

HOW TO ALLOCATE R & D (AND OTHER)  
SUBSIDIES: AN EXPERIMENTALLY TESTED POLICY  
RECOMMENDATION  
INSTRUCTIONS AND SCREENSHOTS FROM THE LAB  
EXPERIMENT

THOMAS GIEBE      TIM GREBE      ELMAR WOLFSTETTER

*Institut für Wirtschaftstheorie I, Humboldt-Universität zu Berlin  
Spandauer Str. 1, 10099 Berlin, Germany*

*Email: [giebe@grebe/wolfstetter@wiwi.hu-berlin.de](mailto:giebe@grebe/wolfstetter@wiwi.hu-berlin.de)*

AUGUST 2005

*This document provides a translation of the (shortened) instructions and the screenshots of the computerized experiment. It includes only the instructions for the open descending-bid mechanism. The instructions for the sealed-bid mechanism are similar, and hence not included. The original instructions (in German) can be downloaded at <http://www.wiwi.hu-berlin.de/wt1/papers/index.html>.*

## INSTRUCTIONS

Please read the instructions carefully. If you have questions, please put up your hand, we will come to your place. Please do not ask questions loudly.

This experiment tests a mechanism for the attribution of grants for research projects. You act as an applicant who needs such a grant in order to carry out a project. Today, we test an auction-like procedure with which these grants can be assigned.

Altogether you participate in 6 auctions, the first being a trial auction, the latter 5 being payoff-relevant.

In each auction you participate together with 5 other, randomly drawn bidders.

Each auction proceeds as follows:

1. Bidders for the auction are assigned randomly. It is possible that you participate in the auction with the same bidders as in the preceding auction. You won't be informed about other bidders' identities.
2. You receive the following information:
  - your minimum required amount of grant for carrying out your project (minimum bid),
  - the maximum amount of grant you may request (maximum bid),
  - the additional private profit you receive if your project is carried out,
  - the quality of your project: Your project is either of type A or type B. A project of type A is preferred to a project of type B. In each auction

there are 3 bidders with a project of type A and 3 bidders with a project of type B.

3. You are requested to submit a bid. Your bid is your requested amount of grant. For more information on the bidding procedure see page 3.
4. Whether you receive a grant or not, is determined by the rules described in 5. If your project is subsidized, you will receive the requested amount of grant plus your private profit. If not, you will get nothing.
5. It is determined which combinations of projects may be funded with the given budget. Among the implementable allocations, the allocation with the best rank is selected. A project of type A is preferred to a project of type B. However, two projects of type B are preferred to one project of type A. Among bidders of the same type, bidders with a lower bid are preferred. If both type and bid are identical between bidders, it will be randomly drawn which bidder is preferred.
6. You are informed about your grant and your payoff in the auction.

Determination of the data specified above: All data in ECU (Experimental Currency Unit)

Minimum bid: a randomly drawn integer from the interval  $[0, 5]$ .

Maximum bid: a randomly drawn integer from the interval  $[5, 10]$ .

Private profit: a randomly drawn integer from the interval  $[1, 10]$ .

Evaluation of your project (type A or B) is randomly allotted.

Each parameter is determined at random and independently in each auction and for each applicant. The available budget is 20 ECU in each auction.

Your payoff at the end of the experiment: Your payoffs (grants plus private profits) in the payoff-relevant auctions are added. 9 ECU corresponds to a payoff of €1. In addition, you receive €4 for participation.

EXAMPLE: All parameters given in ECU.

Available Budget: 20

It is impossible to subsidize all projects since the sum of all bids (29) exceeds the budget (20). Therefore, the combination with the best rank is selected.

|                | Bidder |   |   |   |   |    |
|----------------|--------|---|---|---|---|----|
|                | 1      | 2 | 3 | 4 | 5 | 6  |
| Type           | A      | B | B | A | B | A  |
| Private profit | 4      | 1 | 8 | 3 | 4 | 10 |
| Bid            | 8      | 3 | 5 | 7 | 2 | 4  |

Table 1: Example

| Rank* | Combination** | Sum of bids*** | Implementable?**** |
|-------|---------------|----------------|--------------------|
| 1     | AAABBB        | 8+3+5+7+2+4=29 | exceeds budget     |
| 2     | AAABB         | 8+3+7+2+4=24   | exceeds budget     |
| 3     | AABBB         | 3+5+7+2+4=21   | exceeds budget     |
| 4     | AAAB          | 8+7+2+4=21     | exceeds budget     |
| 5     | AABB          | 3+7+2+4=16     | optimal            |
| 6     | ABBB          | 3+5+2+4=14     | not optimal        |
| 7     | AAA           | 8+7+4=19       | not optimal        |
| 8     | AAB           | 7+2+4=13       | not optimal        |
| 9     | ABB           | 3+2+4=9        | not optimal        |
| 10    | BBB           | 3+5+2=10       | not optimal        |
| 11    | AA            | 7+4=11         | not optimal        |
| 12    | AB            | 2+4=6          | not optimal        |
| 13    | BB            | 3+2=5          | not optimal        |
| 14    | A             | 4              | not optimal        |
| 15    | B             | 2              | not optimal        |

Table 2: Ranking of Allocations

\*= The rank order is general, it does not only apply to the example.

