Economics 201

Fall 2010

Double-Oral Auction Experiments

Results and Analysis

Design of the Experiment

- Buyers could buy one widget at price less than or equal to given value.
- Sellers could sell one widget at price greater than or equal to given cost.
- Buyers and sellers interacted in double-oral auction market.
- Transaction prices posted in real time.

Is market perfectly competitive?

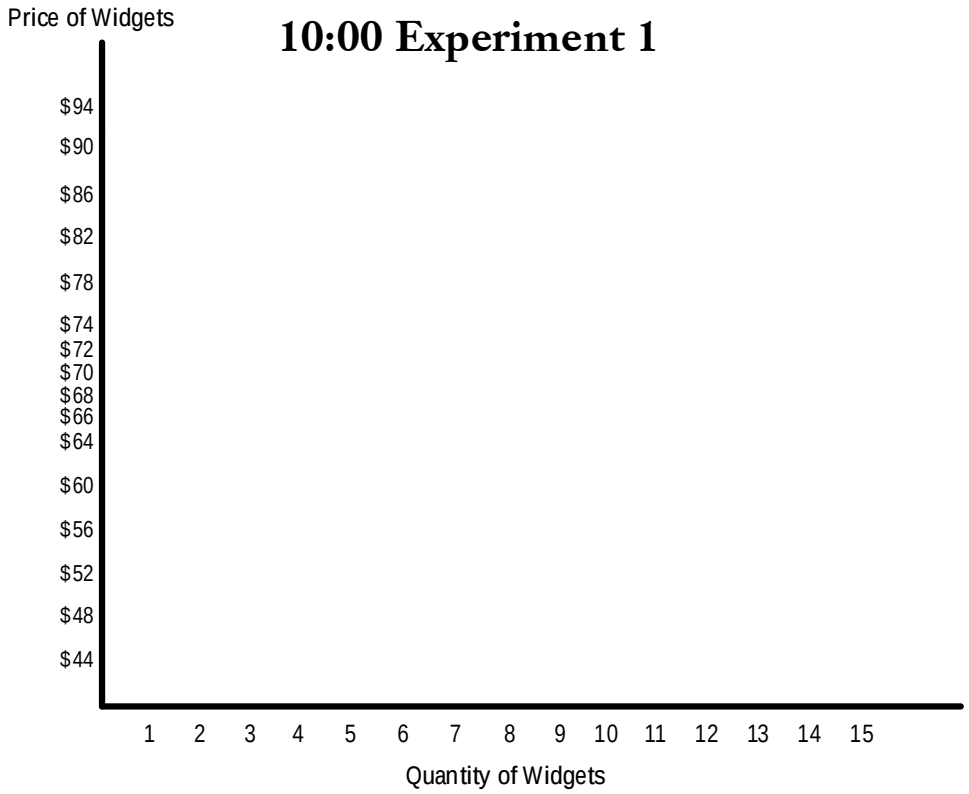
- All buyers & sellers are small part of market?
- Homogeneous product?
- Perfect information?
- Walrasian auctioneer to adjust price to equilibrium instantaneously?
- Free entry? (not relevant here)

What was the demand curve?

Demand curve asks the question: "How many widgets would buyers have bought if all had been available for purchase at $X?" Repeats the question for various values of $X.

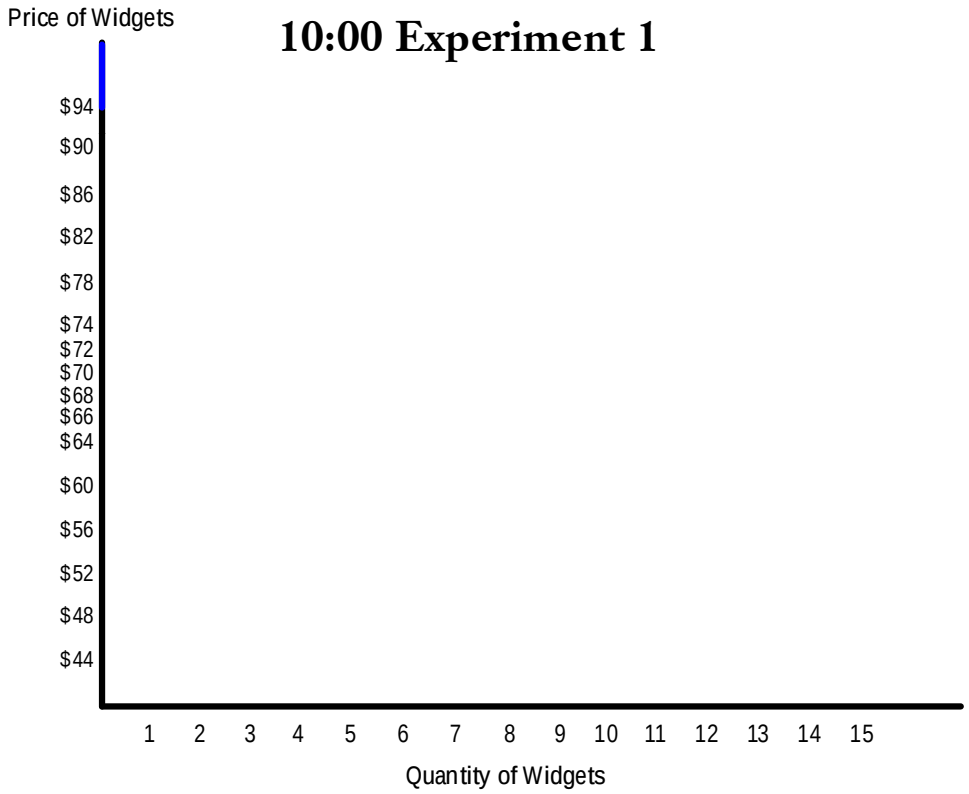
What was the demand curve?

- In 10:00 Experiment #1, the highest value for any buyer was $94.



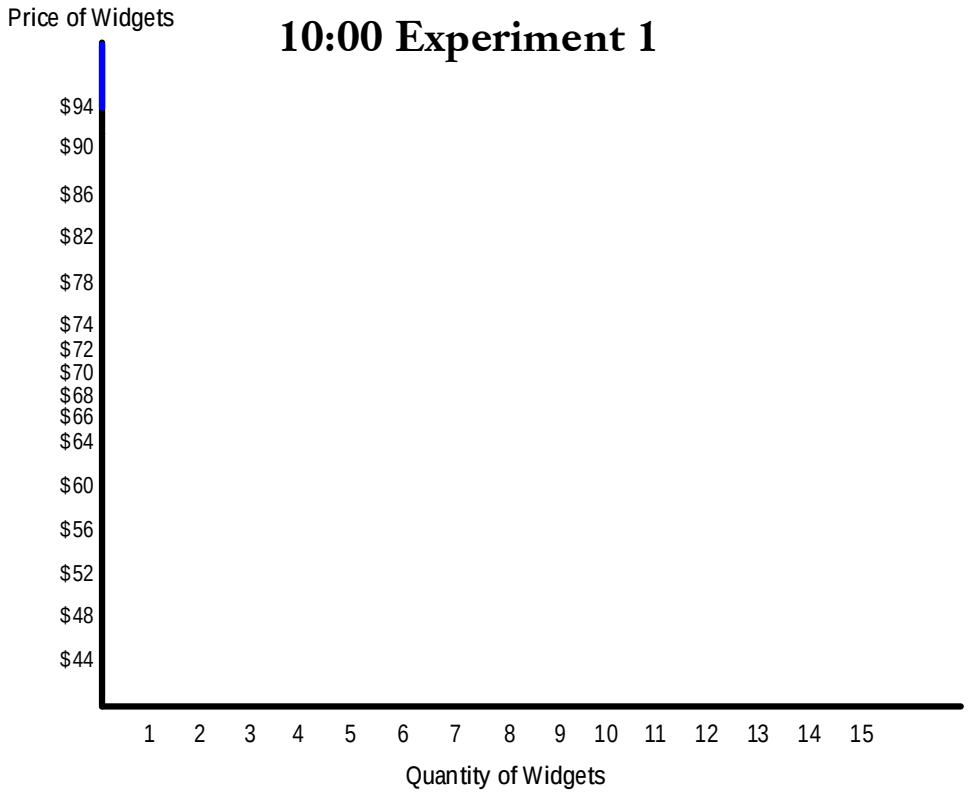
What was the demand curve?

- In 10:00 Experiment #1, the highest value for any buyer was $94.
- For any price above $94, quantity demanded was zero.



