

Supplemental Material for:

**Divisible Good Auctions with Asymmetric Information: An Experimental Examination**

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## **Appendix – Instructions**

### **Sample Experimental Instructions**

(Uniform Pricing, Asymmetric Information)

This is an experiment in economic decision-making. In this experiment you will participate in a sequence of auctions. At the end of each auction your profit for that auction will be calculated for you. At the end of the experiment, your initial cash endowment and your profit from each auction will be added to an undisclosed lump-sum adjustment that you will be informed of at the end of the experiment. The sum of these values will be used to determine your total payoff for the experiment. Your payoff will be made with funds provided through grants by various institutions. Feel free to earn as much of this money as possible. Under no circumstances will you owe money at the termination of the experiment. Everything contained in these instructions and everything you hear in this session is an accurate representation of this experiment; **deception plays no part in this experiment**. Be sure to ask any questions you may have during this instruction period, and ask for assistance, if needed, at any time. There are five bidders in total in this experiment and all received the same instructions. Monetary units in this experiment are denominated in an experimental currency (Laboratory dollars or L\$ for short). At the end of the experiment, L\$ will be converted to US\$ at an exchange rate of L\$1 = US\$ 0.05

There are four parts in today's experiment:

1. These instructions
2. The bidding game
3. A questionnaire
4. The private payment of earnings

### **THE BIDDING GAME OVERVIEW**

In this experiment all five participants will bid for units of identical goods, that we will call widgets. There will be 26 widgets available in each auction. After each auction the widgets will

be automatically resold (at a profit or loss) by the bidders to the computer. Each bidder begins the first auction with a balance of L\$250. Profits and losses from auctions are added to this starting balance and carried forward to subsequent auctions. At the end of the experiment, each bidder's ending balance plus a random additional payment that is the same for all participants will be converted to US\$ (at an exchange rate of \$0.05 per laboratory dollar) and that amount will be paid to you in cash.

There will be an unspecified number of auctions in this session. Each auction involves a sequence of steps that is the same for all auctions.

1. Prior to each auction, each bidder receives an independent signal that gives him/her information about the resale value of the widgets. This signal is private information.
2. Each bidder then submits a schedule of bids for the widgets. This schedule details the number of widgets each bidder is willing to buy at each possible price. Bidders may concentrate their bids at a single price or spread them out over many prices. Each bidder's schedule of bids is his/her private information.
3. After all bidders have submitted bids, widgets are allocated by the computer to the bidders submitting the 26 highest bids.
4. All bidders receiving widgets will pay the **market clearing price** for all widgets. The market clearing price is the price the computer must drop the price to in order to sell all 26 widgets. Another way to think of the market clearing price is as the highest price at which all 26 widgets can be sold. Bidders receiving widgets pay the market clearing price even if some or all of a winning bidder's widgets were bid for at prices above the market clearing price.
5. Following each auction you will resell all the widgets you are allotted to the computer. You do not have to do anything to initiate the sale of your allotted widgets; it is an automated transaction. The **resale value** of the widgets is the same for all widgets and all bidders at the conclusion of any particular auction, however you will only learn the resale value of the widgets after each auction has concluded. On average, the resale value is 20, but it will typically vary from auction to auction. A bidder earns profits in an auction if he/she is allocated widgets and the market clearing price is below the resale value. A bidder incurs losses in an auction if he/she is allocated widgets and the market clearing price is above the resale value.

**More information about each of these steps is given below.**

Each Bidder Receives an Information Signal

Before each auction, each bidder receives a signal that provides information concerning the resale value of the widgets. The signal each bidder receives is independent from the signals other bidders receive. This means that each bidder's signal is determined randomly, and has no effect on any other bidder's signal. Each signal is determined by a computer by taking an independent draw from the following uniform probability distribution.

<u>Probability</u>	<u>Signal</u>	<u>Difference from 20</u>
20%	18	-2
20%	19	-1
20%	20	0
20%	21	+1
20%	22	+2

Each signal plays a role in determining the resale value of the widgets, as explained next.

How the Resale Value is Determined

Each signal plays a role in determining the resale value of the widgets. The difference between each signal and 20 is calculated. The resale value of the widgets will be the sum of these differences, added to 20.

**Example:**

Assume the signals received by the five bidders are as follows:

<b>Bidder:</b>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
<b>Signal:</b>	18	20	20	19	21

These signals would correspond to the following differences with respect to 20.

<b>Bidder:</b>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
<b>Signal:</b>	-2	0	0	-1	1

That is, Bidder 1's signal is 2 less than 20 ( $18 - 20 = -2$ ), Bidders 2 and 3 have signals equal to 20 ( $20 - 20 = 0$ ), Bidder 4 has a signal 1 less than the 20 ( $19 - 20 = -1$ ), and Bidder 5 has a signal 1

more than the 20 ( $21 - 20 = +1$ ). Since the sum of these differences is  $-2$  ( $-2+0+0-1+1$ ), the resale value of the widgets for this auction is 18 (i.e.  $20 - 2$ ).

### Submitting a Schedule of Bids

After you receive your signal, you will be required to submit via computer a schedule of bids. This schedule indicates the number of widgets you are willing to buy (including zero) at each possible price level: The possible price levels in L\$ will be 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30. The only restriction you will be faced with during the bidding phase is that your total units bid for may not exceed the 26 widgets available in each auction. That is, you may bid for less than or equal to, but not for more than 26 widgets. In any auction, neither the number of widgets for which you may bid, nor the prices at which you may place bids are restricted by the level of your cash balance. That is, even if your cash balance is negative or very low, you will still be able to participate in the auctions and bid for up to 26 widgets at any desired price.

### The Market Clearing Price

After all bidders have submitted their bids, the computer determines the market clearing price. It does this as follows. It starts at L\$30, the highest price. If there is sufficient demand at this price to sell the 26 widgets, this becomes the market clearing price. If not, it lowers the price by 1 and calculates the new total demand at this and all higher prices. If there is now sufficient demand to sell the 26 widgets, this becomes the market clearing price. If not, it continues lowering the price until it reaches a price where total demand at that price and higher prices is at least equal to 26.

