Lecture 3(i)

Announcements

HW2 due Tues 11:45 pm

Lecture

1. Discuss auction experiments
2. Elasticity: general idea
3. Midpoint formula
4. Special Cases

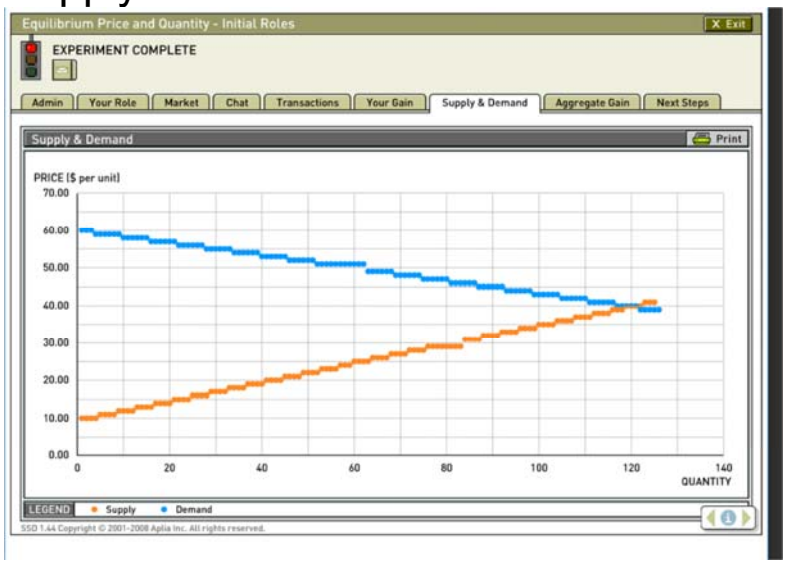
Experiments from last week.
Profit for seller: Price minus cost.
Profit for buyer: Value minus price

Line up sellers from lowest to highest and plot costs. Get_____

Line up buyers from highest to plot values. Get._____

equilibrium is price = _____ and Q = ____

Supply and Demand for Section 001AL



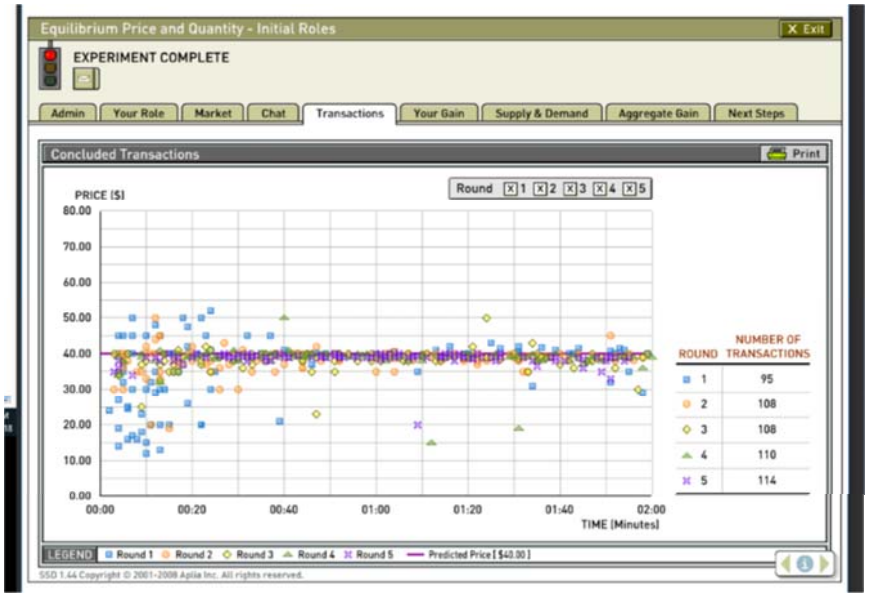
Highest value buyer: value of 60. At competitive price has profit of:_____

Lowest cost seller: cost of 10. At competitive price has a profit of: _____

Average between them is 25 in profit.

Some buyers have a value of 40 and at competitive price have profit of _____

At the perfectly competitive price, on average profit per student (per round) is approx $12
Let's look what happened for 001AL:



In the figure, blue squares represent transactions in the first round. There is an interesting pattern in the auctions. In the first round of each auction, transaction prices are all over the place, four around $15, a one at $60, and so on. But most the trades taking place away from the $40 benchmark are low price trades, e.g. $14, $15. So even though there is symmetry in that the buyers are mirror images of the seller. Students are more willing to sell at a low price than buy at a high price. Later in the auction, most trades take place near price equal to $40.

Average Realized Profit By Round
(Equals 12 with perfect competition)

Round		Large Lectures			
	Across All 1 Experiments	9:05 A-L	9:30 M-Z	10:10 A-L	10:35 M-Z
1	10.32	9.68	10.39	10.49	11.02
2	11.05	10.98	11.12	11.48	10.85
3	11.35	11.14	11.19	11.71	11.09
4	11.44	11.33	11.45	11.62	11.23
5	11.69	11.53	11.74	12.10	11.55

The previous table shows the results across different lectures. Recall that the average profit is $12 at the perfectly competitive outcome in this market. We can see the learning, by looking at what is happening to the average profit in the later rounds. Profit starts low and rises in the later rounds.

Next, let's look at the highest scoring trades. To determine who played the best, we have to adjust scores to take into account that some sellers draw low costs and some buyers draw high values.
(Note: everyone who participated in auction gets 1 bonus point added to HW2 If your adjusted profit is in top half, your get an extra bonus point.)

How buyer score is calculated:
1. Calculate buyer's profit when purchase a book at $40 (the competitive price).
2. Adjustment (per round) is difference between that and $12 (average profit at competitive price).