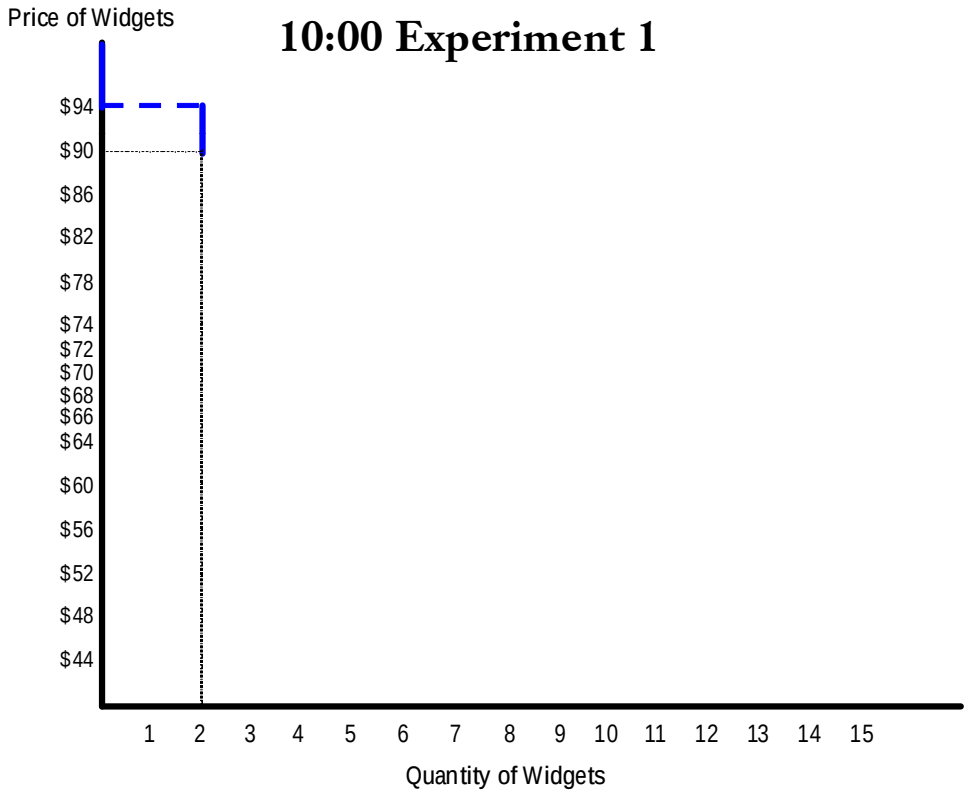
What was the demand curve?

- At a price of $94, two people can buy without making losses.



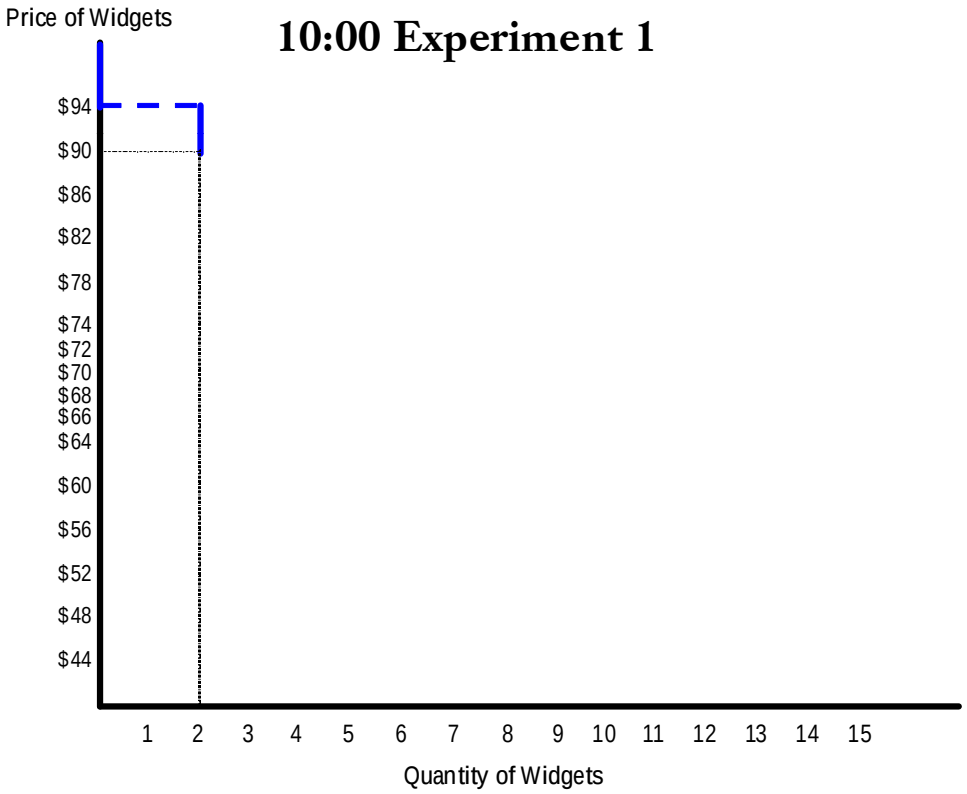
What was the demand curve?

- At a price of $94, two people can buy without making losses.
- For prices between $94 and $90, quantity demanded is two.



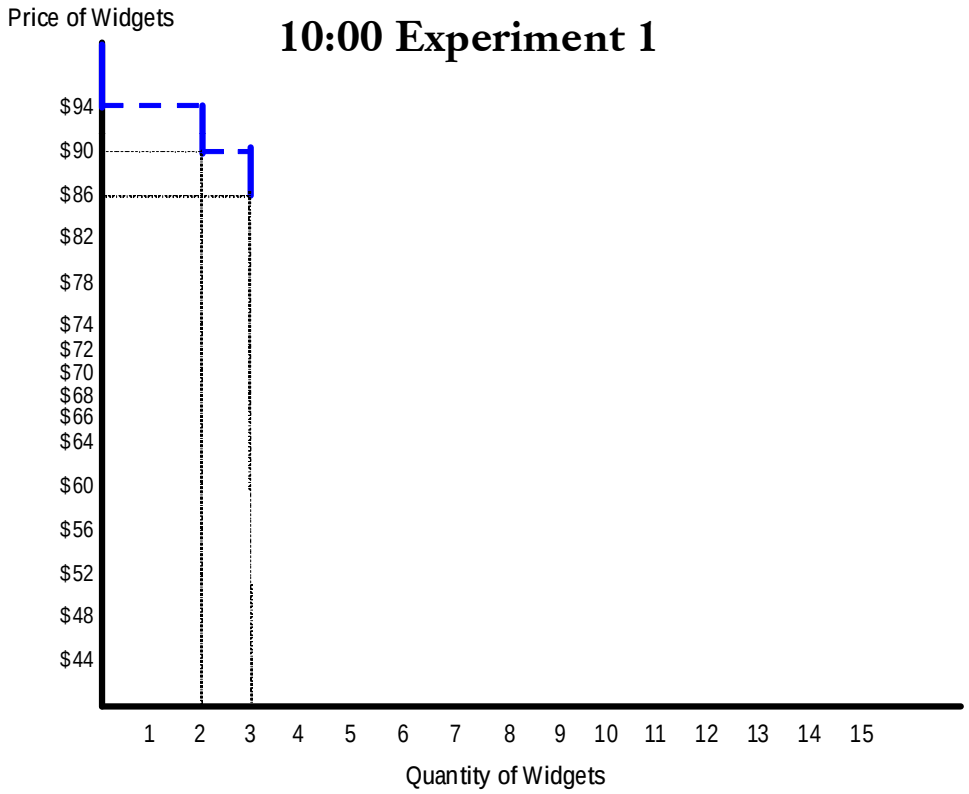
What was the demand curve?

- At price of $90, one additional buyer would enter market.



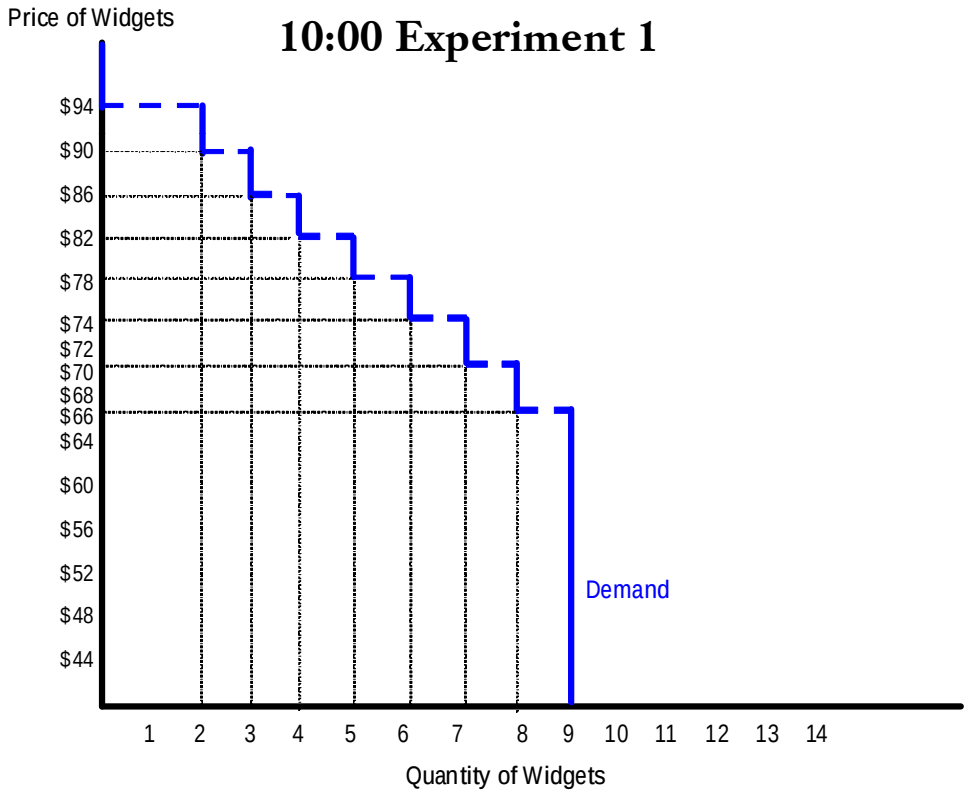
What was the demand curve?

