PROCUREMENT DESIGN: LESSONS FROM ECONOMIC THEORY AND ILLUSTRATIONS FROM THE DUTCH PROCUREMENT OF WELFARE-TO-WORK PROJECTS

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I. INTRODUCTION

When a public institution intends to procure a project, it faces the difficult task to find the procurement mechanism that is most likely to satisfy the institution’s goals. The set of potential mechanisms is a priori unbounded, and not sufficiently restricted by legal requirements to make the choice of the optimal mechanism an easy one. For instance, in the European Union, public procurement is subject to Community rules, which require public bodies “to follow transparent open procedures ensuring fair conditions of competition for suppliers” (European Commission, 2007). Indeed, there is a large range of transparent, open, and fair allocation mechanisms, and some will be better suited to contribute to the public institution’s targets than others. Imagine, for instance, a lottery in which all parties that show interest in completing the project have an equal chance of winning. This mechanism is transparent (the rules are simple and well-defined), open (anybody can participate), and fair (all have the same probability to win), but it is very unlikely that it will select the bidder that is best able to finish the project.

For many practical instances it is well known that in procurement design, the devil is in the details: the success or failure of procurement may depend crucially on the subtleties of its design. In other words: procurement design is not a trivial exercise. In addition, a failure of procurement may fuel arguments in favor of in-house provision, also for projects for which procurement may work very well, if not better. Therefore, the following question begs for an answer: How (not) to design public procurement?
In practice, this question is a very relevant one. In 2002, total expenses on public procurement in the European Union amounted to roughly €1500 billion, i.e., 16% of GDP (European Commission, 2007). Similar figures apply to many other developed countries. Of course, the other chapters in this handbook are centered around the same research question as the one above. In the current chapter, we will aim to answer it on the basis of lessons from economic theory, in particular auction theory and mechanism design.\textsuperscript{2}

We will focus on procurement in which the public institution invites several bidders to compete with each other to complete a project. There is a large range of procurement mechanisms, including auctions and beauty contests. In an auction, for instance, the institution could allocate a project to the bidder having the cheapest offer, who could be paid her bid once she has finished the project. A typical example of a beauty contest is competition on the basis of prototypes. The bidder with the best prototype wins. Other procurement mechanisms are lotteries (the government selects the winner at random among all bidders that show interest in the project), grandfathering (the government directly assigns the project to a preferred supplier), and benchmarking (the government selects a supplier among a set of several on the basis of performance in past projects).

We will answer the following sub-questions in this chapter:

- Which allocation mechanism is the most likely to fulfill the public institution’s goals, given the circumstances?
- If the institution decides to use a particular allocation mechanism, what kind of practical things does it have to keep in mind?

We will answer these questions in Sections II and III respectively. In Section IV, we will illustrate the main lessons using an example from the Dutch practice, namely procurement of welfare-to-work programs. In the conclusion in Section V, we will summarize the main lessons. In addition, we will argue that the theory remains silent about many practically
important questions. This allows us to finish with several interesting avenues for future research.

II. THE OPTIMAL PROCUREMENT MECHANISM

In the introduction, we mentioned five procurement mechanisms: auctions, beauty contests, benchmarking, grandfathering, and lotteries. Which mechanism is optimal? In order to answer this question, we need to be more precise about the objective of the government. Hereunder we will assume that the government wishes to select a “supplier” from a set of “bidders” to complete a “project” in order to maximize “social welfare”. Social welfare is higher (1) the higher the quality the winning bidder delivers, (2) the less compensation the winner requires for completing the project, (3) the richer the spin-offs from the project, (4) the more the government has been able to keep its reputation as a trustworthy party, (5) the lower the organizational costs, (6) the lower the cost of participation, (7) the more cost efficient the winning bidder, and so forth. Some of these dimensions may be in conflict with each other, so that the government faces the difficult task to find a procurement mechanism that is most likely to result in high social welfare.

As said in the introduction, there is a large range of mechanisms the government can apply. However, lotteries, grandfathering, and benchmarking will hardly ever be optimal. In the remainder of this chapter, we will only focus on auctions and beauty contests. In contrast to lotteries and grandfathering, auctions and beauty contests let several suppliers compete for the project, which forces them to offer high quality for a sharp price. Although competition is present in benchmarking, we believe that auctions and beauty contest perform better because (1) benchmarking could encourage bidders to put socially suboptimal excessive effort in earlier projects, (2) the performance of bidders in different
projects is difficult to compare, (3) the possibilities to expropriate the surplus of the supplier are limited, and (4) benchmarking limits the entry of new firms.

