Appendix B. Experiment Instructions

(Copies of the common instructions in the Overview (section B.1 below) were read aloud, but were not handed out to participants. The seller instructions (section B.2) and buyer instructions (section B.3) were handed out only to sellers and buyers, as relevant. These instructions were read publicly aloud, in sequence. Common information instructions (section B.4) and buyout instructions (section B.5) were read aloud, but copies were not distributed. In the seller instructions, we underline comments specific to the real buyer treatment and *italicize comments specific to the simulated buyer treatment.*

Similarly, in the buyout instructions, we underline comments specific to the no synergy treatment, **bold instructions specific to the fixed cost synergy treatment,** and *italicize instructions specific to the unit cost synergy treatment.* Notice finally that minimum price restrictions were never announced either to buyers or sellers.

B.1. Overview

This is an experiment in the economics of decision-making. Various research foundations have provided funds for this research. The instructions are simple, and if you follow them carefully and make good decisions, you may earn a considerable amount of money that will be paid to you in CASH at the end of the experiment. Your earnings will be determined partly by your decisions and partly by the decisions of others.

General Incentives. In today's experiment sellers and buyer earn money by selling and buying "units." Sellers are endowed with unit costs. Sellers earn money by selling units at prices in excess of their unit costs. Buyers are endowed with unit values. Buyers earn money by purchasing units at prices over their unit value.

An example illustrates. Could someone please give me a unit cost (Monitor Elicits a Cost). Thank you. Now could someone please give me a unit value (Monitor elicits a value that exceeds the unit cost). Now could someone give me a price (Monitor elicits a prices between the unit cost and the unit value.

If a unit sold at this price, the buyer would earn the difference between the unit value and the price, or in this case (Monitor elicits buyer earnings from participants.) The seller would earn the price minus his or her unit cost, in this case (Monitor elicits seller earnings from participants).

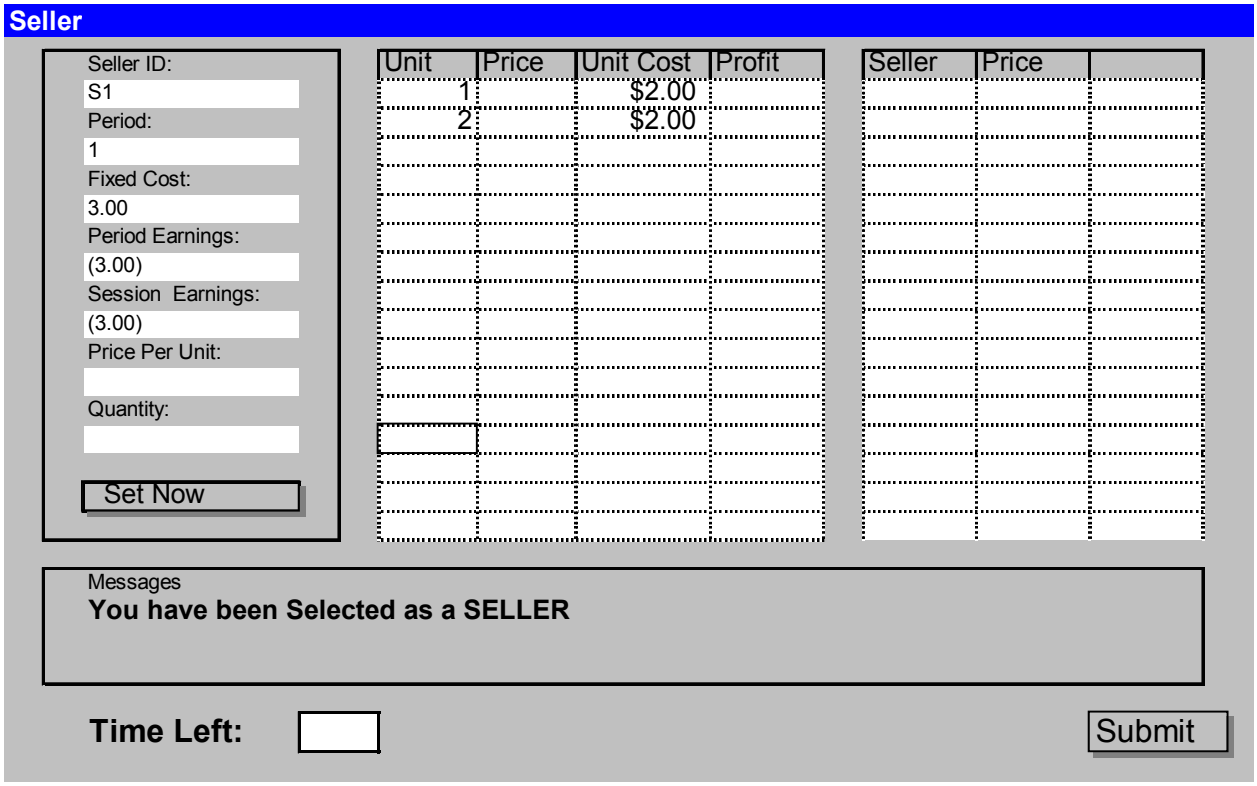
Note: In today's market sellers will also pay a fixed cost each period that is borne independent of sales. We explain this in more detail below.