- At price of $90, one additional buyer would enter market.
- For prices between $90 and $86, quantity demanded is three.



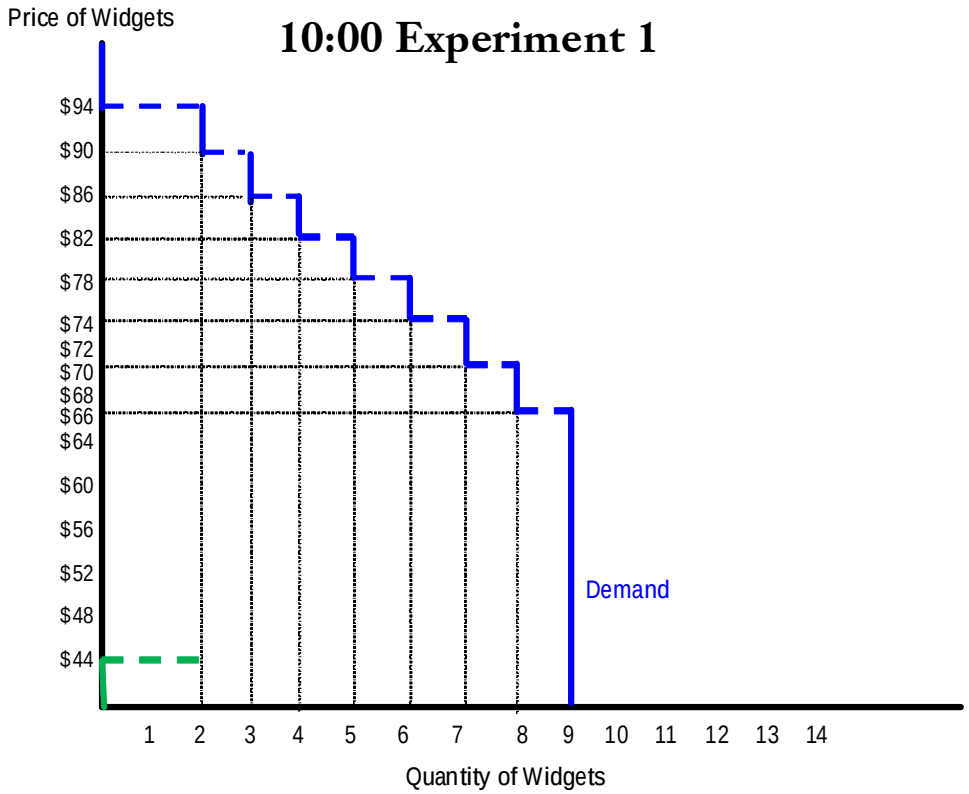
What was the demand curve?

- Continuing on, we construct the remainder of the demand curve.
- At prices below $66, all 9 buyers are in the market.



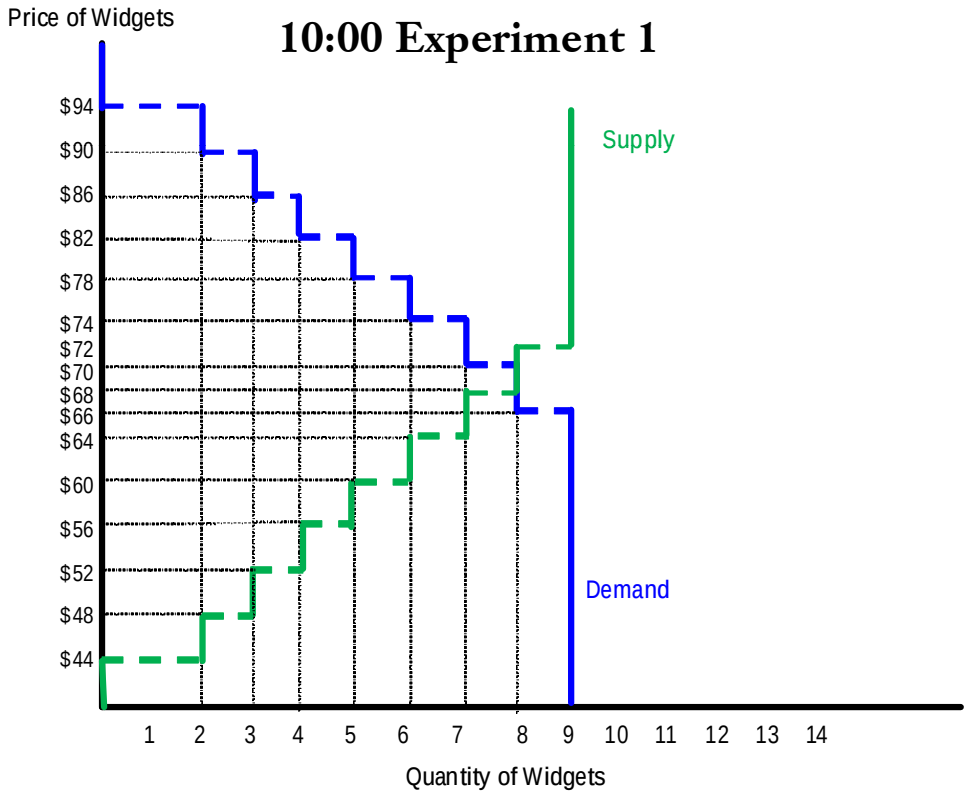
What was the supply curve?

By similar logic, quantity supplied jumps from zero to two at the lowest cost value: $44.



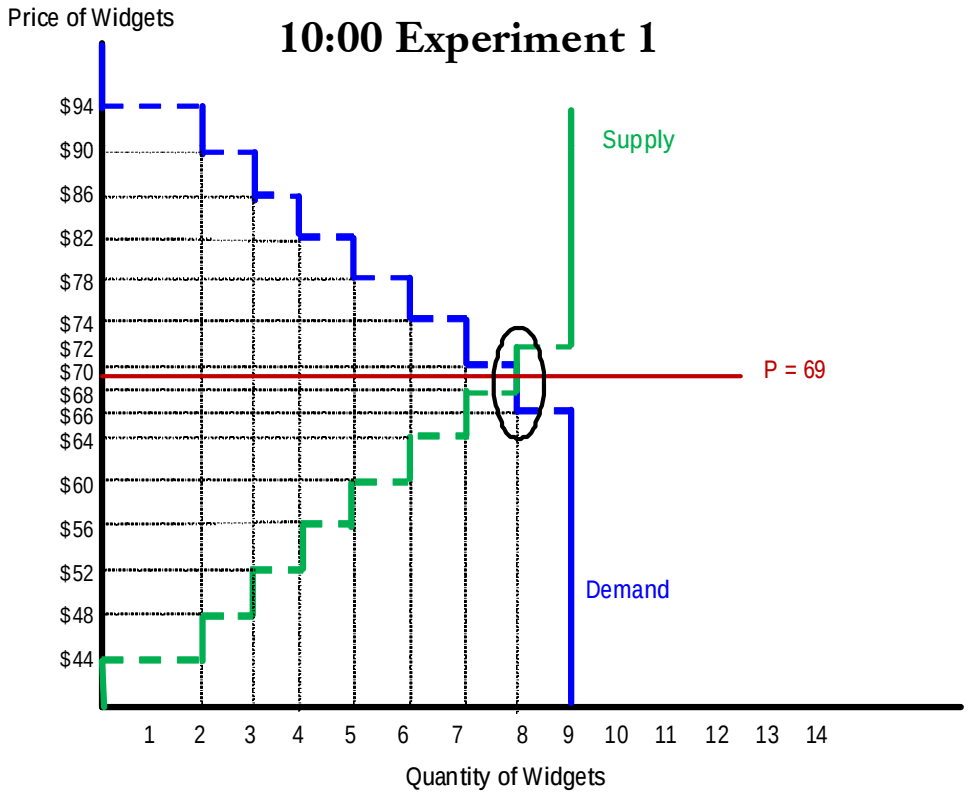
What was the supply curve?

- Continuing on, we add more sellers as the price rises and fill out the rest of the supply curve.
- At a price above $72, all 9 sellers are in market.



Market Equilibrium

- At price between $68 and $70, exactly 8 buyers and sellers will trade.
- Equilibrium quantity is 8; price is ~$69.