The difference between auctions and beauty contests is that in an auction, the winning supplier is selected on the basis of a well-defined rule, while in a beauty contest, the selection decision has at least some degree of subjectivity. A typical example of an auction is procurement in which the government selects the winner on the basis of the lowest price to complete the project. A typical beauty contest is a competition in which the most creative, innovative or imaginative proposal is being selected based on a subjective evaluation of several proposals. This implies that during the evaluation process, there are no well defined evaluation criteria. Observe that a request for bids (RFB) is an auction, and a request for proposals (RFP) a beauty contest.¹

Note that both an auction and a beauty contest could be multidimensional. Suppose that the government selects that bidder with the highest “score” \( S = wQ - P \), where \( Q \) is a quality dimension, \( P \) the price supplier wishes to receive once the project is finished, and \( w \) is the weight the government assigns to quality. By calculating \( wQ \), we assign a monetary value to quality level \( Q \). This auction is referred to as the “scoring auction”. For instance, for the construction of a road, the government could ask a bid on price and the delivery date, where quality is higher, the earlier the delivery date.

Also a beauty contest can incorporate multiple criteria including objective ones, such as the price. However, as long as there is at least one criterion that is based subjectively, we refer to these mechanisms as a beauty contest. Cabizza en De Fraja (1998) report on procurement for television franchises, where the seller of the license is concerned with the quality of broadcast program. The contest was organized as a sealed bid auction, but the seller reserved the right to make a subjective judgment on the quality. In our terminology, ¹

¹ For a discussion of the differences between RFBs and RFPs, see Thai (2004).
this is a beauty contest. Indeed, governments usually turn out to use beauty contests for public procurement.

This observation is remarkable as it seems that economic literature strongly advocates auctions over beauty contests. For instance, Binmore and Klemperer (2002) argue that “the difficulty of specifying and evaluating criteria for a beauty contest makes this a time-consuming and opaque process that leads to political and legal controversy, and the perception, if not reality, of favouritism and corruption.” They add that “an auction can raise staggering sums of money to support the public finances. […] A beauty contest, by contrast, can give away valuable assets at a fraction of what they are worth.”

However, Binmore and Klemperer’s reasoning does not seem to be complete. First, Binmore and Klemperer presume that a monetary bid cannot be part of a beauty contest, while clearly it can. Second, in some cases, it is hard to imagine that the government uses an auction because a priori it is simply impossible to define a sensible objective allocation rule. A good example is a research contest in which academics compete for grants on the basis of research proposals. It is difficult to imagine an objective allocation rule that selects the most promising proposals.

Indeed, there are good reasons for preferring beauty contests which boil down to the following, simple, rule:

**Lesson 1:** Use an auction if all relevant quality dimensions can be defined ex ante. Otherwise a beauty contest is preferable. Benchmarking, grandfathering, and lotteries are seldom optimal.

This rule does give some credit to researchers who advocate auctions over beauty contests. The starting point is that auctions are the best choice: only if the government cannot specify a well-defined rule by which it can evaluate bids on all relevant quality
dimensions, it should use a beauty contest (Dykstra and van der Windt, 2004). There are two motivations for this bias in favour of auctions (Asker and Cantillon, 2007). The first one is that an auction does not have an inherent commitment problem. The first-best mechanism may require that the government employs a minimum value that it wishes to obtain for the project. In an auction, the government may communicate a minimum score to the bidders, because, by definition, the bidders know the scoring-rule ex-ante. This is, again by definition, impossible in a beauty contest. So, if the scores on all bids turn out to be below the minimum score the government has in mind, it may be very tempting to still assign the project. The second reason why auctions are preferable over beauty contest is that by publishing the scoring-rule, the government reveals its preferences over price/quality combinations. In a beauty contest, the bidders have to guess the preference. Asker and Cantillon (2007) show that the winning offer in a beauty contest will turn out to be less favourable than the one in an auction.

III. AUCTION AND BEAUTY CONTEST DESIGN

Once the government has decided on the selection mechanism, it should fill in the details of the mechanism. In this section, we will discuss several lessons from economic theory that relate to the design of auctions and beauty contests. The next subsection includes lessons that apply to both auctions and beauty contest while in subsections 3.2 and 3.3, we will focus on lessons that are specific for auctions and beauty contests respectively.