\*\*= indicates, which projects are subsidized. E.g., AABBB means that two

projects of type A and three projects of type B are subsidized.

\*\*\*= Among bidders of the same type, those with a lower bid are preferred. For example, if the selected allocation is AABB, this means that projects 4 and 6 of type A are subsidized and projects 2 and 5 of type B.

\*\*\*\*= Among all implementable allocations, the one with the best rank is selected. Therefore, in the example, AABB is selected.

**BIDDING PROCEDURE** The auction is an open auction with declining bids. The bid of each bidder is lowered by a fixed decrement from round to round, except if a bidder stops his price clock. The auction ends when all bidders' bids are final. On the basis of the final bids, the allocation of grants is determined according to the rank order described in Table 2. At the beginning, each bidder has an initial bid which corresponds to his maximum bid.

Furthermore, each bidder has a minimum bid and is not allowed to lower his bid below this value.

Course of the auction:

1. First round: The initial bids are given. You decide whether to lower your bid by 1 ECU (button "Lower") or to fix it on the current level (button "Stop"). First, bidders of type A make this decision, afterwards the bidders of type B. If your starting bid corresponds to your minimum bid, you cannot lower your bid. It is then fixed automatically.

If your requirement is fixed, you cannot participate in the auction any more and change your bid. The auction ends in the first round if the bids of all bidders are fixed. Otherwise another round takes place.

2. Second round: You decide again whether to lower your bid by 1 ECU (button "Lower") or to fix it on the current level (button "Stop"). First, bidders of type A make this decision, afterwards the bidders of type B. If your current bid corresponds to your minimum bid, you cannot lower it further. It is then fixed automatically.

Third and further rounds: This procedure is repeated round after round until all bids are fixed. Then the auction ends. On the basis of the final bids the allocation is determined by the ranking described before.

Every time you are required to bid, a table with the current bids of all bidders participating in your auction appears. It is indicated whether the respective bids are final (bidder has already stopped or reached his minimum bid) or not. In addition the sum of all current and final bids in your group is displayed.

Please remember that your private profit is only disbursed if your project is subsidized.

## SCREENSHOTS

Verbleibende Zeit [sec]: 120

**Auktion 1**

**Ihr Projekt ist vom Typ A**

Zur Erinnerung: Das Budget beträgt ECU: 20

**Die folgenden Informationen sind nur Ihnen bekannt:**

|   |   |
|---|---|
| Mindestens benötigter Zuschuß, um das Projekt durchzuführen (Mindestgebot): ECU | 0 |
| Höchst möglicher Zuschuss (Höchstgebot): ECU                                    | 9 |
| zusätzlicher Gewinn bei Durchführung des Projektes (Projektgewinn)*: ECU        | 3 |

Bitte geben Sie jetzt Ihr Gebot ein

**OK**

Hilfe  
\* Den Projektgewinn bekommen Sie nur, wenn Sie einen Zuschuss erhalten.

Figure 1: Decision Screen: Sealed-Bid Mechanism

Verbleibende Zeit [sec]: 54

Ihr Projekt ist vom Typ B.

Ihr aktuelles Gebot: ECU 9

Ihr Mindestgebot: ECU 1

Projektgewinn: ECU 10

Information über die anderen Bieter Ihrer Gruppe:

| Typ des Projekts | A         | A               | A         | B               | B               |
|------------------|-----------|-----------------|-----------|-----------------|-----------------|
| Gebot: ECU       | 6         | 9               | 9         | 10              | 7               |
| Status           | endgültig | nicht endgültig | endgültig | nicht endgültig | nicht endgültig |

Summe aller Gebote (Ihr Gebot + die Gebote der anderen Bieter Ihrer Gruppe): ECU 50

Zur Erinnerung: Das Budget beträgt ECU 20

Um Ihr aktuelles Gebot um 1 ECU abzusenken, drücken Sie "Absenken".

Um Ihr Gebot auf dem aktuellen Niveau festzulegen, drücken Sie "Stop".

Figure 2: Decision Screen: Open Descending-Bid Mechanism

**Befragung**

Haben Sie Ihr Gebot vom Projektgewinn abhängig gemacht?  ja  
 nein

Haben Sie Ihr Gebot davon abhängig gemacht, von welchem Typ Ihr Projekt ist?  ja  
 nein

Für wie kompliziert halten Sie das Auktionsverfahren, welches wir heute erprobt haben?

sehr einfach sehr kompliziert

Weitere Kommentare zum Experiment

Figure 3: Questionnaire Screen