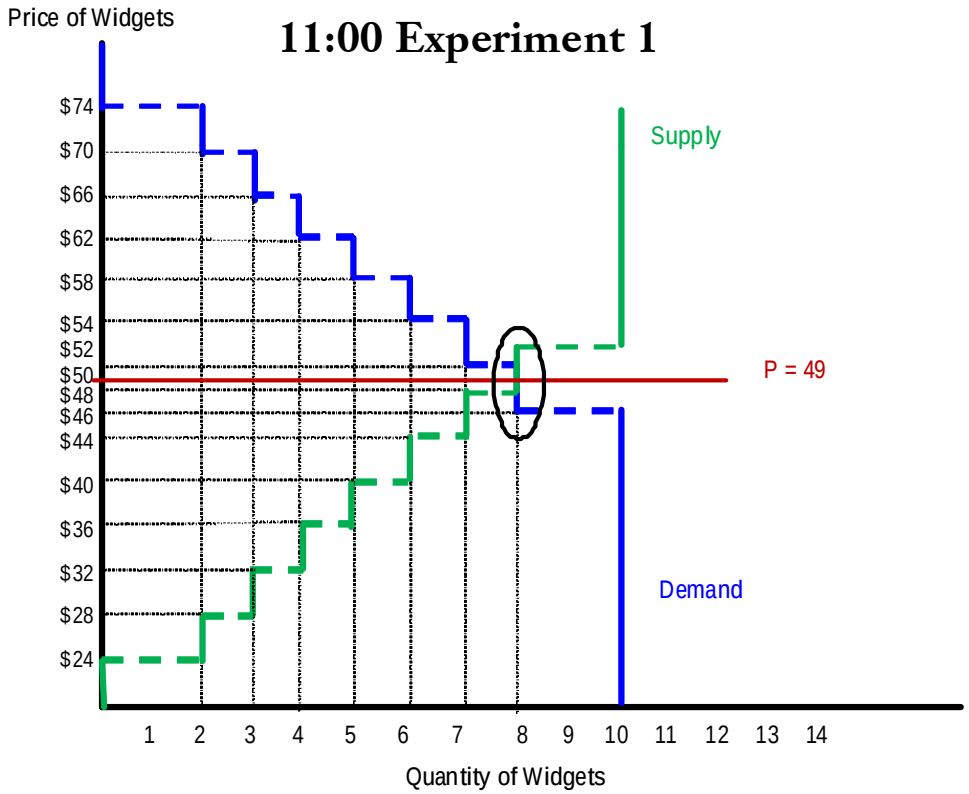


11:00 Experiment #1

- All dollar values were lower by $20
- Ten buyers and sellers participated rather than nine
- All other aspects of Experiment #1 were identical

11:00 Experiment #1

- At price between $48 and $50, exactly 8 buyers and sellers will trade.
- Equilibrium quantity is 8; price is ~$49.



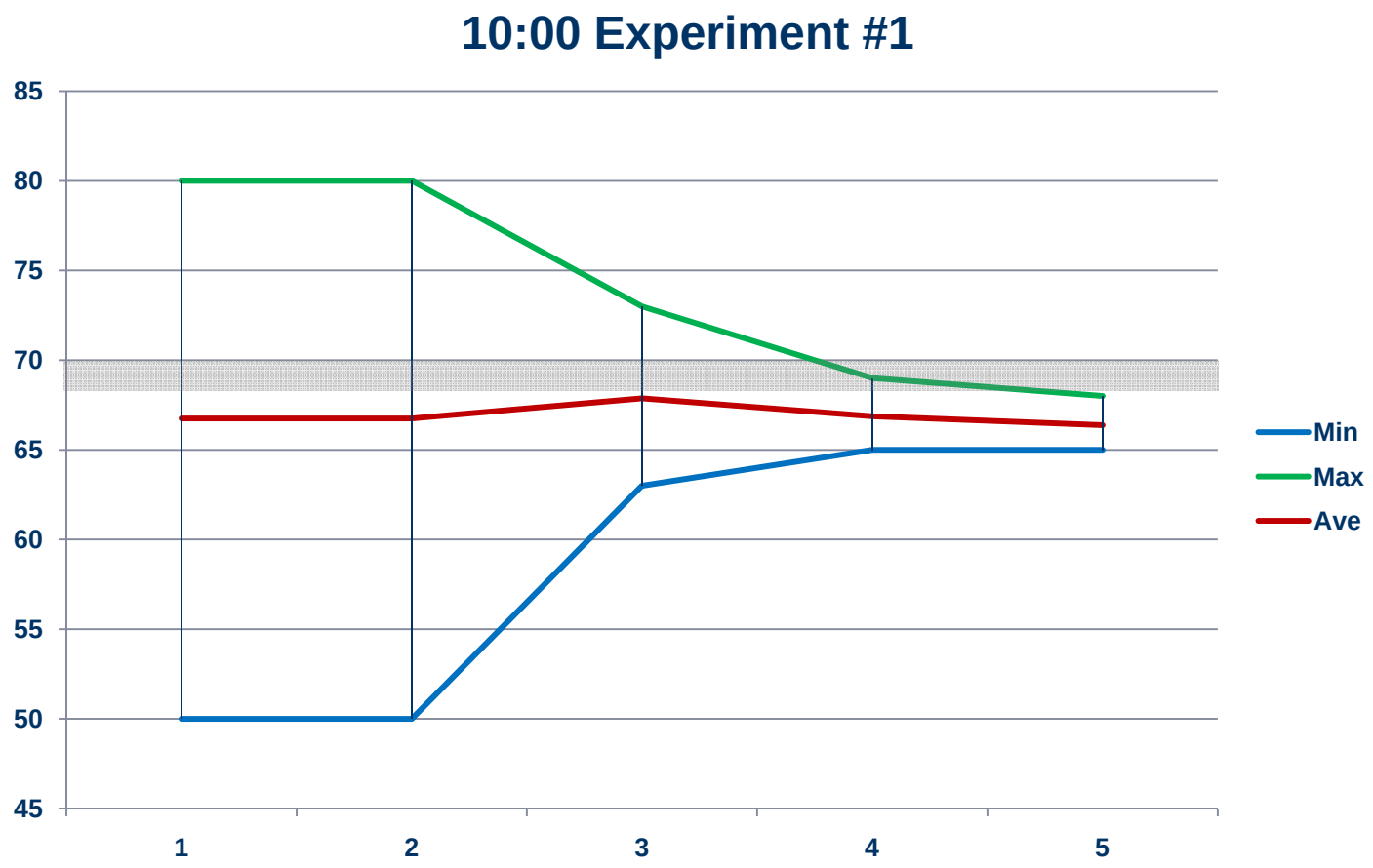
Comparing actual and predicted outcomes

How close did your double-oral auctions come to replicating the predictions of the competitive-market model?

Quantity exchanged (10:00)

Period	Predicted Q	Actual Q	Notes
1	8	8	
2	8	8	
3	8	8	
4	8	8	
5	8	8	

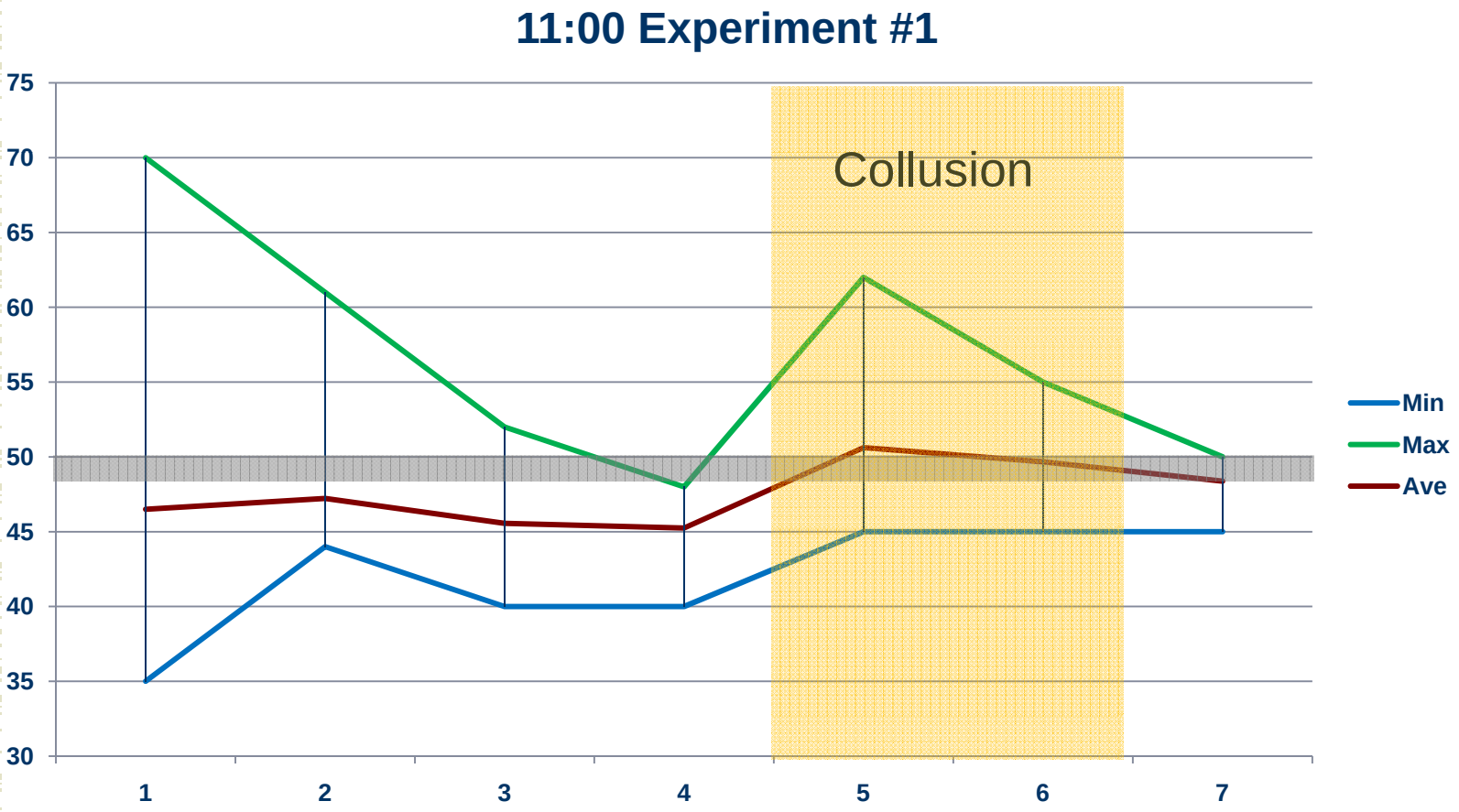
Prices (10:00)