3.1 Auctions and beauty contests

Let us first summarize the main lessons from the literature that apply to both auctions and beauty contests.
Lesson 2: There is no one-size-fits-all design

The first lesson is a negative one. Different procurement situations may require different mechanisms (Klemperer, 2002). Two commonly used auction types to select the winner on the basis of price alone are the lowest-price sealed-bid auction and the descending auction. In the lowest-price sealed-bid auction, all bidders independently submit a bid. The lowest bidder wins the project, and receives his bid from the government.\(^4\) The descending auction starts with a high price, which is decreased until only one bidder is left. This bidder wins, and the government compensates him with the price at which the runner-up left.\(^5\) The lowest-price sealed-bid auction is usually preferable over the descending auction if competition is "weak" (there are only a few potential bidders, or one bidder has a clear advantage over others). The reason is that in the lowest-price sealed-bid auction, weak bidders have a positive probability to beat a strong bidder, because the latter finds it attractive to bid high, so that he may lose against a competitive offer by a weak bidder. By contrast, in a descending auction, the strong bidder will observe the weak bidders’ bids, and can always overbid them, so that a weak bidder has zero probability of winning. In symmetric situations with ample competition between strong bidders, the descending auction performs better than the lowest-price sealed-bid one, because it is the former more likely to select the most efficient supplier (Klemperer, 2002).

Lesson 3: The devil is in the details

Details in the procurement environment may highly influence the success of procurement. For instance, the governments of the UK and the Netherlands employed the same auction type to allocate UMTS\(^6\) licenses. The British auction was considered a huge success: it attracted a new bidder to the market for mobile telecommunications, and raised a staggering £30 billion, or €650 per capita. The auction in the Netherlands was much less
successful: the only potential entrant that entered the auction left the auction after threats by one of the incumbents. The auction ended soon after that, at a much lower price than the one in the UK: €170 per capita. Most economists agree that the key difference between these auctions was the number of bidders with an existing network on the mobile telecommunications markets: there were 4 bidders in the UK, and 5 bidders in the Netherlands. The following lessons will help the designer to fill in some of the details that may render procurement a success or a failure.

Lesson 4: Pre-screen

An obvious contribution to the success of procurement is that the project, once assigned to a bidder, is completed. In other words, a procurement procedure can be hardly considered successful if the winning bidder defaults on his obligations. However, firms that are on the edge of bankruptcy may find it attractive to enter the contest for the following two reasons. First, they bid for “options on prizes” rather than on “prizes”. If the project turns out to be cheaper than expected, they make a nice profit. But if it turns out to be more expensive, the firms will default, which they probably would have done in any case if they had not participated in the contest (Klemperer, 2002). Second, they have an advantage relative to financially healthy firms, because the latter have to take the downward risks of the project into account, and are therefore willing to bid less aggressively than underfinanced firms (Klemperer, 2002). In other words, it is advisable to pre-screen the bidders on the basis of their financial position. Nevertheless it is a good idea to restrict requirements on financial situation to the minimum that is necessary. If the requirement on the minimal annual revenue of the supplier for building an identical road is twice as high in one town than another town (a situation that is not uncommon in the Netherlands) is a sign that pre-selection rules are applied in a rather arbitrary manner.
A different type of pre-screening is based on bidders’ experience or reputation. Although experience and reputation are good signals of capability of carrying out a project, the procurement agency should be careful about the requirements being too restricting. We advocate against using experience or reputation for the same reasons that we have advocated against selection on the basis of benchmarking (see Section II above). Still, it could be advisable to exclude a blacklist of bidders who performed extremely poorly in past projects.

Lesson 5: Keep the cost of entering the procurement as low as possible

Usually, participation in procurement is not without costs for the bidders. They have to gather information on the project, prepare a bidding strategy, and submit bids. The government may affect each of these. It may reveal information about the project, apply simple or complex auction rules, and require a bid that is just a single number (e.g., the price) or a business plan consisting of several pages. Because the driving force behind the success of procurement is competition between bidders, the more bidders enter the contest, the more likely the end result is satisfactory for the government. Therefore, it makes sense for the government to keep the entry costs as low as possible (Milgrom, 2004). Still, sometimes it is better to exclude some bidders, particularly those who are close to bankruptcy (see Lesson 4), or to only let a limited number of preferred suppliers compete in a beauty contest (see Lesson 14). However, high entry costs are unlikely to select just those bidders the government wishes to enter.

