declared “their intention to pursue and enhance informal European Cooperation

in the field of public administration, so that the constant exchange of information and best practices between administrations, and the performance of joint activities can foster the process of modernising the administrations at the national and European levels."

3. We do not consider those institutions, such as national embassies, that were not requested to fill in the questionnaire.
4. Four institutions did not participate in the two meetings but they asked to be members of the EU Lab, anyway. For this reason, they received the questionnaire.
5. As you will see not all the institution members are considered in the following description because we do not have available data.
6. We ranked only institutions that gave us precise data about their governance organisation.
7. N and J did not join any working group.
8. A "frame contract" is a general contract between a procuring entity and an economic operator for the delivery of goods (or the providing of services) within a certain time frame at specified price and conditions. Ordering Units can buy the goods (or the services) provided for in the contract, at the price and conditions agreed, by sending an order that, by completing terms and conditions defined by the frame contract (i.e. it indicates quantity, place of delivery, date of delivery, etc.), becomes a fully valid contract.
9. A "framework agreement" is an agreement between one or more contracting authorities and one or more economic operators, the purpose of which is to establish the terms governing contracts to be awarded during a given period, in particular with regard to price and, where appropriate, the quantity envisaged. The awarding of contracts based on Framework Agreements is in general more flexible than that of Frame Contracts; in fact in Framework Agreements there can be a choice between multiple operators and/or a "second stage competition" on one or more economic variables that in Frame Contracts tend to be fully pre-determinated. According to EU Directive 18/2004 the second stage competition for Framework Agreements must comply with the following procedures:

- "Where a framework agreement is concluded with a single economic operator, contracts based on that agreement shall be awarded within the limits of the terms laid down in the framework agreement. For the

award of those contracts, contracting authorities may consult the operator party to the framework agreement in writing, requesting it to supplement its tender as necessary."

- "Contracts based on framework agreements concluded with several economic operators may be awarded either:- by application of the terms laid down in the framework agreement without reopening competition, or- where not all the terms are laid down in the framework agreement, when the parties are again in competition on the basis of the same and, if necessary, more precisely formulated terms, and, where appropriate, other terms referred to in the specifications of the framework agreement, in accordance with the following procedure:(a) for every contract to be awarded, contracting authorities shall consult in writing the economic operators capable of performing the contract; (b) contracting authorities shall fix a time limit which is sufficiently long to allow tenders for each specific contract to be submitted, taking into account factors such as the complexity of the subject-matter of the contract and the time needed to send in tenders; (c) tenders shall be submitted in writing, and their content shall remain confidential until the stipulated time limit for reply has expired; (d) contracting authorities shall award each contract to the tenderer who has submitted the best tender on the basis of the award criteria set out in the specifications of the framework agreement."

10. Institutions not mentioned in the figure did not give any answer on this aspect. This consideration is valid also for all others Figures and Tables of the paper.

11. "Procurement contracts" are contracts for pecuniary interest concluded in writing between one or more economic operators and one or more contracting authorities and having as their object the execution of works, the supply of products or the provision of services.

12. M, F and T performed online auction below and above the threshold defined in the OJEC; instead G run online auction only below the former EU threshold of 130.000,00€.

13. The procurement entity can choose either a reserve price by itself or to set the first bid received as a starting price (G).

14. A as B, awards 50% of frame contracts through multiple lot auctions; M splits the 40% of its frame contracts (but this percentage is growing); N affirms that usually large supply contract are divided in lots.

15. It would be very interesting to analyse thoroughly the average ratio between the specific budget revenue required and the economic value of

the auction. In fact the higher is this ratio and the more difficult will probably be for the SMEs to enter the auction. In fact, this result means that the specific budget requirement is very high and so difficultly affordable for SMEs. This consideration is even more important when we speak about central procurement entity where the value of auctions run is generally substantial. Unfortunately, at the moment, we do not have reliable data on this matter.

16. In addition to this information other institutions (A, R) disclose also the following information: terms and conditions of the contract, duties of the bidder and of the buyer, the needs of the Public Administrations, the contracting authorities, the estimated turnover on the framework agreements, the reserve price, technical requirement.

17. If the purchasing entity makes investigations about potential participants in order to better design the auction it would have an idea about the number of firms that will enter.

18. B stresses that if the number of expected participants is higher, revealing that number could increase competition. Otherwise, B recognises that in the case of a weak level of suppliers, publishing the number of expected participants could keep their offered prices higher. This is why publishing or not the expected participants cannot be an obligation for the procurement entity.

19. M calculates the discount as the difference between the awarding price (in terms of unit price) and the price published by ISTAT, a national statistical centre.

20. G only compares the awarding price with the expected awarding price.

REFERENCES

European Parliament Council (March 31, 2004). “Directive 2004/18/EC on the Coordination of Procedures for the Award of Public Works Contracts, Public Supply Contracts and Public Service Contracts.” *Official Journal, L 134* (30/04/2004): 0114 - 024

Milgrom, P. (2004). *Putting Auction Theory to Work*. London, UK: Cambridge University Press.