### The Allocation of Widgets

Bidders that submitted bids above the market clearing price will receive all of those units. Bidders that bid for widgets at the market clearing price will receive at least some of those units. When at the market clearing price total demand at that and higher prices exceed 26, the computer allocates the widgets demanded at the market clearing price as follows. First, it calculates the number of widgets remaining after it has allocated all the widgets bid for above the market clearing price. It then rations the remaining widgets among the bidders who made bids at the market clearing price. It does this in proportion to the number of shares bid for at that price. For example, if there are 8 widgets left to allocate at the market clearing price, total demand at the market clearing price was for 40 widgets, and Bidder 1 bid for 10 widgets at the market clearing price, then Bidder 1 would be allocated all the widgets bid for at prices above the market clearing

price, and  $10/40 \times 8$ , or 2 shares from his/her bid at the market clearing price. Note that it is possible to be allocated a fraction of a widget.

### Profits and Losses from Auctions

1. You make a profit in an auction if you are allocated widgets and the market clearing price (the price you pay for all of the widgets you are allocated) is less than the resale value of the widgets.
2. You incur a loss in an auction if you are allocated widgets and the market clearing price exceeds the resale value of the widgets.
3. Your cash balance is unchanged in an auction if you are not allocated widgets, or if you are allocated widgets and the market clearing price equals the resale value.

In other words,

$$\text{PROFIT IN AN AUCTION} = \\ (\# \text{ WIDGETS ALLOCTED}) \times (\text{Market Clearing Price} - \text{Resale Value})$$

For example, if you are allotted 5 widgets, the resale value is L\$20, and the market clearing price is L\$18, your **profit** for the auction is L\$10 ( $5 \times [L\$20 - L\$18]$ ). If you are allocated 5 widgets, the resale value is L\$20, and the market clearing price is L\$22, your **loss** for the auction is L\$10 ( $5 \times [L\$20 - L\$22]$ ).

### After Each Auction

After each auction, all bidders will learn the resale value and the market clearing price for that particular auction. However, only you will know your actual bids, allocations, profits, and your cumulative cash balance. You will receive a new signal about the resale value of the widgets at the start of each auction and you may change your bid schedule from one auction to the next. If at any point during the game your cash balance turns negative, you will be allowed to continue playing. Remember that your initial allocation of funds will be augmented by a predetermined lump-sum amount at the end of the experiment and that the computer will end the experiment after a random number of auctions. Only the computer knows these two numbers.

### **The Calculation of Your Final Payment for Participation Today**

Once the trading portion of the experiment is over and you have finished completing a brief questionnaire, the experimenter will announce to all participants the magnitude of the final cash

adjustment. This will be added to your final balance from the experiment. The sum of the final balance from the experiment and the cash adjustment will be converted into US\$ using the following formula:

$$\text{US\$ Payoff} = (\text{Cash adjustment in L\$} + \text{final balance from experiment in L\$}) \times 0.05$$

If your final payoff is positive, you will be paid that amount in cash. If your final payoff is negative, you will be paid nothing. You will only learn your own final cash payment and not that of other players.

## COMMUNICATION RULES

You are not permitted to communicate with the other players during the experiment. Once the experiment begins you are required to remain seated behind your computer screen at all times. If you have a question, raise your hand and an assistant will help you.

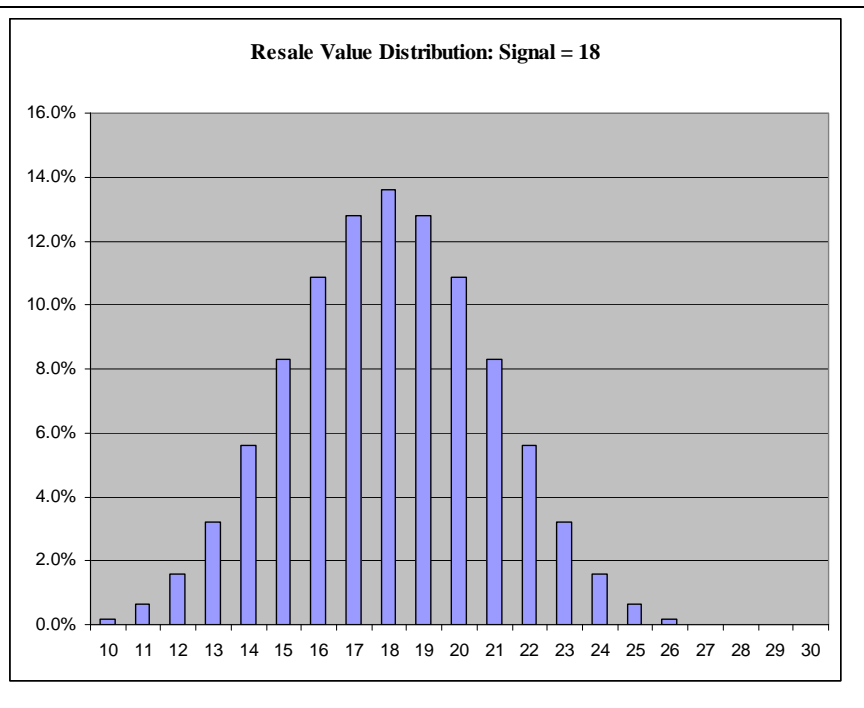
### Estimating the most likely Resale Value of the Widgets from your Signal

Since you do not know the actual signals of other bidders and, on average, the difference between their signals and 20 will sum to 0, your best guess of the resale value of the widgets will always be your signal. However, in many auctions, the actual resale value may be more than or less than your signal. The following charts show the distribution of the resale value depending on the signal you receive. You may refer to them during the auction periods when you are submitting your bidding schedule. If your signal is 18, from the first chart you can see that the probability that the resale value equals L\$18 is 13.6%, the probability that the resale value is lower than L\$18 is 43.2% and the probability that the resale value is higher than L\$18 is 43.2%. Similarly, if your signal is 19, the probability that the resale value equals L\$19 is 12.8%, the probability that the resale value is lower than L\$19 is 56.8%, and the probability that the resale value is higher than L\$19 is 30.4%.

Remember: Different bidders may receive different signals but you only learn your own signal. If other signals are above yours on average, the resale value will be above your signal. If other signals are below yours on average, the resale value will be below your signal.