Lesson 6: Avoid collusion

The key idea behind using either an auction or a beauty contest is that competition between bidders results in high quality for a sharp price. These benefits may be easily lost
if bidders manage to form a cartel, and make agreements to keep the price high, or quality low (Klemperer, 2002; Salmon, 2004). Although collusion is a violation of the competition law, the literature offers many examples of successful cartels in procurement. For instance, Pesendorfer (2000) describes collusion among bidders for school milk contracts, and Boone et al. (2006) report on a large scale cartel in Dutch construction procurement. Motta (2004) argues that “it is better to create an environment that discourages collusion in the first place than trying to prove unlawful behaviour afterwards”. This is especially relevant in public procurement where the main target of the procurement agency is to get the project done and promoting competition is just a mean of achieving that in the most efficient way. Therefore, the procurement agency suspecting anticompetitive behaviour is inclined not to report unlawful behaviour because of the possibility that the procurement is being stopped by the Competition Authority.

How to prevent collusive behaviour? We will see later that the government may impose a sharp maximum price or minimum score to prevent collusion. Moreover, Robinson (1985) argues that the lowest-price sealed-bid auction is less conducive to collusion than the descending auction. The reason is that in the latter, the “designated winner” can still react if a cartel member deviates from the agreement by submitting a bid below the agreed price by bidding an even lower price. This is not possible in the sealed-bid auction, because each bid is “once and for all”.

Lesson 7: Reveal all relevant information

There are at least three reasons that the government may reveal information that is relevant for the bidders when preparing a bid on the project (Klemperer, 2002 and Milgrom, 2004). First, this information may reduce uncertainty about the costs to complete the project, which reduces the risk premium that has to be paid to the winner. Second, the
revealed information reduces the risk on the *winner’s curse*, i.e., the winner finding out after the auction that his bid was too optimistic. If the government is hesitant in publishing relevant information, bidders will take into account that they may fall prey to the winner’s curse, and may be cautious in bidding. Third, all information revealed about the rules of the auction (scoring rule, maximum bid) strengthen the government’s commitment to the rules. Suppose that the government has a maximum price in mind above which the project will not be assigned. If the government does not announce the maximum price, it may feel tempted to accept a bid just above this price if it does not receive lower bids. The bidders will take this into account, and will bid less aggressively (see also Lesson 11).

In practice, some procurement agencies apply communication rules that ensure that each bidder has the same information. For instance, bidders are allowed to ask questions on the project and they are being answered extensively. All competitors are informed of the question and the answer. The disclosure of information on the maximum price could however lead to a problem. A procurement agency announcing a maximum price should bear in mind that the announced maximum price could easily become the focal price, inducing each competitor to charge the same price and competition being restricted to the other dimensions of the auction or beauty contest.

*Lesson 8: In the case of asymmetries, give weak bidders an advantage*

In many procurement situations, one bidder (usually the incumbent party) has a clear advantage over other bidders. Because weak bidders may judge it unlikely to beat the strong bidder, they may refrain from bidding at all, so that the incumbent party faces little competition in the contest. The government may stir up competition by giving weak bidders an advantage. One way to do so, is giving “bidding credits” to weak bidders
(Myerson, 1981). For instance, if a weak [strong] bidder wins, he receives 120% [100%] of the price that he offered.

However, such bidding credits could be in conflict with EU state aid law (Maasland et al., 2004). Whether or not this is the case depends on the standard with which the “(potential) distortion of competition”-criterion is applied: while economists have stressed the importance of using a “total welfare standard” for testing whether there is a distortion of competition, in the practice of state aid cases it is often the “(negative) effect on rivals standard” that is used. Such problems do not arise outside the EU, as other countries are not concerned of interstate trade and state aid to this degree.

If the government is restricted to non-discriminatory rules, the lowest-price sealed-bid auction may attract more bidders than the descending auction. The reason is that the lowest-price sealed-bid auction is more likely to allocate the project to a weak bidder than the descending auction (as we argued in our motivation to Lesson 2). Another way to attract weak bidders to the contest, and (hence) encourage competition is to give a premium to the runner-up for driving down the price (Goeree and Offerman, 2004 and Milgrom, 2004.).

