

Auction experiment

This is an experiment in the economics of market decision making. The National Science Foundation and other research organizations have provided funds for conducting this research. The instructions are simple, and if you follow them carefully and make good decisions you may earn a CONSIDERABLE AMOUNT OF MONEY which will be PAID TO YOU IN CASH at the end of the experiment.

1. In this experiment we will create a number of markets in which you will act as buyers of a fictitious commodity. There will be 42 trading periods, with the first two being dry runs with no monetary payoffs. A single unit of the commodity will be auctioned off in each market in every trading period.
2. Your task is to submit bids for the commodity along with the other buyers in your market. In each trading period you will be assigned a private VALUE for the item. This indicates the value to you of holding the item at the end of a period.

Types

There are two types of bidders, type A and type B. At the beginning of the experiment you are randomly assigned a type and you keep it throughout the first 20 periods of today's session. Then you switch to the other type for another 20 periods. Each auction group will have one Type A bidder and one Type B bidder. However, in each period who you are bidding against will be determined randomly. You will never know who the other bidder is in your auction; you will only know his or her type.

Values

All values in the experiment will be in terms of an experimental currency, the drachma. In each period both the type A and B bidders will be given a new private value for the good that is being sold. This value is the amount of drachmas the experimenter will give you if you wind up getting the item at the end of the auction period. These values are drawn randomly from a uniform distribution at the start of each auction so the value you have in one auction has no impact on the value you will have in the next auction.

For type A bidders, values will be drawn randomly from the interval (0, 100) so that each integer (whole number) in this interval has an equally likely chance of being Type A bidder's value.

For type B bidders, values will be drawn randomly from the interval (0, 60) so that each integer (whole number) in this interval has an equally likely chance of being Type B bidder's value.

To reiterate, type A will never have a value higher than 100, type B will never have a value higher than 60. No type can have a value lower than 0.

Each auction has two stages:

Stage 1 – The Auction

Stage 1 consists of a first-price sealed bid auction in which both the A and B types submit bids for the item. The bidder with the highest bid in your market obtains the item and pays what they bid for the item. This establishes an interim profit of

$$(\text{PRIVATE VALUE}) - (\text{BID}) = \text{INTERIM PROFIT}$$

We call these interim profits since final earnings for the auction period are not determined until after Stage 2 – the Resale Stage

Stage 2 – Resale Stage

In Stage 2 the bidder who got the item in Stage 1 has the opportunity to sell it to other bidder. The Stage 1 bidder determines a price they want to sell the item for in Stage 2. After seeing the price, the other bidder has the opportunity to buy the item or not.

If the other bidder *decides to buy* the item earnings will be as follows:

Buyer earnings in Stage 2: $(\text{private Value}) - (\text{Price}) = \text{Profits}$

Seller earnings in Stage 2: $(\text{Price}) - (\text{Stage 1 bid}) = \text{Profits}$

If the other bidder *decides not to buy* the item then their earnings will be zero for that auction and the seller's earnings will be equal to the Interim Profits from the auction.

In order for the *seller* to make a positive profit in Stage 2 he/she needs to sell the item at a price equal to or greater than what they paid for it in Stage 1. If they sell the item below what they paid for it in stage 1 they would make a loss. In order for the *buyer* in Stage 2 to make a profit he/she would have to buy the item at a price that was less than or equal to their own value.

This is all little abstract so let's give some examples:

Suppose that the A bidder has value 50 and B bidder has value 30 – the mid points of their respective intervals.

Suppose that the A bidder bids 25 and the B bidder bids 2 or 3 in the Stage 1 auction. Then the A bidder makes interim profits of 25 (private value of 50 minus the bid of 25). They could try and sell the item to the B bidder, but for the B bidder to be willing to buy and make a positive profit they would have to offer a price below 30, let's say 10. If they did that the B bidder could buy the item and make a profit of 20 (private value of 30 minus the price of 10) and the A bidder would make a profit of -15 (the price of 10 minus their bid in the auction of 25). That is, the A bidder would lose money. Note, we are not advocating that, just showing you how things would work.

On the other hand suppose that the B bidder bids 35 and the A bidder bids 25. Then the B bidder would make interim profits of -5 (their value of 30 less their bid of 35). Now suppose they offer to sell the item to the A bidder at a price of 40. If the A bidder accepts the A bidder would make a profit of 10 (their private value of 50 less the price of 40). And the B bidder would make a profit of 5 (the price of 40 less their bid in the auction of 35). If the A bidder chooses not to buy the item they would earn 0 profits and the B bidder would make a loss as well.

Note that in this auction the items for sale have no intrinsic value. You would do us a favour if you tried to maximize your own earnings, as our objective is to study how real cool headed people are likely to behave outside the lab.

Total payoffs

In the beginning of today's session you will receive an endowment of 100 drachmas which includes your show up fee. Every period your payoff from that period is added to this initial endowment. At the end of the today's session you will receive your cumulative payoffs – your earnings from each auction plus your initial endowment. The conversion rate from drachmas dollars is \$1 = 15 drachmas. Note that If at any period your cumulative auction profits are such that you have exhausted your initial endowment, you will not be allowed to continue playing.

Please, answer these questions, they will help us to know if you understood the instructions well. When you finish, call the coordinator and he will check the answers.

Suppose you are a type A player so the other bidder is a type B player. Suppose your private value is 9. What is a possible value for the B player?

- a) any value from 0 to 60
- b) any value from 0 to 100
- c) any value from 0 to 60 but not 9
- d) any value from 0 to 100 but not 9

Suppose you are the high bidder in stage 1 of the auction. Your private value is 60 and the price you paid was 70. Now suppose you sell the item in Stage 2 for a price of 50. What is *your* final payoff after the second stage?

Suppose you are the high bidder in stage 1 of the auction. Your private value is 10 and the price you paid was 20. Now suppose you sell the item in stage 2 for a price of 80. What is *your* final payoff after the second stage?

Suppose you are *not* the high bidder in stage 1 of the auction but you buy the item in stage 2. Your private value is 60, the price paid in the auction (stage 1) was 20 and the price you paid in stage 2 was 50. What is *your* final payoff alter the second stage?

Dual Market

Now that you understood the basic structure of the game, let us introduce a twist:

You will actually be asked for decisions in two markets in each auction period.

First (Case 1), you will be asked to bid in the auction as described above but there will be no resale permitted. That means the auction ends after stage one, and what we called your interim profits will be your final profits for Case 1.

Second (Case 2) you will be asked to bid again in a second auction but one in which resale will be permitted after stage one. You will have the same private value as in Case 1 and you may bid the same or differently in the two auctions. This is for you to decide based on what you think will earn you the most profits.

You will not know the results from Case 1 prior to completing Case 2. After both cases have been completed we will determine randomly which Case you will actually be paid off on in that auction period..