The Trading Sequence. Today's market will consist of a number of *trading periods.* At the outset of each period sellers are induced with costs and buyers with values. Each trading period follows a simple two-step process. First, sellers make price and quantity decisions. Second, after all sellers have posted their decisions, a shopping mode begins and buyers make purchases. Following the shopping mode your earnings are calculated and a new period begins.

The Market Structure. In this experiment, **four** sellers will attempt to sell units to **two** buyers *a single simulated buyer.*

We explain market procedures in more detail below.

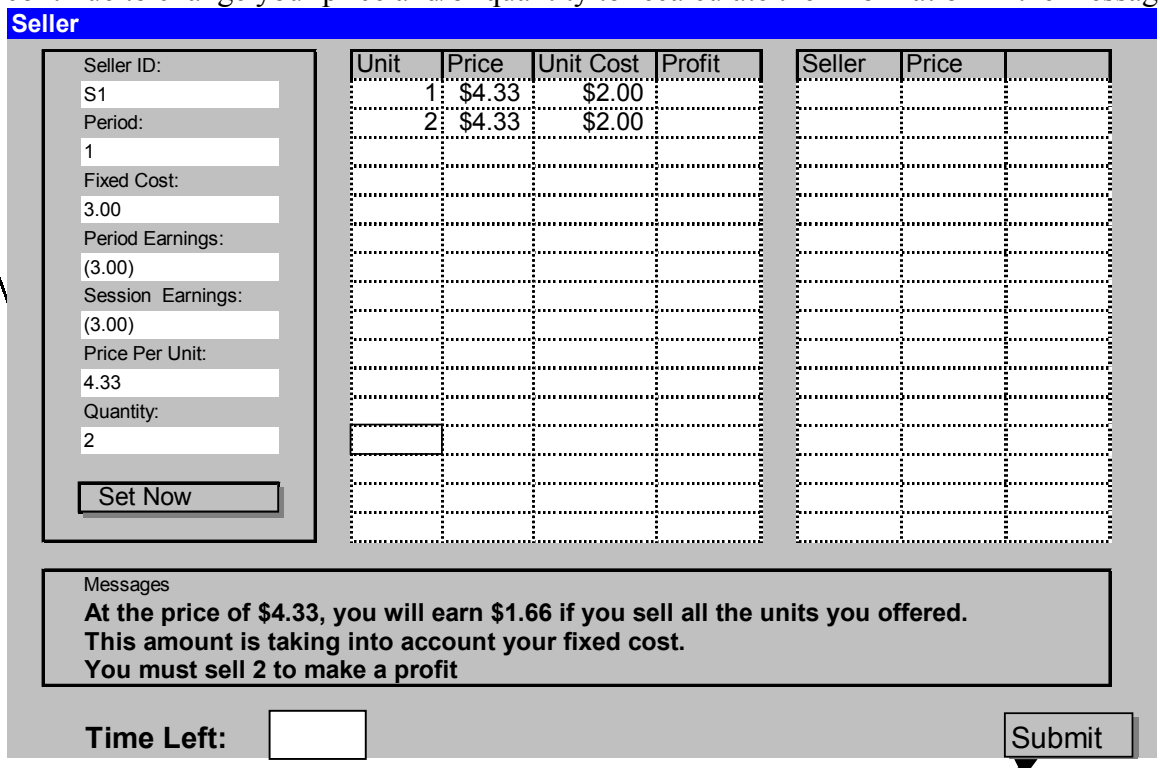
B.2. Specific Instructions for Sellers. In this experiment, you are a **seller**. This is what your screen will look like.



This session consist of a number of trading "periods." At the outset of each period you will be given a two units to sell, at a cost of you of $2.00 per unit. You will only incur these costs if you sell that unit. If you do not sell that unit, you do not incur the $2.00 cost for each unsold unit.