Lesson 9: Provide ex-post incentives

The government should give the winning supplier incentives to complete the project as satisfactory as possible. For instance, if the government cares about the time of completion of the project, the supplier should be rewarded [punished] if he completes the project before [after] the deadline. Moreover, in order to avoid overly optimistic bids, the government should force the winning bidder to fulfil the promises he makes in the contest. If not, bidders are tempted to promise the sky, so that the bids amount to cheap talk and in
turn lose discriminatory power (see also Lesson 10). Of course, the government should announce before the contest that these incentives will be provided (cf. Lesson 7).

Lesson 10: Fix the winning bid in a contract

In order to avoid “cheap talk bids”, the winning bid should be fixed in a contract. Consequently, no decision should be based on criteria that are not ex post contractible (Janssen, 2004). If the desired quality is not contractible (perhaps because it is not measurable) then one should not base the decision on that criterion.

Lesson 11: Commit to the rules

Sometimes the government may be tempted to “change the rules” during or after the contest. For instance, if a bidder violates the rules, the government may be reluctant to exclude this bidder from the auction, especially if it results in a less favourable outcome of the auction. Moreover, in the case of a bidding cap (see Lesson 13), the project may remain unassigned if none of the bidders beats the cap. It may be tempting to organize a new contest with a looser bidding cap. However, the government’s reputation in future contests may be at stake if it breaks its own rules. So, for its future credibility, commitment to the rules is of the highest importance (Klemperer, 2002, and van Damme, 2002).

3.2 Auctions

The following lessons apply to auctions alone (and not necessarily to beauty contests).

Lesson 12: Attract as many bidders as possible

The starting point of any auction (or procurement mechanism in general) is attracting bidders, because “an auction can hardly be considered optimal if no bidders choose to
participate” (Milgrom, 2004). So each auction should start with a marketing campaign to attract bidders. Generally, the more bidders the better. Many issues are automatically resolved if many bidders participate in the auction. For instance, it is much harder to collude with many bidders than with a few (see Lesson 6). Moreover, for the seller it is less important to impose a tight bidding cap (Lesson 13), because competition between bidders will encourage them to bid aggressively in any case. In addition, if many “strong” bidders enter the auction, it is not necessary to favor “weak” ones (Lesson 8). Next to a marketing campaign that informs potential bidders that the government will organize an auction, the government can make it attractive to enter the auction by keeping bidding costs low (Lesson 5) and using transparent and “fair” rules (Milgrom, 2004).

Lesson 13: Impose a bidding cap

Imposing a bidding cap in the sense of a maximum price or minimum score is good policy for at least three reasons. First, for any project, there is a maximum price the government is willing to pay for the project to be completed. Bids above this price should not be accepted. Second, the government may impose an even lower maximum price in order to discourage collusion (see Lesson 6). The lower the maximum price, the less attractive collusion is, because the lower are the spoils that the cartel members can divide among themselves. Third, a tight bidding cap stirs up competition, so that the government may expect a better offer for the project. Note, however, that the government faces the risk of not assigning the project if it imposes a tight bidding cap. Politically, it may be difficult to sell that a welfare-enhancing project is not started. Moreover, the government may feel tempted to organize a new contest with a looser bidding cap, which may destroy its reputation in future contests (see also Lesson 11).
3.3 Beauty contests

Before we discuss some specific lessons for beauty contest design, let us classify beauty contests along the following two dimensions. The first one is open versus closed. In an open [closed] beauty contest, anybody [only a small set of pre-selected bidders] is allowed to participate. The second dimension is weighted versus unweighted. In a weighted [an unweighted] beauty contest bidders [do not] know in advance on which criteria their proposal will be assessed and what weights will be assigned to the different criteria. EU tenders on research are a good example of open weighted beauty contests. The call for proposal contains a detailed list of criteria and specifies extensively how the criteria are defined and weighted.

Lesson 14: Use a closed beauty contest if the effort that is invested in the bid has a positive effect on ex-post quality, and an open one otherwise

If the awarding authority wants contestants to put effort in their proposals, it does well restricting the number of contestants. Classic examples for these beauty contests are architectural design contests, competition for research grants and high technology defense equipment. In the restricted tender there is a pre-qualification phase where the awarding authority determines who is entitled to participate. Knowing that there are only a limited number of competitors, contestants “run harder” and submit higher quality proposals. The other way around, if there are many contestants, the chance of winning the contest are low, so contestants could be reluctant to put a lot of effort in the proposal. Che and Gale (2003) show that it may be optimal to invite as few as two bidders. Indeed, for the procurement of the “Joint Strike Fighter”, only two prototypes were invited.