Quantity exchanged (11:00)

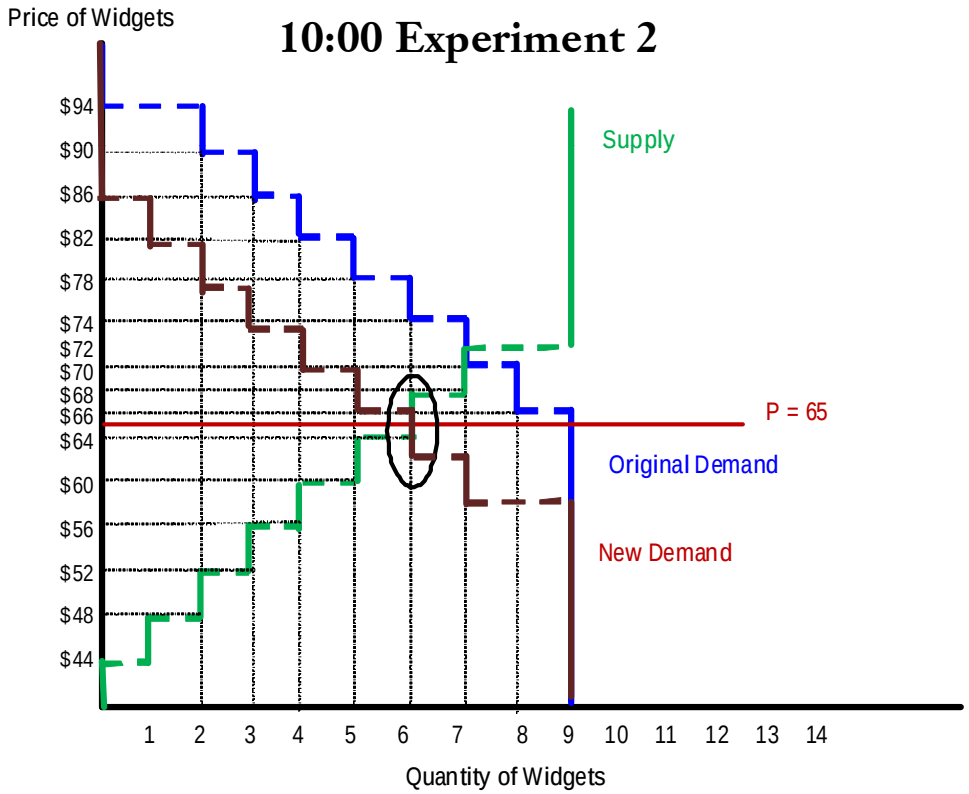
Period	Predicted Q	Actual Q	Notes
1	8	10	
2	8	9	
3	8	9	
4	8	8	
5	8	8	Seller collusion
6	8	9	Seller collusion
7	8	8	

Prices (11:00)


11:00 Experiment #1
75
70
65
60
55
50
45
40
35
30
1
2
3
4
5
6
7
Collusion
Min
Max
Ave

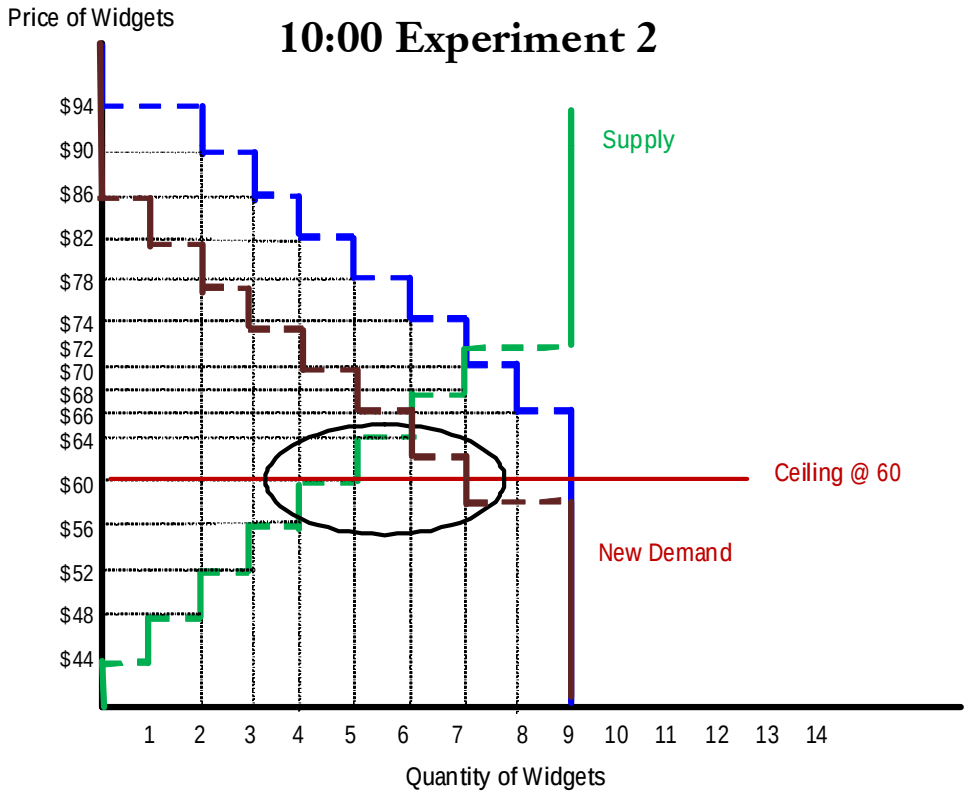
Experiment 2 (10:00)

- Exchanged values of adjacent buyers/sellers.
- Demand curve shifts down by $8; supply unchanged.
- P*=$65, Q*=6.



Exp #2 (10:00): Price Ceiling

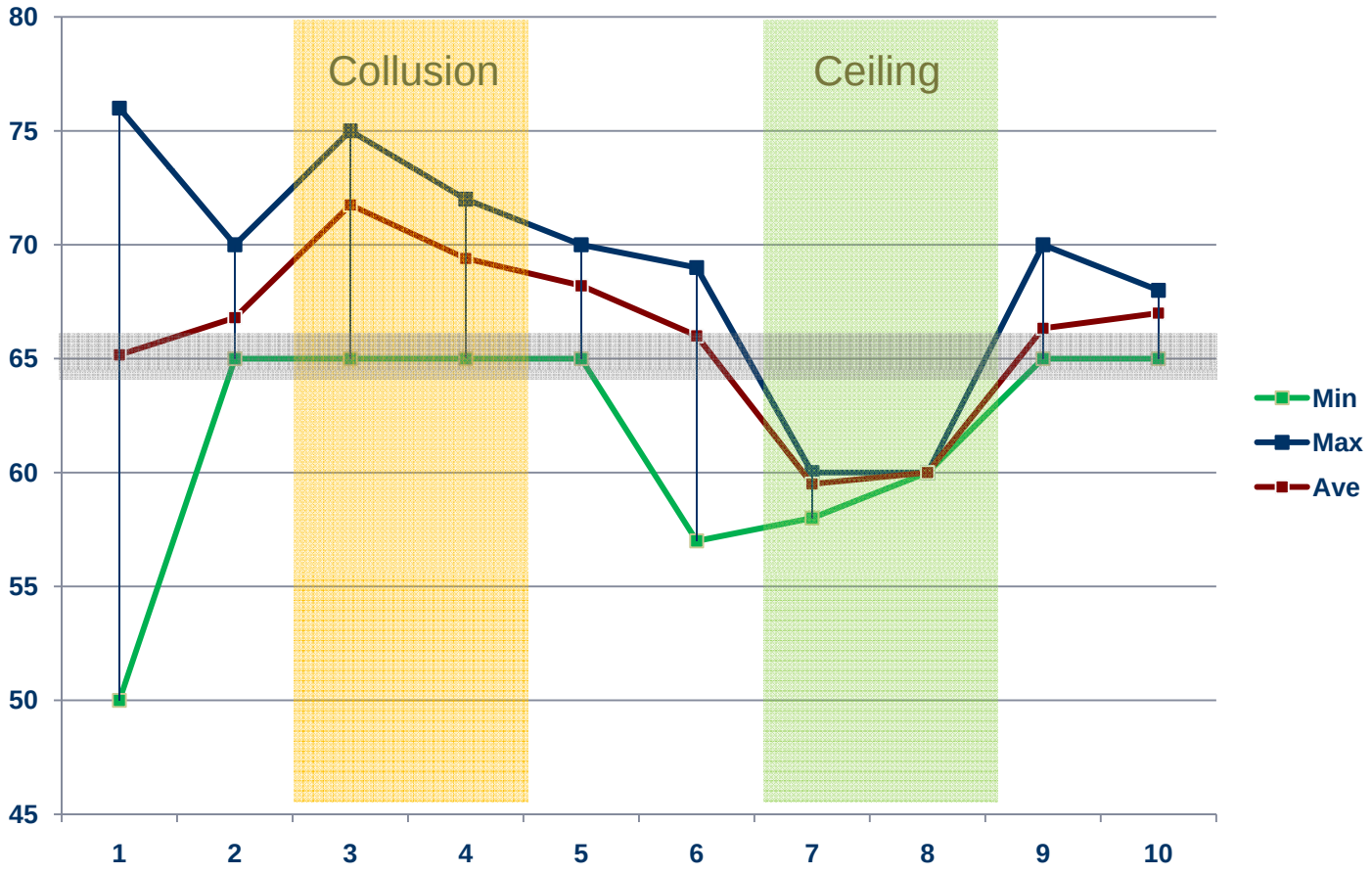
- Periods 7&8: price ceiling at $60
- Only 4 sellers could gain (and 1 break even)
- Quantity demanded = 7
- Prediction: 4 or 5 trades at $60