In addition to this cost of $2.00 per unit, you also incur each period a cost of $3.00 regardless of how many units you sell. We will call this cost a 'Fixed Cost' because you incur it no matter how many units you sell. That is, if you sell zero units, you will still incur a cost of $3.00. If you sell 2 units, you will incur a cost of $3.00 plus $2.00 for each of the two units sold.

Periods consist of two parts, a posting sequence, and a shopping sequence. In the posting sequence, you must decide the price at which you wish to offer your units for sale. To submit your price and quantity, type your price and quantity and then click on the 'Set Now' button. Suppose that you submitted a price of $4.33 and quantity of 2. Once you click on the 'Set Now" button, the software will calculate your profit IF you sell all of the units offered. It will also inform you how many units you must sell at that price in order to cover your fixed costs of $3.00 and avoid a loss. You may continue to change your price and/or quantity to recalculate the information in the message area.



Once you have settled on a final price and quantity offer, click on the 'Submit' to finalize that decision.

Once the sellers have all submitted their price and quantity offers, all of the offers will be displayed on the right portion of the screen, and the shopping sequence begins.

Seller	Price	
S1	$4.33	
S2	$4.54	
S3	$3.93	
S4	$3.72	

In the shopping sequence, buyers are drawn one at a time from a waiting mode. When selected, a buyer then make his/her purchases from the sellers. As the buyer does so, the quantity remaining on your screen will update. If the buyer purchases a unit from you, the profit column on your screen will be filled in row by row with each purchase (see below).

In the shopping sequence, an automated buyer will buyer will make purchases from the seller. The buyer will make all purchases possible that do not generate a loss, starting with the least expensive units first, followed by progressively more expensive units. If the buyer makes purchases from you, the profit column on your screen will be filled in row by row with each purchase (see below).

Unit	Price	Unit Cost	Profit
1	$4.33	$2.00	$2.33
2	$4.33		

Seller	Price	
S1	$4.33	
S2	$4.54	
S3	$3.93	
S4	$3.72	

Notice on your first unit that the unit cost $2.00, and sold at a price of $4.33. thus you earned $2.33 on the sale of that unit. *Importantly, your fixed costs do not appear here. Fixed costs will be deducted from your sales at the end of the period*. Recall, also if you do not sell unit 2, you do not incur the cost of $2.00 per unit for that unit.

At the end of the period you will receive a summary window of the results for that period. Suppose that you chose a price of $4.33 in Period 1 and sold both of the units you offered at that price. Then you earned $4.67 on the sale of those two units. Your period earnings are $4.67 less the $3.00 fixed cost, for $1.67.

A cumulative total of your session earnings is also maintained for you. *Note: period or cumulative earnings are recorded in brackets.*

When you have finished reviewing the results click on the 'OK' button. After everyone has clicked on the 'OK' button, the next period will begin.

Period Compete

Period 1 is over. Please view yor period earnings and data, then Click 'OK' to start the next period