In contrast, if bidders sell products or services that are standardized within their firm, an open contest is preferable. The arguments are the same as why the government should
attract many bidders in an auction (see Lesson 12). For example, a firm supplying telephone interview services can complete an offer for a telephone survey of 500 households in an hour time. Each firm supplying telephone interview services have standardized offers. In this case there is no need to restrict the number of bidders.

Lesson 15: Make the rules as simple and transparent as possible

The rules of a beauty contest should be simple and transparent. Simple and transparent rules (1) induce a high probability that the government selects the best offer, (2) result in low bidding costs (cf. Lesson 5), (3) result in a quick and easy selection process when the government evaluates the bids, (4) render it unlikely that bidders make mistakes, (5) keep the probability on a law suit after the auction low, and (6) discipline the awarding authority to commit to the rules (cf. Lesson 11). In contrast to this lesson, sometimes procurement agencies require pages-long bid-books from the bidders, contributing neither to the simplicity nor the transparency of the contest. The above lesson implies that weighted beauty contests are a priori better than unweighted ones, because the former are more transparent. It is however the question to what extent one can determine the weights ex ante. A procurement agency organizes a beauty contest because it wants to invite creativity. The bidders are often better informed than the awarding authority so that the awarding authority needs to learn from the bids. So, it is often easier to compare the proposals or the prototypes than to try to devise rules and weights ex ante.

IV. CASE STUDY: PROCUREMENT OF WELFARE-TO-WORK PROJECTS IN THE NETHERLANDS

In this section, we discuss procurement of welfare-to-work projects in the Netherlands to illustrate several lessons from the previous two sections. In several countries,
Governments use procurement to allocate welfare-to-work projects. The bidders in these contests are employment service providers. A welfare-to-work project encompasses all sorts of trainings and coaching that improve the employability skills of unemployed people. Welfare-to-work projects typically consists of a number of unemployed people, and the winning provider is rewarded on the basis of the number of these people that find a job within a specified period of time. The success of a welfare-to-work project depends on (1) the number of people that find a job, (2) the costs incurred by the employment service provider, (3) the reduction in unemployment benefits, and (4) the payments made from the government to the employment service provider. The latter two are important as they imply that the government raises less distortionary taxes.

In reaching these targets, governments may be confronted with two types of economic problems: adverse selection and moral hazard. Adverse selection occurs when the procurement does not select the “best” employment provider, i.e., the provider that, relative to all other providers, is able to help the unemployed people back to work in the most cost efficient way. Moral hazard may occur as the winner of the procurement has no incentive to put much effort in the welfare-to-work project. An additional target may be a cheap procurement process.

Most governments that procure welfare-to-work projects use a beauty contest. Table 1 shows a typical scoring slide that we have modeled after the procurement rules that were employed by the Dutch social security agency UWV around the year 2002. The rules are as follows. Employment service providers submit an offer that contains a bid on several pre-specified dimensions (five in this example). On each dimension, a bidder obtains a score. The sum of the scores on each dimension results in the total score. The bidder with the highest total score wins the project.
Table 1: Fictitious scoring card for welfare-to-work procurement by Dutch public institution UWV

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience (target group and region)</td>
<td>None = 5</td>
</tr>
<tr>
<td>Experience (region)</td>
<td>None = 4</td>
</tr>
<tr>
<td>Reward per placement (in € 100)</td>
<td>&gt; 39 = 0</td>
</tr>
<tr>
<td>Placement fraction after 6 months</td>
<td>30% – 35% = 0</td>
</tr>
<tr>
<td>Placement fraction after 12 months</td>
<td>60% – 65% = 5</td>
</tr>
</tbody>
</table>

Let us discuss the five dimensions of the scoring card in Table 1. The first refers to experience with the target group. UWV subdivided all unemployed people who were eligible to participate in a welfare-to-work program in groups on the basis of age, profession, type of handicap (if applicable), and so forth. The score on the dimension “experience with the target group” depends on how well the bidder dealt with similar groups in the past, if at all. Similarly, “experience with the region” refers to how well the bidder dealt with unemployed people in the region in which the people in the current project live. The next dimension, “reward per placement”, is the amount the bidder wishes to receive for each person in his project that finds a job in a pre-specified time period. The final two dimensions are related to the minimum fraction of people in the project that the bidder promises to find a job for in six respectively twelve months.