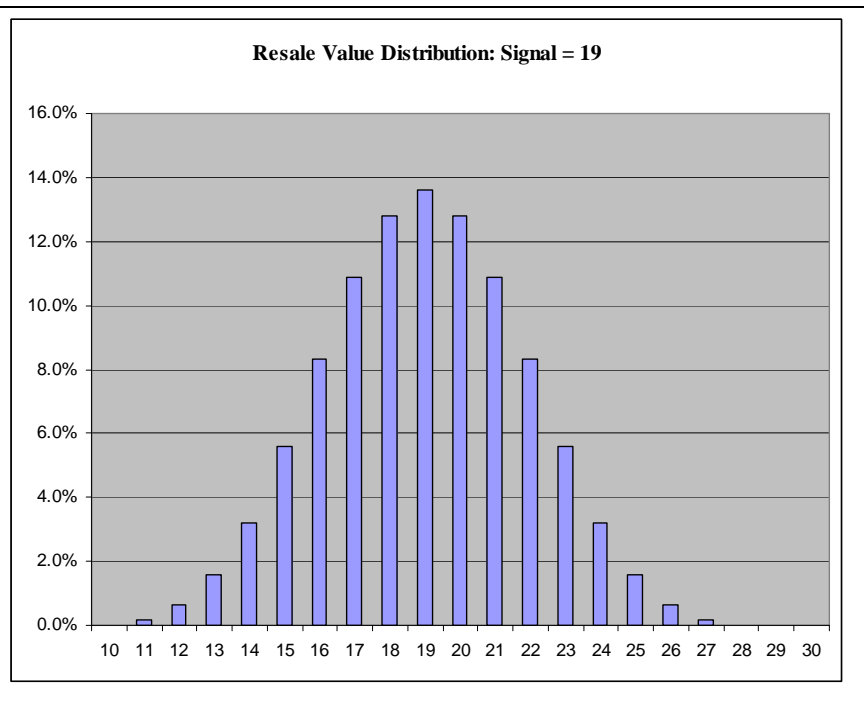
**If your signal is 18,**

Value L\$	Probability Resale Value Equal	Probability resale value Lower	Probability resale value Higher
10	0.2%	0.0%	99.8%
11	0.6%	0.2%	99.2%
12	1.6%	0.8%	97.6%
13	3.2%	2.4%	94.4%
14	5.6%	5.6%	88.8%
15	8.3%	11.2%	80.5%
16	10.9%	19.5%	69.6%
17	12.8%	30.4%	56.8%
18	13.6%	43.2%	43.2%
19	12.8%	56.8%	30.4%
20	10.9%	69.6%	19.5%
21	8.3%	80.5%	11.2%
22	5.6%	88.8%	5.6%
23	3.2%	94.4%	2.4%
24	1.6%	97.6%	0.8%
25	0.6%	99.2%	0.2%
26	0.2%	99.8%	0.0%
27	0.0%	100.0%	0.0%
28	0.0%	100.0%	0.0%
29	0.0%	100.0%	0.0%
30	0.0%	100.0%	0.0%



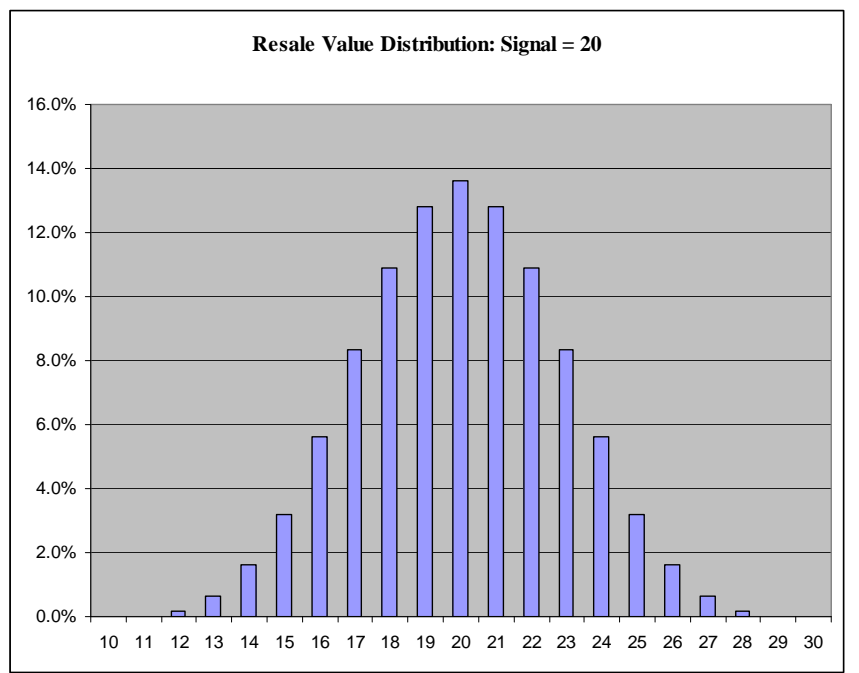
**If your signal is 19,**

Value L\$	Probability Resale Value Equal	Probability resale value Lower	Probability resale value higher
10	0.0%	0.0%	100.0%
11	0.2%	0.0%	99.8%
12	0.6%	0.2%	99.2%
13	1.6%	0.8%	97.6%
14	3.2%	2.4%	94.4%
15	5.6%	5.6%	88.8%
16	8.3%	11.2%	80.5%
17	10.9%	19.5%	69.6%
18	12.8%	30.4%	56.8%
19	13.6%	43.2%	43.2%
20	12.8%	56.8%	30.4%
21	10.9%	69.6%	19.5%
22	8.3%	80.5%	11.2%
23	5.6%	88.8%	5.6%
24	3.2%	94.4%	2.4%
25	1.6%	97.6%	0.8%
26	0.6%	99.2%	0.2%
27	0.2%	99.8%	0.0%
28	0.0%	100.0%	0.0%
29	0.0%	100.0%	0.0%
30	0.0%	100.0%	0.0%



