

Excess supply, excess demand and shifters

Econ 1101

Maria Rodriguez

University of Minnesota

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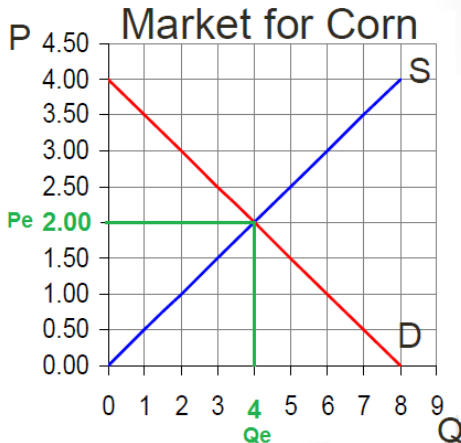
ECON 1101

1. Excess Supply and Excess Demand

Recall Market Clearing

- $P^E = 2$, $Q(S)^E = Q(D)^E = 4$
- Does it make sense this is an equilibrium?

| Q(S) | Q(D) | Res Price |
|------|------|-----------|
| 0 | 8 | 0 |
| 1 | 7 | 0.50 |
| 2 | 6 | 1.00 |
| 3 | 5 | 1.50 |
| 4 | 4 | 2.00 |
| 5 | 3 | 2.50 |
| 6 | 2 | 3.00 |
| 7 | 1 | 3.50 |
| 8 | 0 | 4.00 |

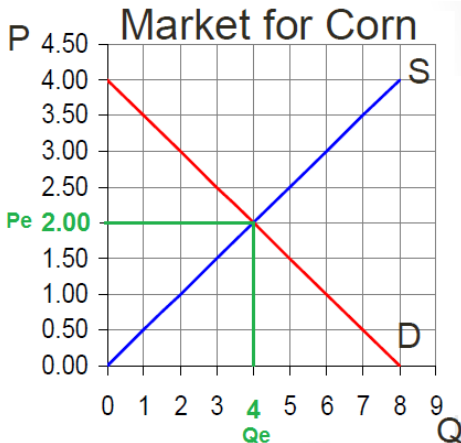


Excess Supply and demand

Does it make sense this is an equilibrium?

1. What if $P=\$1$?

2. What if $P=\$3$?

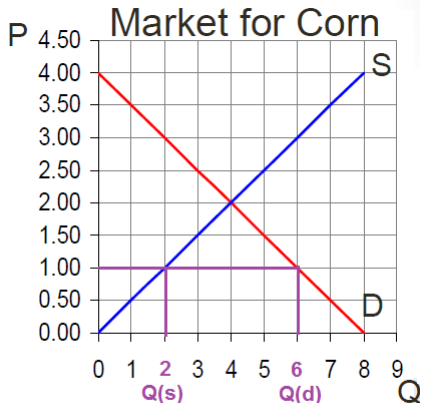


Excess Supply and demand

Does it make sense this is an equilibrium?

1. What if $P=\$1$?

- Quantity supplied $Q(S)$ is 2
- Quantity demanded $Q(D)$ is 6
- $Q(D) > Q(S) \Rightarrow$ *excess demand*
- $Excess\ demand = Q(D) - Q(S)$
 $= 6 - 2 = 4$



2. What if $P=\$3$?

Excess Supply and demand

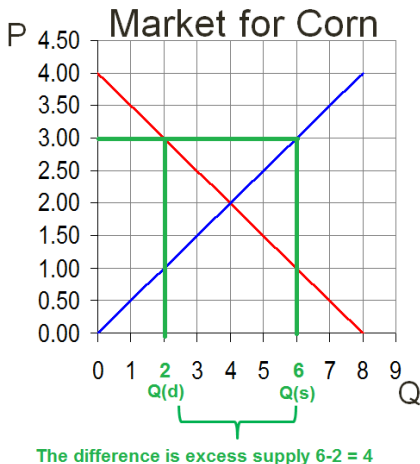
Does it make sense this is an equilibrium?

1. What if $P=\$1$?

- Excess demand

2. What if $P=\$3$?

- Quantity demanded $Q(D)$ is 2
- Quantity supplied $Q(S)$ is 6
- $Q(S) > Q(D) \Rightarrow$ *excess supply*
- *Excess supply* $= Q(S) - Q(D)$
 $= 6 - 2 = 4$



Excess Supply and demand

- Excess Supply: situation where $Q(S)$ is greater than $Q(D)$
- Excess Demand: situation where $Q(D)$ is greater than $Q(S)$

The invisible hand mechanism:

- Without the intervention of the ISO, the market by itself (invisible hand) delivers the same result as the ISO.
- This is the market achieves the price such that $Q(S) = Q(D)$ and there is no excess.
 - If the price is higher than the equilibrium price, there will be excess supply. More people selling than people willing to buy, prices will decrease to increase the number of buyers (up to the P^E)
 - If the price is lower than the equilibrium price, there will be excess demand. More people willing to buy than sellers, sellers can take advantage increasing prices until the number of buyers is reduced.

