

The Market Game

We will play a market game in class. The objective of the game is to simulate the economic forces of supply and demand and to illustrate decision making in a market setting.

Please bring a laptop to class so you can participate in the game (you need to have Chrome or Firefox installed).

In this market you will be randomly assigned into one of three roles: a consumer, a producer, or a potential trader. In this market you trade widgets. Widgets are identical in quality but have different production costs. Each producer can produce a single widget; the *production cost* of a widget always appears on the widget itself. Each consumer has a *reservation price* for a widget. This is the value that this particular consumer associates with owning a single widget. The reservation price appears for a consumer when they are in the game.

When the market is open each participant can buy a widget, and participants who own a widget can sell it. In the beginning, the only sellers are the producers initially endowed with a widget, but anyone who purchases a widget in the market can then turn around and sell it if they wish.

You will see two potential inputs, one where you can bid a price for buying a widget and one where you can ask for a price if you own a widget and wish to sell. You can enter a number (all the numbers are in US\$), please only enter numbers in multiples of 10 cents. Once you submit, say a bid, a seller can either press the “Sell at bid” button to accept your bid, or if the asked price meets your bid a transaction will be made. The widget will move from the seller to your account and will appear on your screen. The system will record the transaction and the sale will appear in the transaction list (all participants can see all the transactions). Once a transaction is made all the bids and asks are cleared. You need to start bidding or asking from scratch for the next transaction.

A producer will see a screen similar to the one below, note that this particular widget has a production cost of \$2. Also note that the producer can both Ask and Bid (or Buy and Sell) since they can buy another widget or sell the one they currently have.

The screenshot shows the Stanford Business Ignite Market Game interface. At the top, it says "STANFORD BUSINESS IGNITE" and "00:37 remaining". Below this, there are two input fields: "Highest Bid" and "Lowest Ask", both showing "\$0". In the center, there is a green play button and the text "Game is in progress". On the right, it says "Welcome, Darrick Antell Jr." and "logout". Below the "Game is in progress" section, there is a "Your Current Standing" section showing "\$2". At the bottom, there are two input fields: "Bid" and "Ask", both showing "0". Below these are "Submit" buttons. At the very bottom, there are "Buy at Ask" and "Sell at Bid" buttons. In the center, there is a "Your Widgets" section showing a gear icon and "\$2". On the right, there is a table with columns "Buyer", "Seller", and "Price", and a message "No data available in table".

A consumer will see the screen below: Notice that this consumer does not own a widget

at this point and therefore cannot “Ask” (the “Ask” column is dimmed). Her reservation price is \$2.5. In this version there is also a timer indicating when the market will be closed.

STANFORD BUSINESS IGNITE

00:37 remaining

Welcome, Andrea Kambara [logout](#)

Highest Bid: \$0 Lowest Ask: \$0

Game is in progress

Your Current Standing: \$0

Bid: 0 Ask: 0

Submit Submit

Buy at Ask Sell at Bid

Your Reservation Price: \$2.5

Buyer	Seller	Price
No data available in table		

A trader who does not have a widget will see a similar screen to the consumer, but without a notice on his reservation price.

STANFORD BUSINESS IGNITE

00:36 remaining

Welcome, Dave Guercia [logout](#)

Highest Bid: \$0 Lowest Ask: \$0

Game is in progress

Your Current Standing: \$0

Bid: 0 Ask: 0

Submit Submit

Buy at Ask Sell at Bid

Buyer	Seller	Price
No data available in table		

Here are a few notes on how the market is set up:

- All the numbers you see in this handout are fictional. You will not be provided any information on these numbers other than that no number is higher than \$10. These numbers are not randomly generated; they are just assigned randomly to the participants. These are, in reality, private information.
- You will not be told the exact number producers or consumers in the market, but a rough estimate will be provided in class.
- Remember, each widget may have a different production cost and each consumer may have a different reservation price.
- Each producer gets only the initial widget throughout the market (they can buy and sell, but cannot produce more).
- The system will not let you sell a widget if you do not own one (there is no “short selling”).