There are several reasons why this beauty contest is unlikely to yield satisfactory results. In particular, UWV did not seem to have taken several of the lessons from sections II and III into account. Let us start with Lesson 1 (“use an auction if all relevant quality dimensions can be defined ex ante”). Quality in the context of welfare-to-work projects can be defined as for instance the number of people that find a job or the reduction in unemployment benefits during the time of the project. Both can be easily define ex ante, so
that an auction is preferable over a beauty contest. This reasoning implies that the first two dimensions should not be part of the selection procedure, because they are subjective.

The design also violates Lessons 5 (“keep the entry costs low”) and 15 (“the mechanism should be as simple and transparent as possible”). A bid typically consisted of 40 pages in which the bidder motivated how he gained experience with the target group and in the region. So, for a bidder it was costly and time consuming to enter the contest, while for UWV it was not easy to identify the “best” bidder. Once again, the conclusion is that the first two subjective dimensions should be left out of the contest.

Then Lesson 7 (“reveal all relevant information”). In order to avoid strategic bidding, UWV did not announce a priori how it mapped bids into scores. It only communicated the dimensions to the bidders, and the maximum score they could obtain on each dimension. Given the design, UWV’s reason for doing so is not surprising: because the scores make jumps at certain thresholds, revealing the scoring rule would have resulted in bids at exactly these thresholds. However, being unclear about how bids will map into a final score, bidders have to guess where these thresholds are, which reduces the probability that the “best” bidder wins. Not using steps but a continuous mapping, and communicating the rules to the bidders would have substantially improved UWV’s design.

Finally, let us consider Lessons 9 (“provide ex-post incentives”) and 10 (“fix the winning bid in a contract”). At first sight, the winner obtains ex-post incentives in the sense that for each placement, he will be rewarded the amount that he bid on the third dimension in Table 1. However, it does not seem to be a good idea to let bidders bid on this dimension. Why not? Suppose that the reward is the only dimension. Then the lowest bidder wins. This gives rise to a “race to the bottom”, resulting in a low price, which hardly provides incentives to find a job for the unemployed in the project. Relatedly, the final two dimensions amount to “cheap talk” because UWV did not punish [reward] the winner if its
placement rate was below [above] the threshold that he bid. In other words, bidders had an incentive to promise the sky on these dimensions, so that it lost its discriminatory power.

Indeed, UWV’s procurement was not considered extremely successful. Bidders complained that it was costly and time consuming to prepare a bid, while ex post, it was not always clear why a certain bid had won. UWV, in turn, was frustrated because some bidders made unrealistic promises and beat other bidders that seemed more capable of doing the job. Winning bidders had little incentives to fulfill their promises, because they had been engaged in a race to the bottom on the “reward per placement” dimension.

OECD (2001) proposes “the constant-reward auction” as an alternative to UWV’s beauty contest. This auction follows the following rules. UWV sells the project to the highest bidder and pays the winner a fixed reward for each person in the project that finds a job within a pre-specified time period. Onderstal (2006) shows that the constant-reward auction solves the adverse selection problem because the winner is always the most efficient provider. Moreover, the moral hazard problem is almost absent because the winning provider’s output approximates output in the socially optimal mechanism. Finally, the constant-reward auction is easy to implement in practice, in contrast to the optimal mechanism.

V. CONCLUSION

In this chapter, we have discussed several valuable lessons from economic theory for the design of procurement mechanisms. We have summarized these lessons in Table 2. Our case study shows that if the public institution does not take these lessons into account, procurement may lead to unsatisfactory results, from both the institution’s and the bidders’ point of view.
Table 2: Main lessons for procurement design