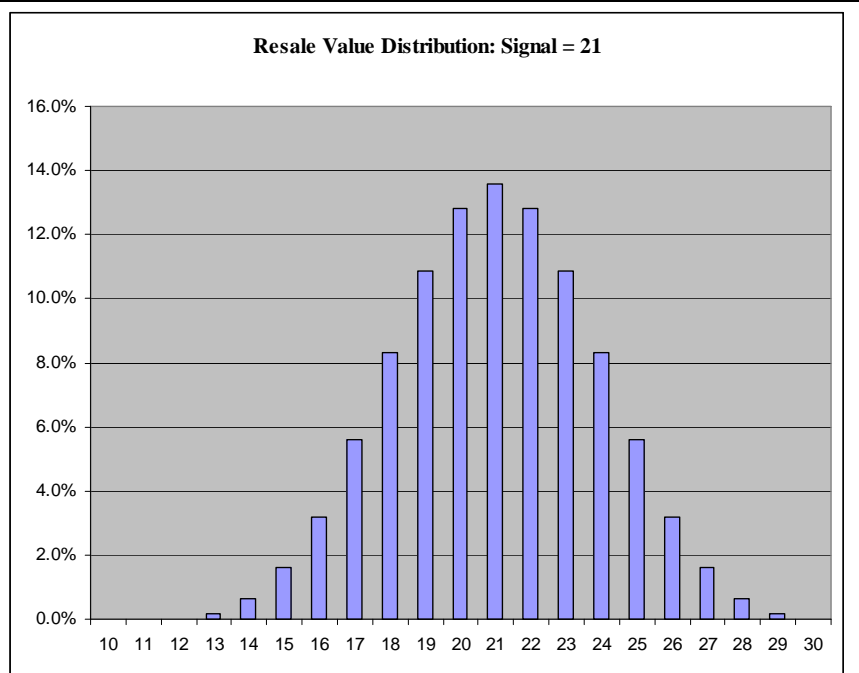
**If your signal is 20,**

Value L\$	Probability Resale Value Equal	Probability resale value Lower	Probability resale value higher
10	0.0%	0.0%	100.0%
11	0.0%	0.0%	100.0%
12	0.2%	0.0%	99.8%
13	0.6%	0.2%	99.2%
14	1.6%	0.8%	97.6%
15	3.2%	2.4%	94.4%
16	5.6%	5.6%	88.8%
17	8.3%	11.2%	80.5%
18	10.9%	19.5%	69.6%
19	12.8%	30.4%	56.8%
20	13.6%	43.2%	43.2%
21	12.8%	56.8%	30.4%
22	10.9%	69.6%	19.5%
23	8.3%	80.5%	11.2%
24	5.6%	88.8%	5.6%
25	3.2%	94.4%	2.4%
26	1.6%	97.6%	0.8%
27	0.6%	99.2%	0.2%
28	0.2%	99.8%	0.0%
29	0.0%	100.0%	0.0%
30	0.0%	100.0%	0.0%



**If your signal is 21,**

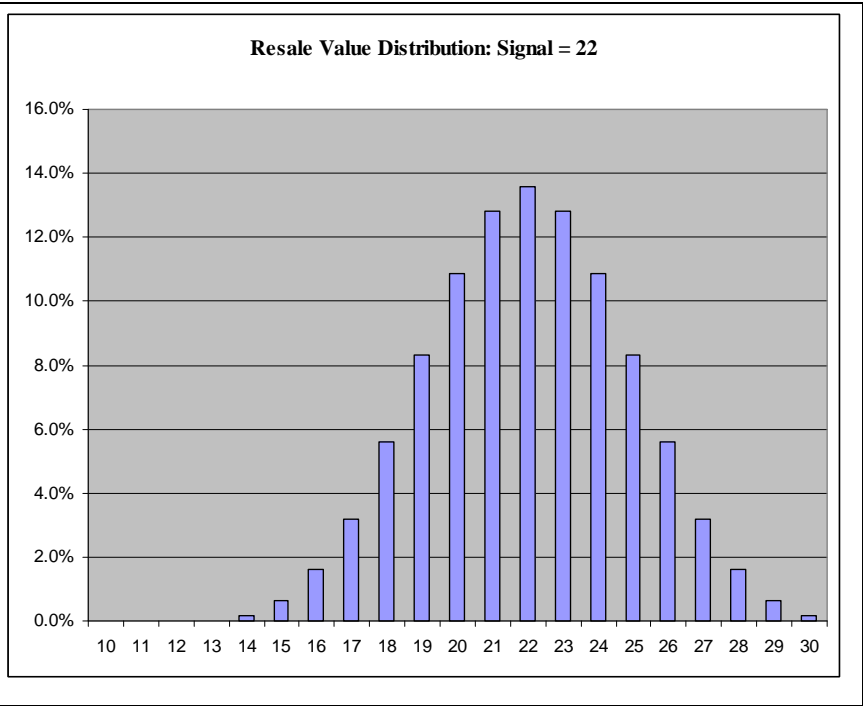
Value L\$	Probability Resale Value Equal	Probability resale value Lower	Probability resale value higher
10	0.0%	0.0%	100.0%
11	0.0%	0.0%	100.0%
12	0.0%	0.0%	100.0%
13	0.2%	0.0%	99.8%
14	0.6%	0.2%	99.2%
15	1.6%	0.8%	97.6%
16	3.2%	2.4%	94.4%
17	5.6%	5.6%	88.8%
18	8.3%	11.2%	80.5%
19	10.9%	19.5%	69.6%
20	12.8%	30.4%	56.8%
21	13.6%	43.2%	43.2%
22	12.8%	56.8%	30.4%
23	10.9%	69.6%	19.5%
24	8.3%	80.5%	11.2%
25	5.6%	88.8%	5.6%
26	3.2%	94.4%	2.4%
27	1.6%	97.6%	0.8%
28	0.6%	99.2%	0.2%
29	0.2%	99.8%	0.0%
30	0.0%	100.0%	0.0%





**If your signal is 22,**

Value L\$	Probability Resale Value Equal	Probability resale value Lower	Probability resale value higher
10	0.0%	0.0%	100.0%
11	0.0%	0.0%	100.0%
12	0.0%	0.0%	100.0%
13	0.0%	0.0%	100.0%
14	0.2%	0.0%	99.8%
15	0.6%	0.2%	99.2%
16	1.6%	0.8%	97.6%
17	3.2%	2.4%	94.4%
18	5.6%	5.6%	88.8%
19	8.3%	11.2%	80.5%
20	10.9%	19.5%	69.6%
21	12.8%	30.4%	56.8%
22	13.6%	43.2%	43.2%
23	12.8%	56.8%	30.4%
24	10.9%	69.6%	19.5%
25	8.3%	80.5%	11.2%
26	5.6%	88.8%	5.6%
27	3.2%	94.4%	2.4%
28	1.6%	97.6%	0.8%
29	0.6%	99.2%	0.2%
30	0.2%	99.8%	0.0%



**SOME GENERAL EXAMPLES**

The following examples are for illustrative purposes only. They are not intended to be suggested as “best” strategies. They simply demonstrate the calculation of the market clearing price, the allocation of widgets, and the profits and losses.