- You can buy multiple widgets.
- Only one widget can be sold/bought at a time.
- If you have multiple widgets and have just sold one the system will transact on the widget with lowest production cost (more on this below).

Some technical notes:

- Since we are running an auction for each transaction the systems clears all bids/asks once a transaction is made.
- After you submit a bid/ask/take, it goes to the server queue and will be processed in order. Once, in this queue, a transaction is made, the server will drop the rest of the bids/asks/take in the queue. Hence, you might take an ask yet someone else who bid high enough before you did gets it. In this case all bids/asks/takes are cleared from the system. You need to submit a new bid/ask if you want to participate in the next widget auction.
- You can either type a bid/ask, or use the arrows to raise/lower the number, or click one of the buttons to accept a current bid/ask. Note: if you accept an ask you have just **bought** a widget. If you accept a bid you have just **sold** one of your widgets.

So why sell, buy, and how do the production costs and reservation prices factor in?

These numbers reflect the actual costs and values created by a product. The production cost of a widget can also be seen as what we call *opportunity* cost. If you are a producer this number indicates how much it would cost to produce that widget, or in this case this is also how much you can save if you did not produce it. Let's say that you are a producer with a widget that has \$1.50 indicated as production cost. If you never sell that widget you will receive \$1.5 after we analyze all the market transaction. This means that you should not sell this widget unless someone is willing to pay you more than \$1.50. If, for example, you sold your widget for \$2.5, you will receive after the market game is over \$2.5. Hence, by selling the widget you made \$1 simulating the margin for a product sold for \$2.5 with a production cost of \$1.5.

For a consumer, the reservation price indicates the value of a widget if you purchase one. Hence, if you are a consumer and you never buy a widget, you have paid nothing but gained nothing. If, however, you purchase a widget, say for \$1.5 and your reservation price was \$2.0 you will be paid \$0.5 after the game. This represent the value you have gained from the widget (\$2.0) minus what you paid for it (\$1.5). Notice, you are not being paid for the production cost, this is because you are consuming the widget and getting the utility from that.

The "Your Current Standing" captures your net profit/loss in the market so far. For traders and producers we calculate the net profit/loss as follows. At the end of the game we look at the net amount of money you received for selling widgets minus what you paid for purchasing them. In addition you also get the production costs of each of the widgets you still hold when the market is over. For example, suppose that you bought two times at the prices \$3, \$3.5 and sold one of the widgets at the prices of \$4 and suppose the widget you have left has a production cost of \$1.5, your net outcomes is $1.5+4-3-3.5=-1$ and you owe \$1 after the game. Note

that when you sell a widget the system will always sell the one with the lowest production cost out of the ones you own at the time of sale. This guarantees you get the highest payoff. The idea is that by trading you can only make money by the difference between the buying price and the selling price, however, if you are “stuck” with a widget when the market closes, we provide you with the opportunity cost (just like a producer).

Consumers who trade widgets have the same calculated current standing with one difference. The value of the lowest production widget they have at the end is replaced with their reservations price. In other words, a consumer gets to consume one of the widgets at the end. The value of consuming the widget is the reservation price.

A few things to note:

- A consumer can only consume one widget. All other widgets are valued at the production (opportunity) cost.
- If you have a widget there is no reason to sell it for under its production cost, since this is guaranteed.
- If you are not a consumer and you are buying a widget, the only reason would be if you expect you can make money by selling it later.
- If you are a consumer, you can still be a trader: If you buy a widget under your reservation price you can make money by consuming it, but if you buy at more than your reservation price, it should be because you expect to sell it for higher.
- We do not allow collusion, or side-markets. You cannot trade outside the simulation.
- The reservation price captures “willingness to pay”. This concept is not only private, it is, in reality, difficult to reveal. I can tell you my reservation price is \$3 but I can’t prove it. To keep the simulation realistic, do not share your reservation price if you are a consumer.

This particular market simulates what we call a competitive market, in the sense that multiple producers and multiple consumers are trading a single homogenous good – the widget.

Good luck.