Quantity exchanged (10:00 Exp 2)

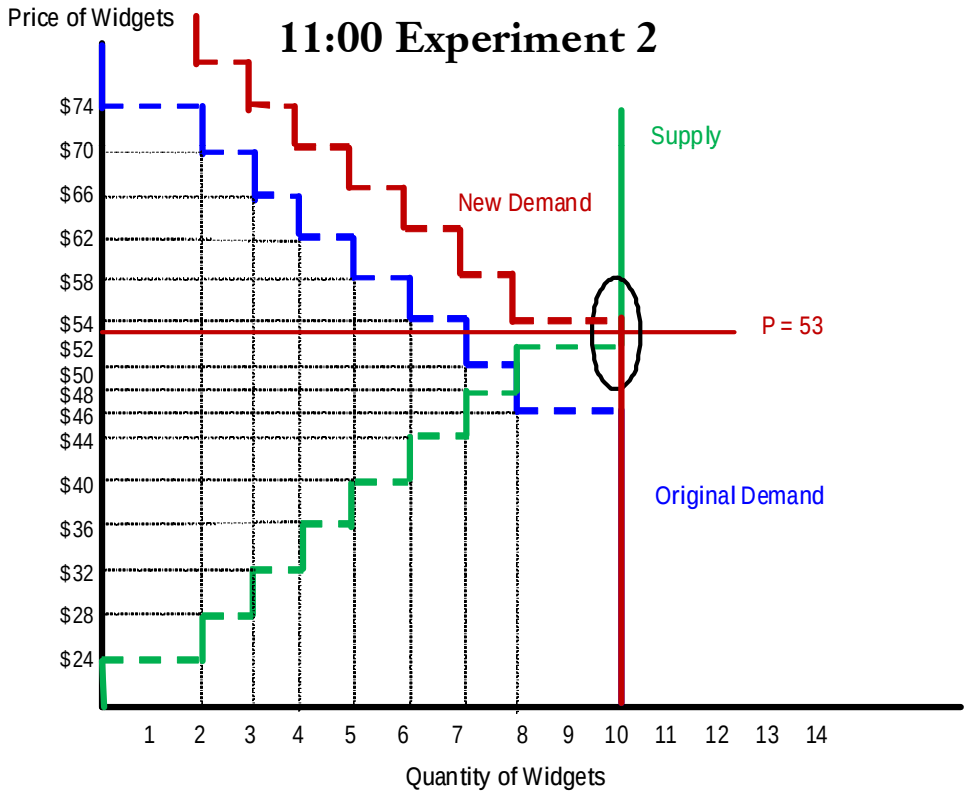
Period	Predicted Q	Actual Q	Notes
1	6	6	
2	6	5	
3	6	4	Seller collusion @ $75
4	6	5	Continued collusion
5	6	5	
6	6	6	
7	4 or 5	4	Price ceiling @ $60
8	4 or 5	3	Price ceiling @ $60
9	6	6	
10	6	5	

Price (10:00 Exp #2)



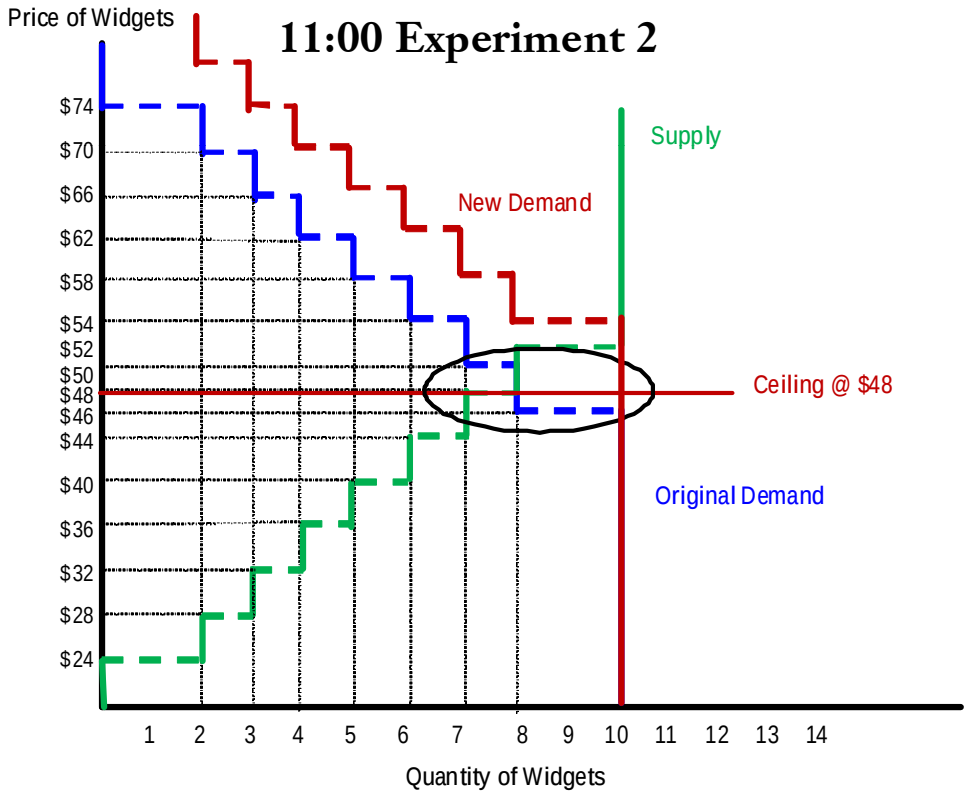
Experiment 2 (11:00)

- Exchanged values of adjacent buyers/sellers.
- Demand curve shifts up by $8; supply unchanged.
- P*=$53, Q*=10.