<table>
<thead>
<tr>
<th>Scope</th>
<th>Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>The optimal procurement mechanism</td>
<td>1. Use an auction if all relevant quality dimensions can be defined ex ante. Otherwise a beauty contest is preferable. Benchmarking, grandfathering, and lotteries are seldom optimal.</td>
</tr>
<tr>
<td>Lessons for both auctions and beauty contests</td>
<td>2. There is no one-size-fits-all design</td>
</tr>
<tr>
<td></td>
<td>3. The devil is in the details</td>
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<td></td>
<td>4. Pre-screen</td>
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<td></td>
<td>5. Keep the cost of entering the procurement as low as possible</td>
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<td></td>
<td>6. Avoid collusion</td>
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<td></td>
<td>7. Reveal all relevant information</td>
</tr>
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<td></td>
<td>8. In the case of asymmetries, give weak bidders an advantage</td>
</tr>
<tr>
<td></td>
<td>9. Provide ex-post incentives</td>
</tr>
<tr>
<td></td>
<td>10. Fix the winning bid in a contract</td>
</tr>
<tr>
<td></td>
<td>11. Commit to the rules</td>
</tr>
<tr>
<td>Specific lessons for auctions</td>
<td>12. Attract as many bidders as possible</td>
</tr>
<tr>
<td></td>
<td>13. Impose a bidding cap</td>
</tr>
<tr>
<td>Specific lessons for beauty contests</td>
<td>14. Use a closed beauty contest if the effort that is invested in the bid has a positive effect on ex-post quality, and an open one otherwise</td>
</tr>
<tr>
<td></td>
<td>15. Make the rules as simple and transparent as possible</td>
</tr>
</tbody>
</table>

Although these lessons can be extremely useful for procurement design in practice, several practically important questions remain unanswered. Let us mention three of these questions. First, how to define the optimal scoring rule in an auction? It is often the case that the procurement agency has little information on what the “right” minimal and/or optimal quality should be, or equivalently what the “right” trade-off between quality and price should be. These are aspects a procurement agency should be very clear about as it should be unambiguous on what project suppliers are bidding for. Bounded rationality models in which the government is to some extent unaware of its preference before it obtains the bids may be useful in answering the above question.
Second, which criteria to use in a beauty contest and how to evaluate them? Apart from the above, rather general lessons, the literature remains silent about this question. Indeed, most of the theoretical literature focuses on auctions rather than beauty contests. This question opens an interesting avenue for future theoretical research, which could supplement the many practical issues on beauty contest design that are raised in the other chapters in this handbook.

Third, how to allocate multiple projects? So far, we have only looked at cases where the government assigns a single project. In the case of multiple projects, procurement design may be even more challenging. In practice, the government often wishes to assign several related projects. Collusion may become an increasingly serious problem, because this allows bidders to “divide the market” and to punish a cartel member in a later contest if he deviates from the cartel agreement in a previous one. Moreover, synergies between projects may call for combinatorial bids. In the past few years, the focus in auction theory has switched from mainly single-object auctions to multiple-object ones, so the lessons from this branch of the literature could be very relevant for procurement design as well (Krishna, 2002; Milgrom, 2004).

Before these, and other, questions are answered, designing good procurement mechanisms remains an area for expert economists. In the past decade, being advisors in spectrum auctions in the US and in Europe, economists have become increasingly experienced in designing tailor-made allocation mechanisms. Let us therefore conclude with the words of Wilson (2002) in his article “Architecture of Power Markets”: “The normative tone [of this article] reflects the increased role of economics as an engineering discipline capable of providing guidance on details of market design. […] I intend my title to convey its double meaning - architecture as a description of the main structural features
of a market, and *architecture* as the professional discipline that designs those features using a body of theory and practical skills.”

**VI. REFERENCES**


*Sander Onderstal* (University of Amsterdam) specializes in auctions, and has publications on auctions in the *Journal of Political Economy* and *Economic Theory*. He has advised several ministries on auctions for gasoline stations, frequencies for commercial radio stations, and welfare-to-work programs.

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1 We wish to thank Emiel Maasland and Koert van Buiren for useful comments on an earlier version of this chapter.

2 For excellent overviews of auction theory and its role in auction design see Krishna (2002), Klemperer (2004), and Milgrom (2004).
Note that we restrict our attention to situations where the government allocates a single project. In the conclusion, we will shortly discuss practical issues that may arise if the government wishes to outsource several projects.

This auction is equivalent to the first-price sealed-bid auction in the case that an auctioneer sells an object.

This auction is equivalent to the ascending or English auction in the case that an auctioneer sells an object.

Universal Mobile Telecommunication Services: a third generation mobile telecommunications standard.

In addition to a “distortion of competition” and “affecting trade between member states”, for being incompatible with the Common Market, the state aid measure should also be selective, financed through state resources (in any form whatsoever). A selective bidding credit is by definition selective and as we focus on public procurement - it is financed from state resources.

An exception is a project with a strong risk on the *winner’s curse*. Increased competition may result in less attractive bids (Bulow and Klemperer, 2002).