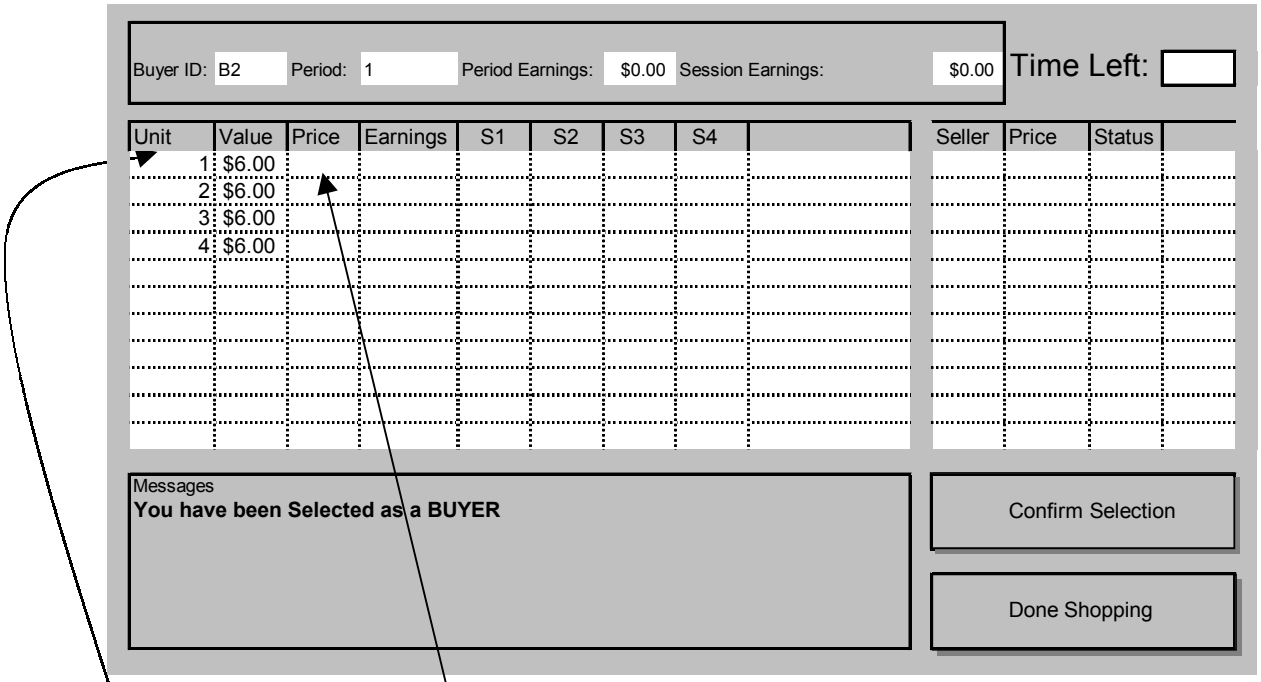
Transactions

Unit	Price	Cost	Earnings
1	$4.33	$2.00	$2.33
2	$4.33	$2.00	$2.33

Seller	Price
S1	$4.33
S2	$4.54
S3	$3.93
S4	$3.72

Period: 1 Period Earnings: $1.67 Session Earnings: $1.67 OK

B.3. Buyer Instructions. In this experiment, you are a **buyer**. This is what your screen will look like.



Notice the column labeled 'Value' has been filled in with dollar amounts. This indicates the value to you of buying this particular unit. In this experiment, you will have values for three or four units. Each unit is listed on a separate row and has a value to you of $6 if you purchase it. If you are able to buy a unit (and we'll describe the buying process soon) you will receive the difference between this value and the price paid. If you do not buy a unit, you do not receive the $6 value for each unpurchased unit.

At the beginning of each period, you will be given a new set of either 3 or 4 unit values. The period proceeds as a two-step sequence. First, you will wait, as the sellers make price and quantity posting decision. During the price posting sequence, your screen will appear as above. After sellers complete price and sales quantity decisions, sales prices will appear on the right hand of the screen, as shown in the figure below. Then a shopping sequence begins. Buyers are randomly selected, one at a time, to shop.

When you have been selected to shop, the bottom of your screen is as shown below. Your decision while shopping is to buy by accepting the prices of the sellers.

Buyer ID: B2 Period: 1 Period Earnings: $0.00 Session Earnings: $0.00 Time Left: 44

Unit	Value	Price	Earnings	S1	S2	S3	S4
1	$6.00	$3.72	$2.28				$3.72
2	$6.00	$3.72	$2.28				$3.72
3	$6.00	$3.93	$2.07			$3.93	
4	$6.00						

Seller	Price	Status
S1	$4.33	In Stock
S2	$4.54	In Stock
S3	$3.93	In Stock
S4	$3.72	Sold Out

Messages
You have been selected to shop. Please choose a SELLER to purchase from.

Confirm Selection

Done Shopping

You can purchase from any seller as long as the status indicates 'In Stock', i.e., the seller has units available to sell at that price. To purchase a unit from a seller, say S3, click on the row of that particular seller so that it becomes highlighted. Then to buy a unit at that price, click on the 'Confirm Selection' button.

As you click on the 'Confirm Selection' button, the rows next to the units will be filled in with the price and earnings information. Your earnings are equal to the 'Value' minus 'Price Paid'. In the example above, the buyer purchased the first two units at a price of $3.72 from Seller 4. Hence the earnings from each unit are $6.00 – $3.72 = $2.28.

You may continue making purchases as long as you have unpurchased units available. If at any time you wish to stop shopping simply press "Done Shopping."

At the end of the period you will receive a summary window of the results for that period.

When you have finished reviewing results for the period click on the 'OK' button. After everyone has clicked on the 'OK' button, the next period will begin.

Period Compete

Period 1 is over. Please view yor period earnings and data, then Click 'OK' to start the next period

Transactions

Unit	Sale	Value	Price	Earnings
1	S3	$6.00	$3.72	$2.28
2	S3	$6.00	$3.72	$2.28
3	S4	$6.00	$3.93	$2.07
4	S4	$6.00	$3.93	$2.07

Seller	Price
S1	$4.33
S2	$4.54
S3	$3.93
S4	$3.72

Period: 1 Period Earnings: $8.70 Session Earnings: $ $8.70 OK

B.4. Public Information (read aloud at the end of the instructions)

Information on Sellers: There are **4** sellers. Each seller can sell up to **2** units and each unit costs **$2.00** to produce. A seller will only incur these costs if he or she sells that unit. If a seller does not sell a unit, he or she does not incur the **$2.00** cost for each unsold unit.