Example 1: Buyer has value of $45.
1. Profit at $40 purchase price = $5 (= $45-$40).
2. Adjustment (per round) = +$7 (to get to $12 per round)

Example 2: Buyer has value of $60.
1. Profit at $40 purchase price = $20 (= $60-$40).
2. Adjustment (per round) = −$8 (to get to $12 per round)

Bottom line:

- If a buyer, we start you at 12 and give you one point for every dollar below $40 in the price of a book you buy.
- If a seller, start you at 12 and give you one point for every dollar above $40 in the price of a book you sell.

Who are the superstar traders? (The highest point getters in each auction?)

They all did it the same way .

- All buyers (not sellers)
- Snapped up a great deal at least once and did OK the other times.

Superstar for 001AL. Buyer value 46

predicted profit = 46-40 = 6 (adjustment is +$12)

Round	Price paid	Actual Profit	Adjusted Score
1	24.49	21.51	27.51
2	40	6	12
3	40.01	5.99	11.99
4	15	31	37
5	39.4	6.6	12.6

(total Adjusted Score =**101.10**)

Superstar for 001MZ. Buyer value 51

predicted profit = $11 (adjustment +1)

Round		Price paid	Actual Profit	Adjusted Score
1		15	36	37
2		37.99	13.01	14.01
3		35	16	17
4		35	16	17
5		40	11	12

(total Adjusted Score =**97.01**)

Superstar for 022AL. Buyer value 43

predicted profit = 43-40 = 3 (adjustment is +$9)

Round	Price paid	Actual Profit	Adjusted Score
1	37	6	15
2	37	6	15
3	16.75	26.25	35.25
4	40	3	12
5	40	3	12

(total Adjusted Score =**89.25**)

Superstar for 022MZ. Buyer value $47

predicted profit = 43-40 = 3 (adjustment is +9)

Round	Price paid	Actual Profit	Adjusted Score
1	15.99	27.01	36.01
2	28	15	24
3	38.90	4.10	13.10
4	39.99	3.01	12.01
5	40.00	3.00	12.00

(total Adjusted Score =**97.12**)

And the superstars are....

While most research in economics is based on data from actual markets, analysis of data from experimental markets plays some role in the field.

- Can see how we can use this data to study speed of learning
- Can also potentially use this to study characteristics of success.
  - Links to course grades?
  - Do students with an interest in business (e.g. in Carlson) tend to do better?

Let's take an exploratory look with data from earlier years.

Relationship between
- Econ 1101 Class Performance (Quartile)
- Adjusted Profit on Experiment

	Adjusted Profit			
Course Performance (Quartile)	Average Years 2009-2011	2009	2010	2011
1	55.43	55.68	55.09	55.45
2	54.58	55.09	54.87	53.88
3	53.66	55.12	54.29	51.78
4	50.25	51.30	49.02	50.29

Relationship between
- Econ 1101 Class Performance (Quartile)
- Being late for experiment
  (robot plays first round, student plays later rounds)

	Percent of Students Late			
Course Performance (Quartile)	Average Years 2009-2011	2009	2010	2011
1	2.2	1.7	2.6	2.4
2	2.3	1.7	3.5	2.0
3	2.3	1.7	2.9	2.4
4	5.9	6.9	5.7	5.2

- Year after year, the students who tend to do poorly in this class are the same ones who tend to show up late for the auction.

- More generally students who do poorly in grades tend to earn less later in life than their peers who do well in grades.
  - There are many factors at work here.
  - One potential factor: being late for things (sending resumes out late, etc.)
  - Certainly true in experiment. If robot plays for you, you get zero!

Last class: discussed direction of effects.

For example:

(1) own price ↑ then Q^D ↓

(2) substitute price ↑ then Q^D ↑

This class: beyond the direction, we are interested in the magnitude.

Sure Q^D ↓ when own price↑.
But by how much?

Sure Q^D ↑ when substitute price ↑.
But by how much?

Magnitudes are crucial (Look back to end of last lecture when two things change. Relative magnitude determines net effect.)

Elasticity

Responsiveness of demand and supply to changes.

How much does it bend?

How about slope?

$$\frac{\Delta Q^D}{\Delta P} = \frac{Q_2^D - Q_1^D}{P_2^D - P_1^D}$$

Defective because of units issue.

i). Compare slope for California and Delaware
ii). Compare Minnesota and British Columbia

Get units out by using percentages

Price elasticity of Demand (midpoint method)
(ugliest formula we see, all semster!)

$= e^D$

$$-\frac{\%\Delta Q^D}{\%\Delta P}$$

$$= -\frac{\dfrac{Q_2 - Q_1}{\frac{1}{2}(Q_2 + Q_1)}}{\dfrac{P_2 - P_1}{\frac{1}{2}(P_2 + P_1)}}$$

When we report the e^D we drop the minus sign (following the convention of the book). To get rid of the minus sign we have to put an extra minus sign in. (That's why the minus sign shows up in the formula)

We remember that own price effect is an inverse relationship, so OK to drop sign.

Need to keep track of sign for:
Cross-price elasticities (how demand for good responds when a different price changes)

Income elasticities

Special Cases

Perfectly Inelastic Demand
$e^D = 0$

Examples:

Who is this man?

Hint: Something to do with demand elasticity for a rare drug.

Perfectly Inelastic Supply

$e^S = 0$

Examples:

Perfectly Elastic Demand
e^D = infinity

Examples:

In Between Cases

(1) When $e^D < 1$ we say
Demand is Inelastic

Total Spending = P*Q increases as P increases.

(2) When $e^D > 1$ we say
Demand is Elastic

Total Spending = P*Q decreases as P increases.

(3) When $e^D = 1$ we say
Demand is Unit Elastic