2. Shifts in Demand and Supply

Determinants of the Demand and Shifts

- Before we claimed that the most important determinant of the demand is the price.
- **Law of demand:** (negative relation of P and $Q(D)$) as the own price increases (decreases), quantity demanded decreases (increases).
- Other factors that affect the demand: (shifters)
 - ① Prices of other related goods [substitutes (+) and complements (-)]
 - ② Income [normal goods (+) and inferior goods (-)]
 - ③ Number of Buyers (-)
 - ④ Consumer Tastes (preferences)
- A change in the own-price will cause a shift along the curve, a change in 1-4 will cause a shift of the curve

Shift ALONG the curve VS shift OF the D curve

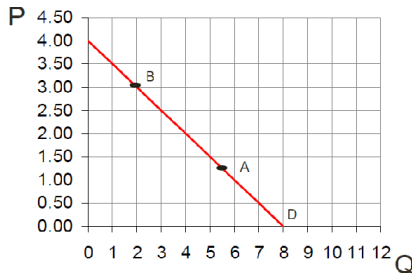
Quantity demanded is modeled in the demand curve as a function of the own price, keeping shifters constant.

1. A change of the **own price** (the variable vertical axis) will cause a **moment along** of demand.

- When price changes quantity demanded changes.

2. A **shift OF** the entire demand **curve** can't be caused by just a change in price. What is left? shifters

- A shifter that increases (decreases) the demand will shift the D curve to the right (left)

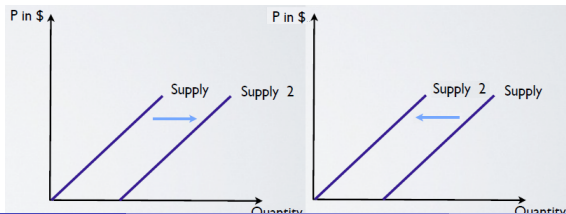


Determinants of the Supply and Shifts

Similarly for the supply we have:

- **Law of Supply:** as the own price is higher more suppliers are willing to sell (positive relation of P and $Q(S)$)
- Other determinants of the supply (shifters):
 - ① Price of inputs (labor and materials) (-)
 - ② Number of sellers (+)
 - ③ Technology (+)
- A change in the own-price will cause a movement along the curve according to the law of supply

A shifter that increases (decreases) the supply shifts S curve to the right (left)



2. Shifts and Examples

1. Income buyers and preferences (D)
2. Price related goods (D)
3. Sellers, technology and price of inputs(S)
4. Example price of inputs (S)
5. Simultaneous Shift of Supply and Demand

1. Shift of the Demand Curve: income, buyers and preferences

- When **income** goes up, you'll buy more or less of something?
- Let's look at different goods: Food? Bus Rides? etc.
- Two classes of goods. One where demand goes up when income goes up and one where demand goes down when income goes up.
 - Normal goods – When income goes up, demand goes up (ex food)
 - Inferior goods – When income goes up, demand goes down
- **Number of buyers:**
 - With more buyers in the market, the demand goes up. Think about maybe one day, everyone in the world became vegetarian. What happens to the demand for vegetables?
- **Consumer tastes:**
 - Usually something that changes the tastes and preferences of a consumer. What happens to the demand for spam if a report came out that said spam is the healthiest and most nutritious food you can eat?

2. Shift of the Demand Curve: example price of substitute

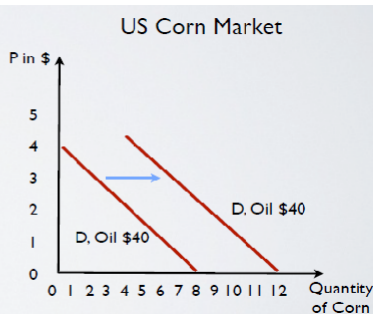
- Recall one shifter of the demand is price of related goods:
 - Substitutes: if the price of a substitute increases, its demand will decrease and will be substituted by an increase in the demand of our good. This is increase in the demand, shift to the right.
 - Complement: if the price of a complement increases, its demand will decrease together with the demand of its complement. This is decrease in the demand of our good, shift to the left
- Example: Corn and oil
 - substitutes: corn can be used to make ethanol—a substitute for gas
 - suppose the price of the oil increases and we own of cars that run on gas and on ethanol
 - Price of Oil going up causes people to buy **more** corn (for their cars that run on ethanol) at each price level (of corn)
 - this is a SHIFT to the right of the D curve of corn

2. Shift of the Demand Curve: example price of substitute

Example: Corn and oil substitutes

- An increase in the price of oil (from \$40 to \$80) will increase the quantity demanded of corn for all prices (of corn)
- This will shift to the right the Demand curve (of corn)

| Corn Price | Q(D), Oil \$40 | Q(D), Oil \$80 |
|------------|----------------|----------------|
| 0 | 8 | 12 |
| 0.50 | 7 | 11 |
| 1.00 | 6 | 10 |
| 1.50 | 5 | 9 |
| 2.00 | 4 | 8 |
| 2.50 | 3 | 7 |
| 3.00 | 2 | 6 |
| 3.50 | 1 | 5 |
| 4.00 | 0 | 4 |