In addition to this cost of **$2.00 per unit**, a seller also incurs each period a cost of **$3.00** regardless of how many units he or she sells. That is, if a seller sells **zero** units, he or she will still incur a cost of **$3.00**. If a seller sells **2** units, he or she will incur a cost of **$3.00** plus **$2.00** for each of the two units sold.

Information on Buyers. There are **2** buyers. Each buyer can purchase a maximum of either 3 or 4 units per period at prices up to $6.00 per unit. In total a maximum of 7 units may be purchased ina peroid. When a buyer purchases a unit, he or she will receive the difference between $**6.00** and the price paid to a seller. If a buyer does not purchase a unit, he or she does not receive the $**6.00** value for each unpurchased unit.

*Information on the Computer Buyer.*The computer buyer will purchase a total of **7** units, if all **7** units are available at prices of $**6.00** or less. The computer will purchase no units priced above $**6.00**. The computer will always purchase the lowest priced units first, followed by the next lowest priced units, etc.

Final Comments

- Notice that each period sellers collectively may offer a maximum of **8** units, and the buyer will purchase **7** units, provided that the price for each unit is $6 or less.

- More than **six** *four* participants are in the room because we are conducting several market simultaneously. You will remain in the same market throughout today's session.

- The session consists of a large number of periods, which will be broken down in a number of segments. When a segment ends, please sit patiently at your desk until the monitor starts a subsequent segment. We ask that you do not talk with other participants. However, you may check your email or look on the internet if you wish. We will not announce in advance neither the total number of segments nor the total number of periods in any segment in today's session.

- At the end of the experiment, your experimental dollars will be converted into cash at the rate of 10 experimental dollars for **$1**. You will be paid the sum of your cumulative earnings, plus your $6 appearance fee, and, for sellers, a $5 cash balance.

- Please do not talk, or look on others' screens.

Any questions? If not, we will begin.

B. 5. Consolidation Announcement (read after period 25).
A consolidation has just occurred! The number of sellers will now drop from 4 sellers to 2 sellers. To identify the acquired and the acquiring sellers, please draw a card from the monitor. The cards are labeled, respecitvely: **M1, A1, M2**, and **A2.** If you draw **A1** or **A2**, you are an *acquired* seller. If you draw **M1** or **M2** you are a merged firm. Merged firms will make pricing decisions for the remainder of the session, while their acquired counterparts watch on. At the end of the session **M1** will divide his or her post-merger earnings with **A1** (pre-merger earnings will not be split). Similarly, at the end of the session, **M2** will divide his or her post-merger earnings with **A2.**

At this time we ask that **A1** move next to **M1**, and that **A2** move next to **A2**. Note: **A1** and **A2** may commincate with **M1** or **M2** in any way.

Information on the Merged Firms

No Synergy Treatment:
-**M1** and **M2** may each offer up to **4** units per period, at a cost of **$2** per unit**,** rather than the 2 units they could each offer pre-meger . As before there is no cost for units offered but not sold.

-Per period fixed costs for **M1** and **A1** combined **equal $6.00** per period. Notice that post-merger fixed costs for the consolidated firm equal the fixed costs for the firms separately, pre-merger. Similarly for **M2** and **A2**. These costs are incurred regardless of whether any units are sold.

Fixed Cost Synergy Treatment:
*-**M1** and M2 may each offer up to **4** units per period, at a cost of **$2** per unit**,** rather than the 2 units they could each offer pre-meger . As before there is no cost for units offered but not sold.*

*-Per period fixed costs for **M1** and **A1** combined drop from **$6.00** per period to **$1.50** per period. Notice that relative to the pre-merger situation for **M1** and **A1**, this represents a savings of **$4.50** per period, since pre-merger each firm paid fixed costs of **$3.00** per period. Similarly for **M2** and **A2**. These costs are incurred regardless of whether any units are sold.*

Unit Cost Synergy Treatment:
-M1 and M2 may each offer up to 4 units per period, at a cost of $0.71 per unit, rather than the 2 units they could each offer pre-meger at $2 per unit. As before there is no cost for units offered but not sold.

-Per period fixed costs for M1 and A1 combined equal $6.00 per period. Notice that post-merger fixed costs for the consolidated firm equal the fixed costs for the firms separately, pre-merger. Similarly for M2 and A2. These costs are incurred regardless of whether any units are sold.