### Example 1

There are 5 bidders: 1, 2, 3, 4 and 5. Suppose they submit the following schedules:

PRICE	Bidders					Demand	Cumulative Demand	Supply
	1	2	3	4	5			
30	0	0	0	0	0	0	0	26
29	0	0	0	0	0	0	0	26
28	0	0	0	0	0	0	0	26
27	0	0	0	0	0	0	0	26
26	0	0	0	0	0	0	0	26
25	2	0	0	0	0	2	2	26
24	3	0	0	0	0	3	5	26
23	5	0	5	0	0	10	15	26
22	5	0	3	2	1	11	26	26
21	5	0	8	6	17	36	62	26
20	6	26	10	18	8	68	130	26
19	0	0	0	0	0	0	130	26
18	0	0	0	0	0	0	130	26
17	0	0	0	0	0	0	130	26
16	0	0	0	0	0	0	130	26
15	0	0	0	0	0	0	130	26
14	0	0	0	0	0	0	130	26
13	0	0	0	0	0	0	130	26
12	0	0	0	0	0	0	130	26
11	0	0	0	0	0	0	130	26
10	0	0	0	0	0	0	130	26

The demand at each price is the sum of the demands of bidders 1, 2, 3, 4, and 5. For example the demand at price L\$22 is equal to  $5+0+3+2+1=11$ . Cumulative demand is equal to the total demand at that price and all higher prices. For example the cumulative demand at the price of L\$22 is 26: The sum of the demand at prices L\$22, L\$23, ..., L\$30 (i.e.  $11 + 10 + 3 + 2 + 0 + 0 + 0 + 0 = 26$  widgets). The market-clearing price is the highest price at which the cumulative demand equals or exceeds the supply. In this case, the cumulative demand exactly equals the supply at a price equal to L\$22, so L\$22 is the market clearing price.

**Assume the resale value for this auction ends up being L\$23.** Remember that players only profit for widgets they buy at a price below the resale value of the widgets. Since in this example

the clearing price is L\$22, each participant makes a profit of L\$1 times the number of widgets he/she is allocated. The allocation and profit/loss of the players would be as follows:

<b>PRICE</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Allocation (Widgets)</b>	15	0	8	2	1
<b>Profit / Loss (L\$)</b>	$15 \times (23-22)=15$	0	$8 \times (23-22)=8$	$2 \times (23-22)=2$	$1 \times (23-22)=1$

### Example 2

The following example illustrates a case where cumulative demand does not exactly equal supply at any price, and shows how the widgets are allocated if this occurs.

<b>PRICE</b>	<b>Bidders</b>					<b>Demand</b>	<b>Cumulative Demand</b>	<b>Supply</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
30	0	0	0	0	0	0	0	26
29	0	0	0	0	0	0	0	26
28	0	0	0	0	0	0	0	26
27	0	0	0	0	0	0	0	26
26	0	0	0	0	0	0	0	26
25	0	0	0	0	0	0	0	26
24	0	0	0	0	1	1	1	26
23	0	0	0	0	1	1	2	26
22	0	0	0	1	0	1	3	26
21	4	0	0	1	2	7	10	26
20	4	0	3	1	2	10	20	26
19	4	0	5	1	0	10	30	26
18	4	0	5	2	0	11	41	26
17	5	0	5	2	4	16	57	26
16	5	0	0	2	0	7	64	26
15	0	0	0	2	3	5	69	26
14	0	0	0	2	0	2	71	26
13	0	26	8	3	4	41	112	26
12	0	0	0	3	4	7	119	26
11	0	0	0	3	4	7	126	26
10	0	0	0	2	2	4	130	26

In this case, the market-clearing price is L\$19 because that is the highest price at which cumulative demand equals or exceeds supply. Since the cumulative demand at prices above L\$19 is 20 widgets, each player will be allotted his/her full demand at those prices. This means that there are only 6 widgets left to distribute to the players who submitted bids at L\$19, but since the demand at L\$19 exceeds the remaining supply (i.e.  $10 > 6$ ) each player's allocation will be rationed based on the size of his/her bid at L\$19. The larger the bid, the larger the allocation, as follows: Player 1 has bid for 4 widgets at L\$19. Since these 4 units represent  $4/10$  or 40% of the demand at that price, this player receives 40% of the 6 widgets left to distribute, which is 2.4 widgets. Player 1 will also receive his/her entire bid at prices above L\$19 (in this case 8) for a total allocation of 10.4 widgets. Importantly, Player 1 will pay L\$19 for all 10.4 widgets.

**Assume the resale value this auction round is L\$ 17.** The allocation and profit/loss of the players is as follows:

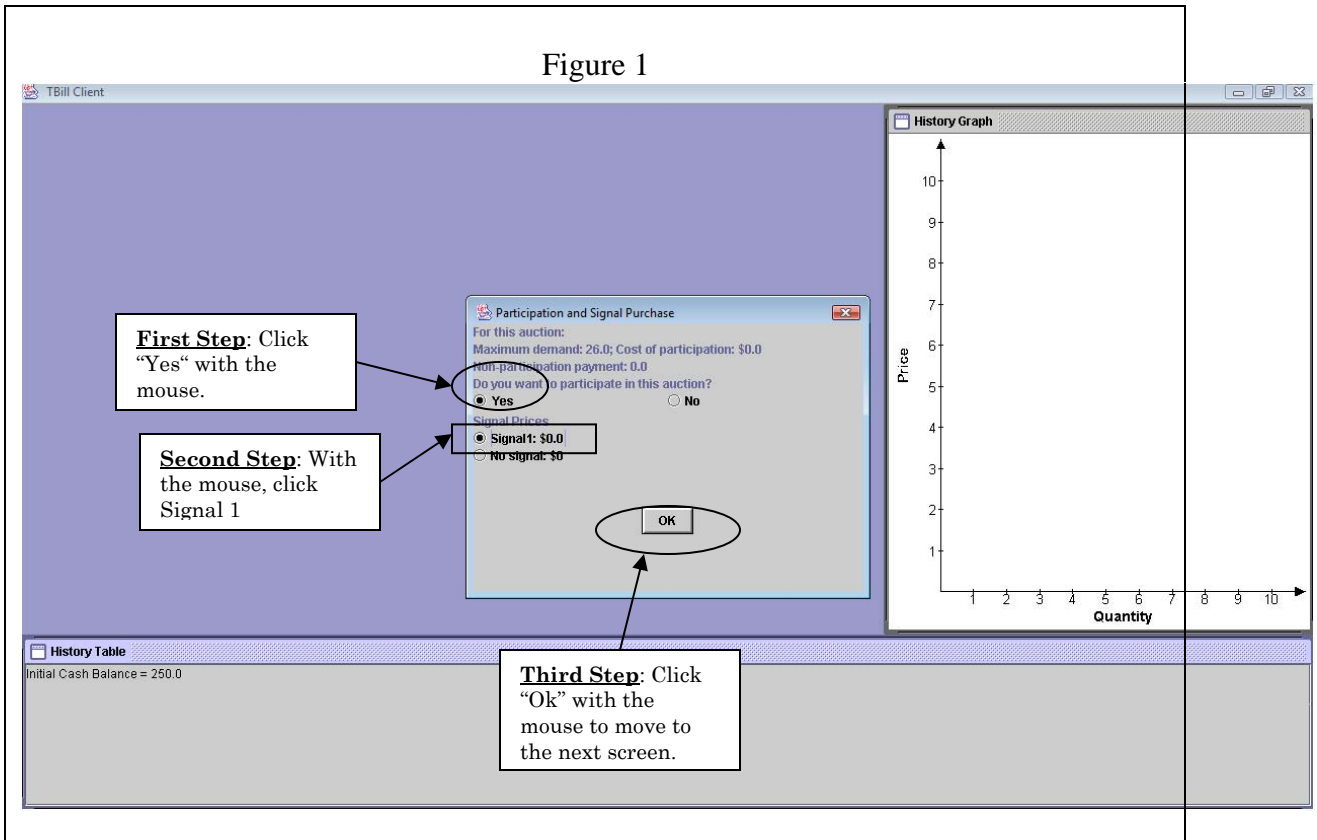
<b>PRICE</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Allocation (Widgets)</b>	10.4	0	6	3.6	6
<b>Profit / Loss (L\$)</b>	$10.4 \times (17-19) = -20.8$	0	$6 \times (17-19) = -12$	$3.6 \times (17-19) = -7.2$	$6 \times (17-19) = -12$