Exp #2 (11:00): Price Ceiling

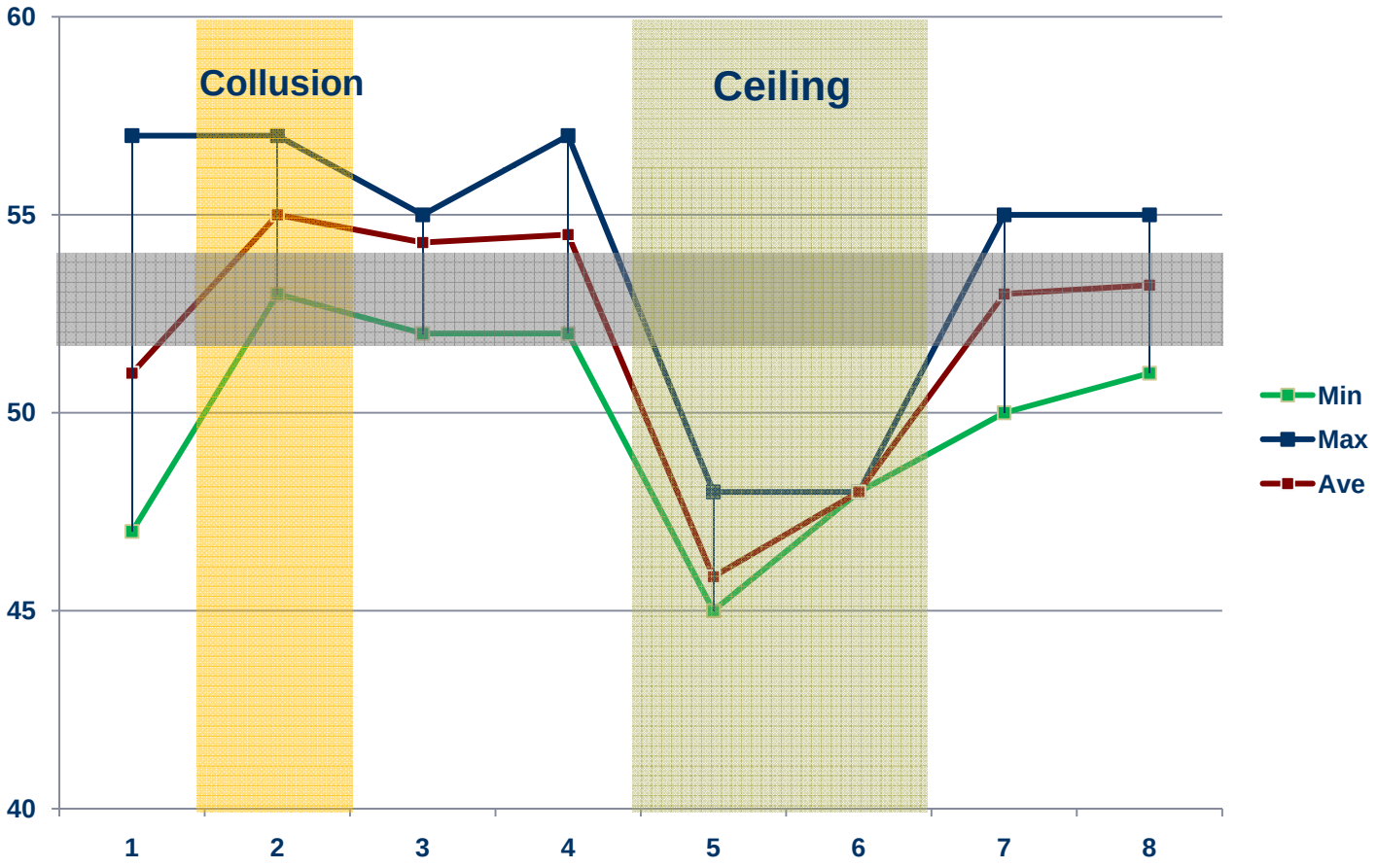
- Periods 5&6: price ceiling at $48
- Only 7 sellers could gain (and 1 break even)
- Quantity demanded = 10
- Prediction: 7 or 8 trades at $48



Quantity exchanged (11:00 Exp 2)

Period	Predicted Q	Actual Q	Notes
1	10	10	
2	10	6	Spontaneous seller coll @ $60
3	10	10	
4	10	10	
5	7 or 8	7	Price ceiling @ $48
6	7 or 8	6	Price ceiling w/ seller boycott
7	10	10	
8	10	9	

Price (11:00 Exp #2)

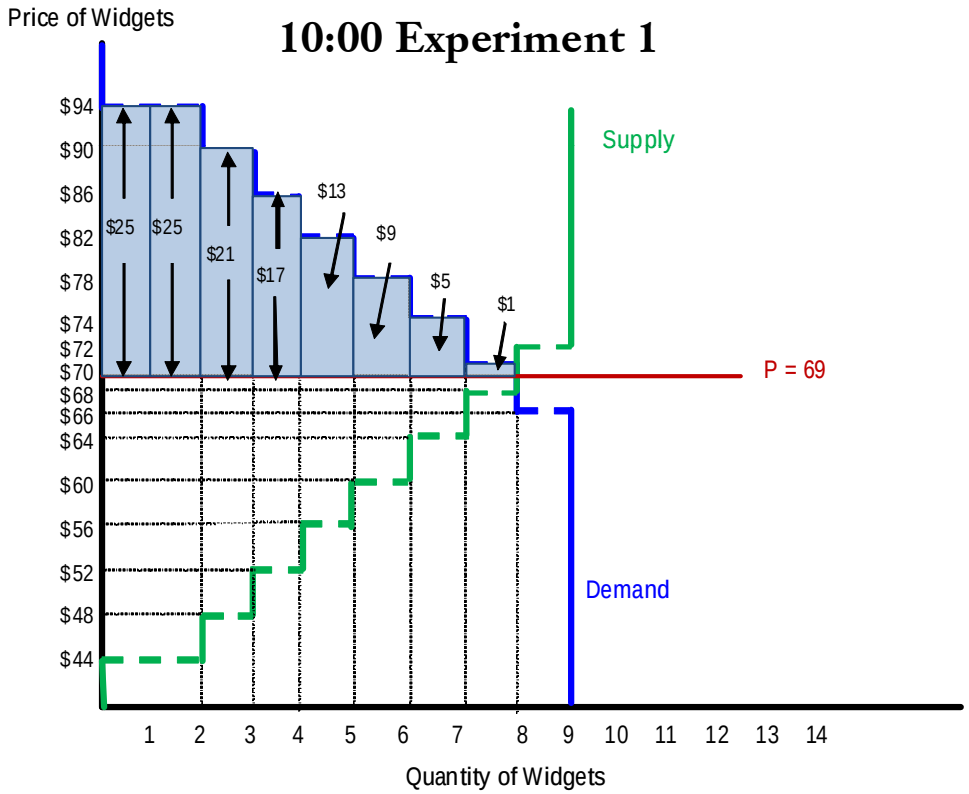


Gains from Exchange (Profits)

- Buyers' gain = Value minus price.
- Sellers' gain = Price minus cost.
- Summing over all buyers (sellers) gives "consumer (producer) surplus."

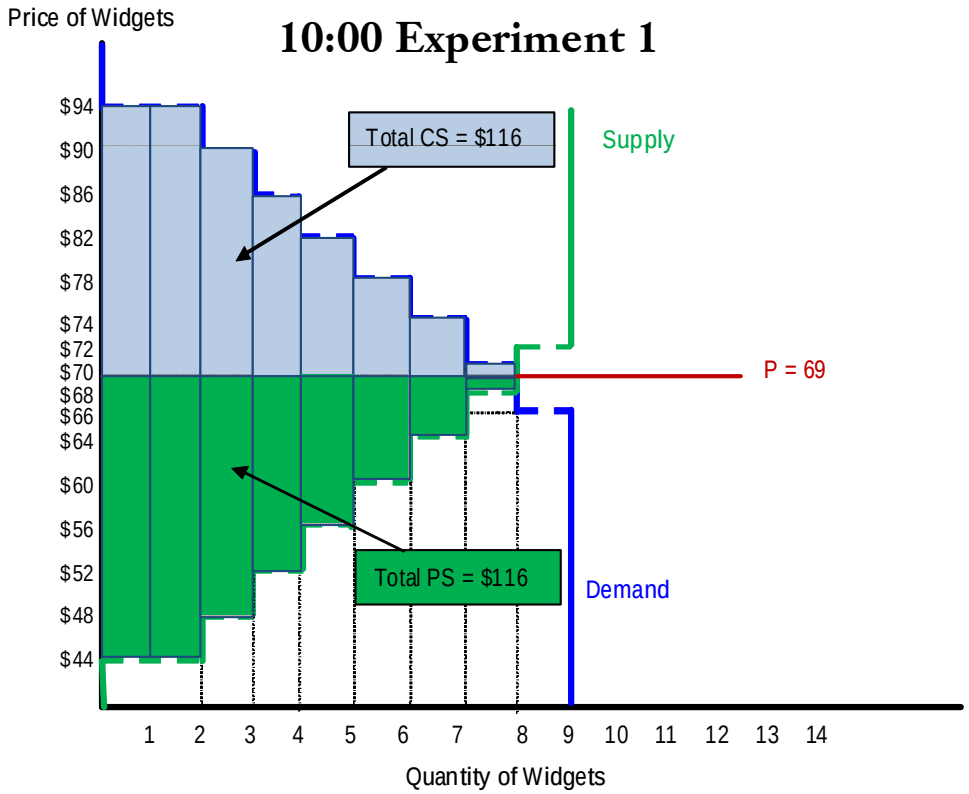
Consumer surplus in competitive equilibrium

- Sum gains for those buyers in market
- No surplus for buyers not trading
- Equals area under demand curve above price line



Producer surplus in equilibrium

- Repeat surplus calculation for sellers
- Producer surplus equals area above supply curve below price line
- CS = PS in this case because of symmetry
- Total potential gains in CE = $232

