## Auction Experiment

Hopefully you'll have now watched the video explaining how second price auctions work. If you're confident that you understand the process, feel free to skip straight to the section 2 of the instructions

## 1. Second Price Auction (SPA)

In this style of auction, participants submit sealed bids for an item in secret. Once all bids have been received, the item is won by the participant who submitted the highest bid, as with any standard auction. However, the winning bidder does not pay the seller the value of his own bid but, rather, they pay the value of the second highest bid for the item, hence the name "Second Price Auction". Losing bidders pay nothing.

For example, consider an SPA consisting of 4 bidders outlined below. Bidder 1 has won the auction by submitting the highest bid, $£ 100$. He receives the item in exchange for payment in the amount of the second highest bid, $£ 90$. Bidders 2,3 and 4 all lost the auction so make no payment.

| Bidder | Bid <br> $(\mathbf{f})$ | Payment <br> $(\mathbf{f})$ |
| :---: | :---: | :---: |
| 1 | 100 | 90 |
| 2 | 90 | - |
| 3 | 85 | - |
| 4 | 80 | - |

The purpose of this auction design is to remove the incentive for bidders to bid below their true value in an attempt to get a bargain.

## 2. Tie Breaking

Not that, for the purposes of this experiment, in the unlikely event of a tie between the bids, the outcome will be decided by a virtual coin-toss; one of the bidders wins the auction and receives the item in exchange for payment equal to the tied high bids, the other loses the auction and receives and pays nothing.

## 3. Experiment Instructions

Please confirm your attendance on the morning of the experiment before 10am via email or any other method. The computer programme we will use needs to know the exact number of participants before the experiment can commence.

A link to the experiment will be sent to you once you have confirmed. You will need to click Login As Participant and enter the session name, which will be sent along with the link. It is important that you then fill in your details accurately for the purposes of the prize draw. Please also remember your user ID and password in case you have IT issues and need to log back in. Once the first half of the experiment has been completed, you will receive the session name for the second half of the experiment.

You will begin the experiment with a virtual bank balance of $\$ 0$. In each round, you will be bidding against a single opponent. You will both be allocated a random valuation between $\$ 10$ and $\$ 15$. This distribution is uniform and the valuations are independent ${ }^{1}$.

[^0]You must consider your valuation and submit a bid for the item, before clicking the 'Confirm' button. Once all bids have been submitted, the result of the auction will be declared. If you lose the auction, your bank balance will carry over to the subsequent round. If you win, your bank balance will decrease by the amount you are required to pay for the item but increase by your valuation in that round. (This number, your valuation minus the price you must pay for the item, is known as your "payoff" for the round.) For example, if your valuation is $\$ 14$ and you win the item for $\$ 11$, your bank balance will increase by $\$ 3$. You will then be free to continue to the next auction round, where you will be allocated new valuations.

Your objective is to maximise your bank balance at the end of the experiment by maximising the sum of your payoffs. This will determine the likelihood of you winning $£ 25$ in the prize draw.

We will now outline the subtle difference between the two scenarios of the experiment.

- Fixed pairs - The first 20 rounds will be feature fixed pairings. In this scenario, you will initially be randomly allocated a single opponent whom you will face throughout all rounds of bidding. You will not know whom you are facing.
- Random pairs - The subsequent 20 rounds of bidding will feature mixed pairings. In this scenario, you will be matched with a new opponent prior to each round of bidding. You will not know whom you are facing at any time. Once bids have been submitted and the result of the auction revealed, you will be randomly allocated a new opponent for the subsequent auction. This will continue until all rounds have been completed. This scenario will take a little longer than the fixed pairs scenario, since all pairs must complete their auction before anyone can move on to the next round.

Note that your bank balance will reset to $\$ 0$ between the two sections. Your total earnings will be added together at the end of the experiment.

## 4. Prize Draw

Each of you will have secretly been split into groups A and B. If you are in group A, you will only face opponents in group B (and vice versa). One participant from group A and one from group B will each win the $£ 25$. The purpose of this is that you never bid against someone that you are also competing against in the prize draw - you only have to concentrate on maximising your own bank balance, there is no incentive to stop your rival bidders making money

The probability of you winning the $£ 25$ prize will be equal to your own final bank balance divided by the total bank balance of your group. If you end the experiment with $\$ 100$ in your account and your group has a combined total of $\$ 1000$, your probability of winning is $10 \%$. The draw will take place by the end of July

## 5. Payment

Payments will be made by paypal or bank transfer within the next few days for those of you taking part online. You will need to send me the relevant details by email, as well as your current address which is a requirement for all Bath University funded studies. I would also appreciate it if you could confirm that you have received the payment, again by email.

## If there are any questions, please don't hesitate to contact me on jb583@bath.ac.uk. Thanks again for taking part


[^0]:    ${ }^{1}$ For those of you without any experience in statistics, this means that each number between 10 and 15 has an equal chance of being selected as your valuation. Independence refers to the fact that your valuation does not influence your opponent's, and vice versa. If you are given a low valuation, for example, it is no indicator of whether your opponents will be low or high. Similarly, your valuation in one round will not affect your valuation in subsequent rounds.