### **GRAPHICAL INTERFACE**

We next explain the computer interface. The figures in this section are for illustrative purposes only. Again, they are not intended to be suggested as “best” strategies, they simply demonstrate the computer interface.

Figure 1 shows the first screen you will see before each auction. This summary screen reminds you that your maximum demand is 26 widgets and that the cost of participation and the payment for non-participation are both zero. This summary screen will be identical for all the auctions in this experimental session. If you wish to participate in the auction, you must click the button labeled “Yes,” (you wish to participate in the upcoming auction). This screen also indicates the price of the information signal is zero. If you wish to receive information about the widget value you must select the option “Signal 1.” The default is “No signal: \$0.” If you do not select “Signal 1” you will not receive a signal and you will play the upcoming auction with less information than bidders that request a signal. After you have made your selections, click “OK.”

Figure 1



**Be careful with the use of the “ENTER” key in this initial screen.** Pressing it will advance you automatically to the next screen with any selections you may have made up to that point or with the default selections (no participation and no signal).

The following computer screen, shown in Figure 2, will allow you to submit your bid schedule and will be divided into three main areas: The “Bid Frame” itself (large area on the left-upper corner), the “History Graph” (thin rectangular area on the right-upper corner), and the “History Table” (wide rectangular area on the bottom of the screen).

The Bid Frame is the interface that allows you to input your bids at each price. Point “A” reminds you that your maximum demand is 26. This is also illustrated in the graph by the blue vertical line (marked A’). Point “B” indicates your signal of the resale value of the widgets will be L\$21 for this auction, but it may be more than or less than this amount. The resale value will be randomly determined each period as explained earlier. The white fields marked with “C” are where you will input your bids. The default value in these fields is zero, but you can either replace them with non-negative integers between 0 and 26, or you can leave them and write your bids to the right of

these zeros. You can move between prices by clicking on the desired field with the left button of your mouse.