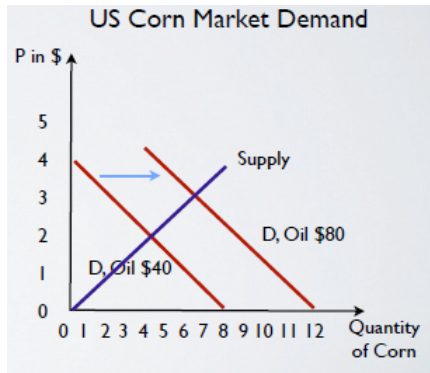


- Corn and cars that run ethanol are complements (increase in price of ethanol cars decreases demand of corn at each price level)

2. Effects of Shift of Demand only (substitutes)

Assume supply is unchanged, how has the equilibrium changed?

- We can see price and quantity have increased
- Why? Higher demand increases scarcity, which forces up prices
- Higher prices increase supply so supply and demand “meet” somewhere in the middle



3. Shift of the Supply Curve: inputs, sellers and technology

- **Price of inputs** (such as labor, materials used to produce the good) (-)
 - Example: wages increase. Q^S decreases at each price level.
- **Number of sellers** (+)
 - Example: People who grew vegetables decide to switch over to making spam, maybe because a law passes that bans the selling of all food aside from Spam. Q^S for Spam increases at each price level.
- **Technology** (+)
 - Example: a new machine that makes the production of spam twice as efficient. Q^S increases at each price level.

4. Shift of the Supply Curve: Example Change in input price

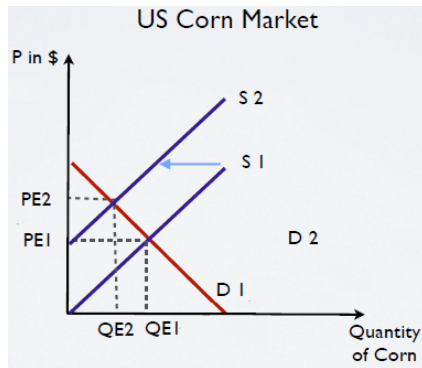
- Price of inputs (such as labor, materials used to produce the good) (-)

Example: increase in the price of inputs - this is costs will be higher

- Application: increase in the oil
 - (an input used in the production of corn -gas)
- Q^S decreases at each price level
 - (because now it is more expensive to produce)
- This is the Supply curve shifts to the left

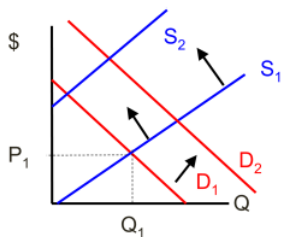
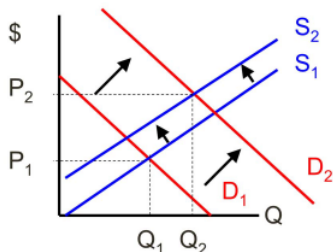
4. Effects of Shift of Supply only (inputs)

- Assume demand is unchanged, how has the equilibrium changed?
- We can see price has increased and quantity decreased
- Why?: Smaller supply increases scarcity, which forces up prices
- Higher prices decreases demand so demand and supply “meet” at a smaller quantity



5. Simultaneous shift of Supply and Demand

- 1 Only the demand shifts to the right (example price of substitute): increase in quantity, increase in price
- 2 Only the supply shifts to the left (example price of input): decrease in quantity, increase in price
- 3 What happens if both changes occur at the same time?
 - Price will increase, But what about quantity?
 - The result is ambiguous. It will depend upon the relative increase of the demand with respect to the increase of the supply (and viceversa)



5. Simultaneous shift of Supply and Demand

| | Shifts | ΔP_{corn} | ΔQ_{corn} |
|--------------------------------|--------|--------------------------|--------------------------|
| Price of Substitute \uparrow | D | Increase | Increase |
| Price of Input \uparrow | S | Increase | Decrease |
| Combined: | D, S | Increase | Ambiguous |

Summary

- 1 The competitive market is able to reach market clearing without the intervention of a third party (auctioneer or ISO)
- 2 The equilibrium price is the price that guarantees demand is equal to supply (more exactly $Q(D)=Q(S)$)
- 3 Demand and supply are determined by factors other than price that can cause SHIFTS IN demand and supply when they change
- 4 Demand and supply shifts will cause a new equilibrium price and quantity to arise in the market

Aplia Experimental Auction

- This experiment will give you a chance to participate in an online market where you will trade with your classmates.
- This online market will help you understand how real markets behave

Instructions

- You will play the role of either a buyer or seller of used textbooks.
- Your goal is to get a good deal, either buying or selling your book.
- For BUYERS:
 - you will see your value (reservation price) or maximum you should be willing to pay
 - you need to submit a bid, a price at which you are willing to buy the item for this auction
- For SELLERS:
 - you will see your reservation price (cost) or minimum you should be willing to receive not to make a loss
 - you need to submit a bid, a price at which you are willing to sell the item for this auction