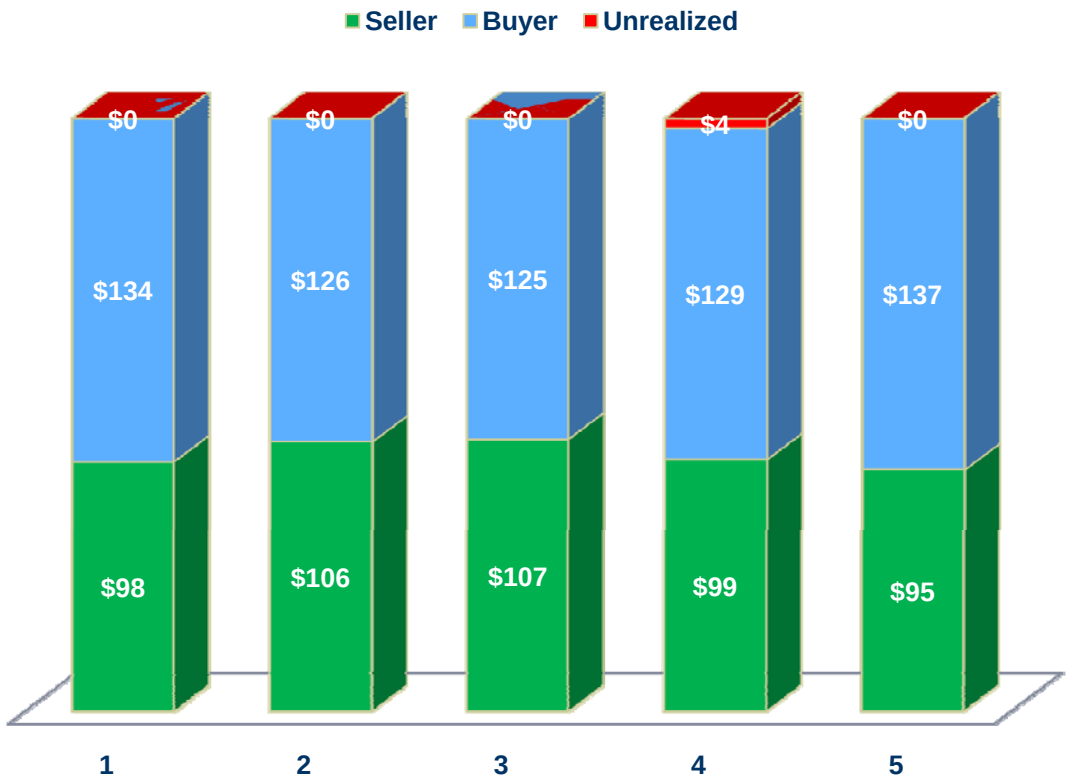


Surplus in other experiments

- 10:00 Experiment #2
  - CS = PS = $66, Total gains = $132
- 11:00 Experiment #1
  - CS = PS = $116, Total gains = $232
- 11:00 Experiment #2
  - CS = PS = $150, Total gains = $300

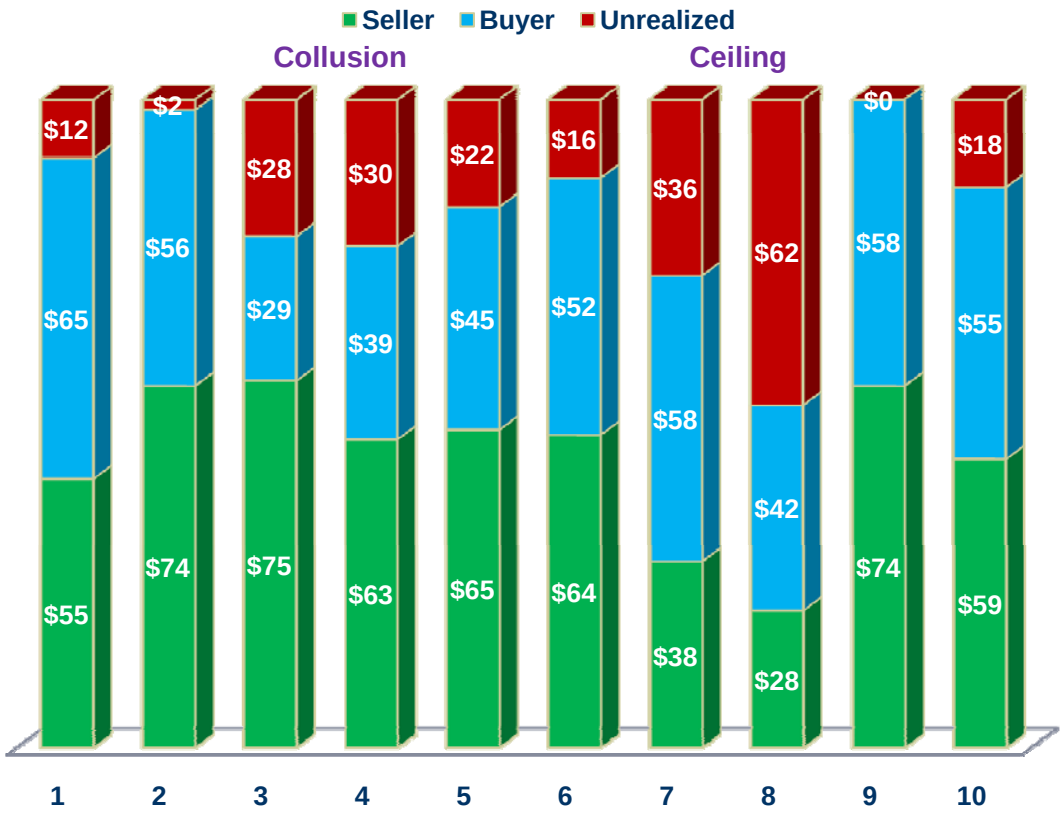
Experiment 1 (10:00): Gains from exchange

Expected gains = $116 each for buyers and sellers; $232 total.



Experiment 2 (10:00): Gains from exchange

Expected gains = $66 each for buyers and sellers; $132 total.

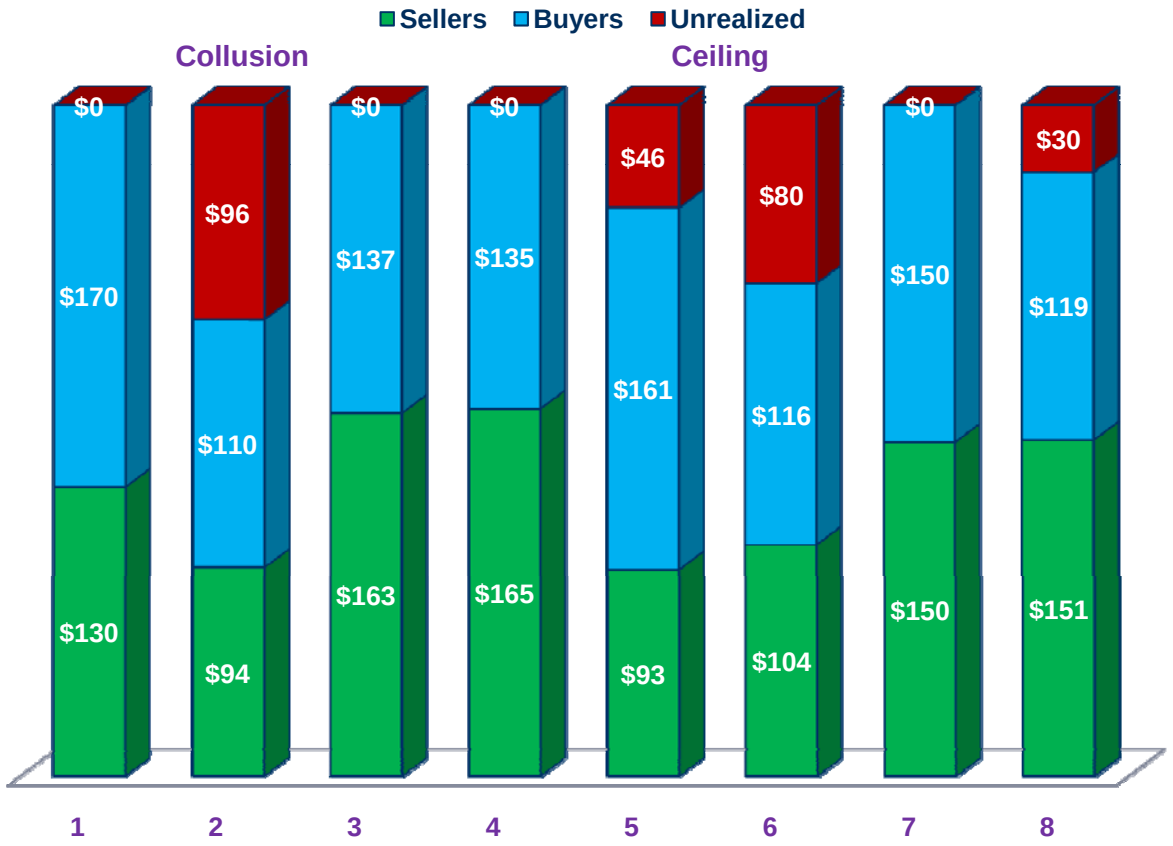


Experiment 1 (11:00): Gains from exchange

Expected gains = $116 each for buyers and sellers; $232 total.

Experiment 2 (11:00): Gains from exchange

Expected gains = $150 each for buyers and sellers; $300 total.



Lessons from Double-Oral Auction Experiment

- Order from chaos: apparently disorganized market converged toward equilibrium.
- Most available gains from exchange were realized, except when collusion or price control interfered.
- Others????