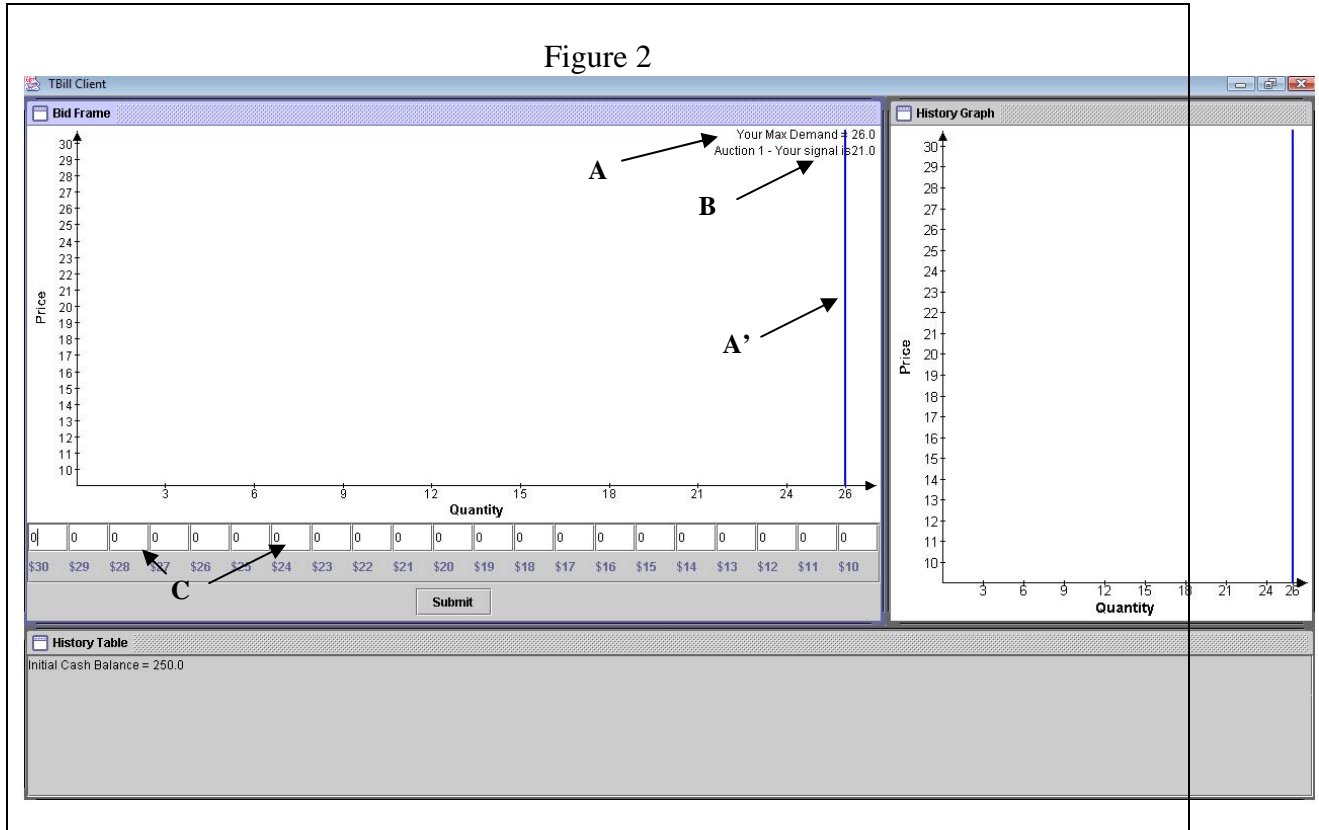
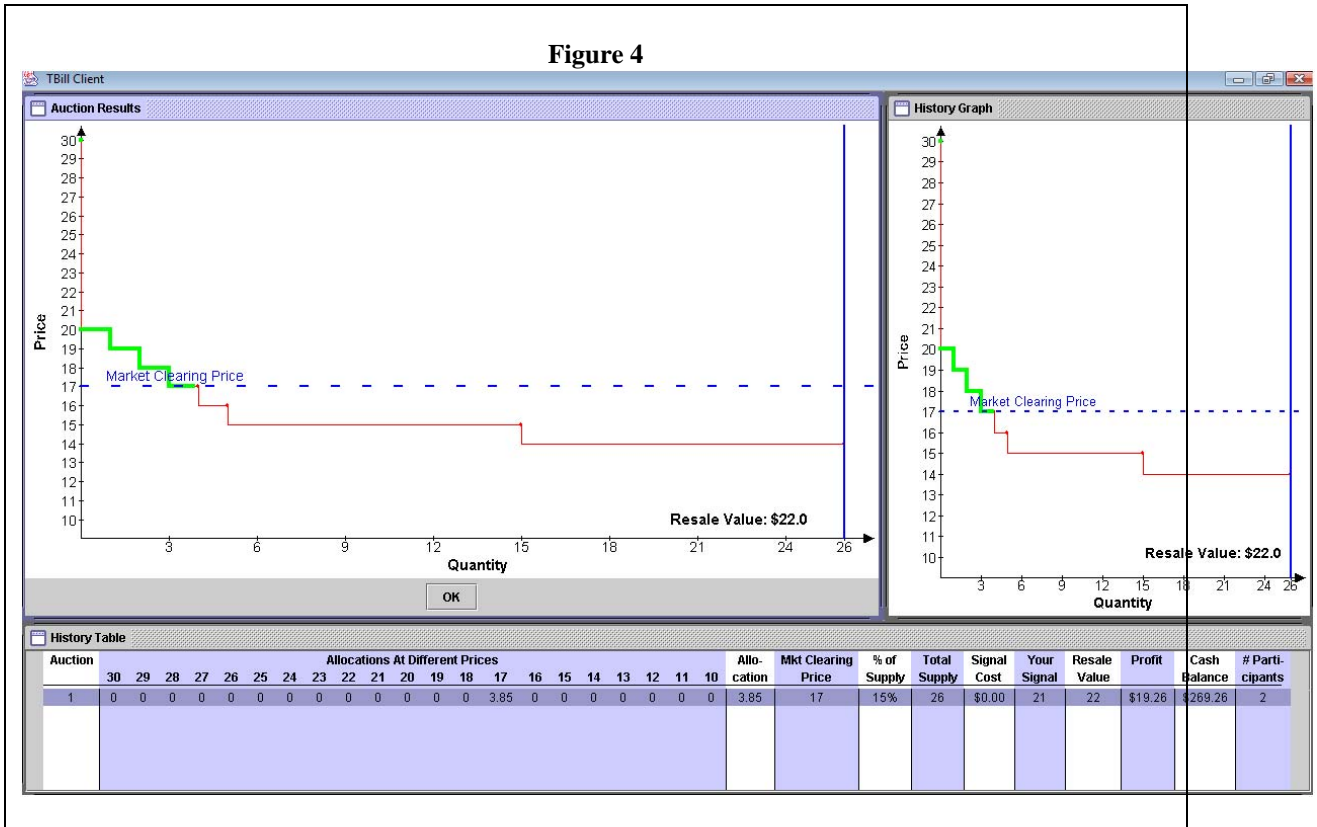


Figure 3 shows that as you input your demand schedule in the above mentioned fields, the computer will draw a bid schedule (demand graph). It will look like the downward sloping ladder graph marked with the letter “D” in Figure 3 if you have entered bids at more than one price. If you enter all of your bids at one price it will be a horizontal line.

Note that the bid schedule only goes as far as the maximum demand allowed (26). You are allowed to bid for less than this amount but not more. Once you are done inputting your bids, you submit them by clicking the “Submit” button on the screen with your mouse, or by “tabbing” into it with your keyboard and pressing the “Enter” key.



Figure 4

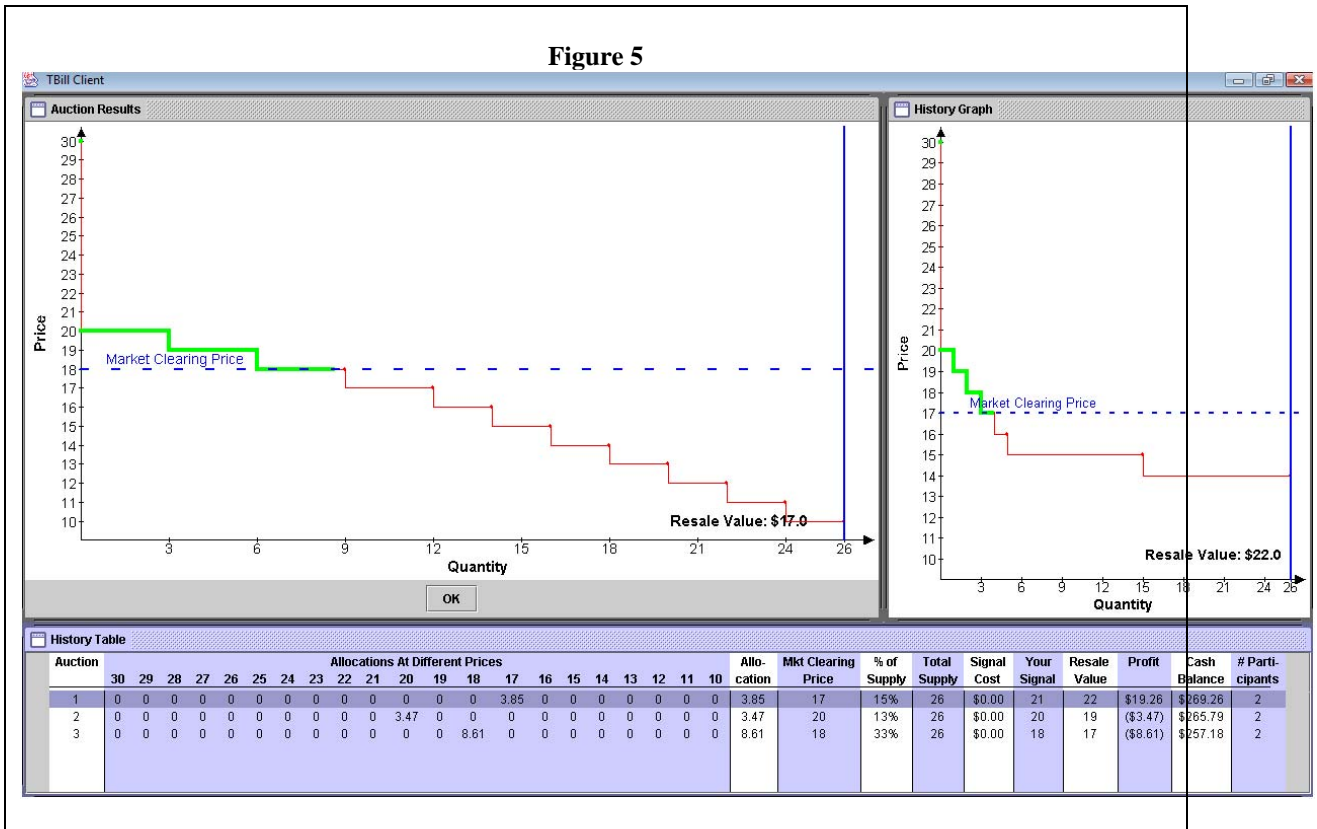


The “History Table” window gives you a numerical summary of the round’s results. It tells you the number of widgets you were allocated at each price (which in this case will always be the market clearing price), your total allocation, the market-clearing price, the percentage of the overall supply you received, the total supply (which in this case will always be 26), the cost of your signal (which in this case will always be zero), the value of your signal, the resale value of the widgets, your profits for this auction, your cash balance at the end of the auction, and the number of participants in the auction.

Figure 5 shows how the “History Graph” displays results from previous rounds. In this example, three rounds have been played. The history graph (upper right-hand corner) is showing the results of the first auction. At any point in the game you can recall a “History Graph” from past rounds by double clicking the desired round in the “History Table.” Notice in Figure 5 that although the “History Table” depicts the results of all the rounds played, the first round is highlighted. This means that the “History Graph” shown corresponds to that highlighted round. When a game lasts for more rounds than the “History Table” can show, a vertical scroll bar will appear to the right of the table. Use that scroll bar to view the results from any past period.



Figure 5



When the computer determines that the game is over, a screen will be displayed that reports the sum of your initial cash balance (of L\$250) and your profits/losses from participating in the auctions. You will be paid the US Dollar equivalent of the sum of these two numbers and the lump-sum adjustment the experimenter will disclose to all subjects at the end of the experiment. After the experiment has ended, the experimenter will come to your terminal and hand you a post-experimental questionnaire. Please remain seated until you are called by the experimenter for the private payment of your earnings.

## Quiz

**This quiz is meant to assess your understanding of the experimental instructions you just reviewed and to see how confident you feel about your upcoming performance. The results from this quiz will not affect your payoffs in any way. It is only intended to identify any segment of the instructions that requires clarification. Please answer all the questions to the best of your abilities and wait for the experimenter to go over the solutions with the group.**

1. Suppose you bid for 1 widget at a price of L\$20, 10 widgets at a price of L\$19, 2 widgets at a price of L\$18, and 13 widgets at a price of L\$17. Suppose the market clearing price is L\$18 and that you receive all the widgets you bid for at a price greater than or equal to L\$18, but none of the widgets you bid for at a price of L\$17. If the resale price is L\$20, what is your profit for the period?

2. Assume the following set of bids.

PRICE	Bidders					Demand	Cumulative Demand	Supply
	1	2	3	4	5			
30	0	0	0	0	0	0	0	26
29	0	0	0	0	0	0	0	26
28	0	0	0	0	0	0	0	26
27	0	0	0	0	0	0	0	26
26	0	0	0	0	0	0	0	26
25	5	0	0	0	0	5	5	26
24	0	0	0	0	0	0	5	26
23	0	0	0	0	0	0	5	26
22	0	0	5	0	0	5	10	26
21	0	0	3	2	1	6	16	26
20	0	0	0	0	0	0	16	26
19	0	0	0	0	0	0	16	26
18	0	0	0	2	0	2	18	26
17	4	0	8	0	4	16	34	26
16	6	0	10	0	0	16	50	26
15	11	0	0	0	4	15	65	26
14	0	26	0	22	0	48	113	26
13	0	0	0	0	5	5	118	26
12	0	0	0	0	6	6	124	26
11	0	0	0	0	6	6	130	26
10	0	0	0	0	0	0	130	26

a. What is the market-clearing price?

- b. Assume the resale value is 16. What is the profit of player D?
  - c. What is the profit of player B?
3. Assume your signal in an auction period is 19. Using the tables in Pages 4 -6, answer the following:
- a. What is the probability the resale value in that auction period is greater than 19?
  - b. What is the probability the resale value in that period is less than 19?
  - c. If the resale value is 17, provide a set of 4 possible signals for the other bidders consistent with this resale value?
4. Please write down, based upon your own judgment, what is the probability (in %) that your performance will exceed the median performance (top 50%) of all those who participated in the experiment today? \_\_\_\_%
5. What is your gender?    Male    Female

#### **POST EXPERIMENTAL QUESTIONNAIRE**

**(This will not affect your payment. Please answer these questions as honestly as possible)**

1. Please take a moment to describe how you determined what quantities to bid for at the various permissible prices.
2. Did your cash balance ever turn negative? If so, how did your strategy change then?
3. What was the lowest cash balance you ever reached? Can you more or less recall the number?
4. Did you, at any point in time, feel that your payoff at the end of the experiment would be zero?
5. Recall the probability you reported before the auctions began that your performance would be above the median of all those that participated at the experiment. Did your confidence change throughout the experiment? If you feel it did, how, when, and for what reason did it change?
6. What is now your assessment of the probability (in %) that your performance will be above the median (top 50%) of all those who participated in the experiment today? \_\_\_\_%
7. Was there any aspect of the experimental instructions that you felt you did not understand well, even after the question round with the experimenter? If so, which and how do you think that affected your performance?
8. Did you have previous experience trading in financial markets? If so, please describe briefly your prior experience?
9. Would you be interested in participating in a similar experiment in the future? If so, please write your name, email, or alternative contact information below.