Where Prices Come From

Topic 3

Learning Objectives

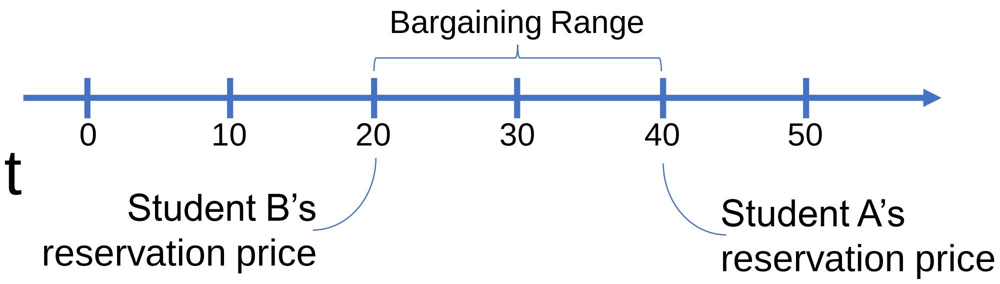
- Model the behavior of buyers and sellers in free market system using the model of economic interaction known as the model of supply and demand.
- Apply the law of demand and law of supply.
- Analyze the determinants of demand and supply.
- Bring together the concepts of demand and supply to identify the market equilibrium.

Reservation Price

- Assume you want to buy a used version of a book you need for your class. What is the maximum amount of money you are willing to pay?
- **Buyer’s Reservation Price**
  - The maximum amount of money that you are willing to give up to acquire something.
- Assume you are the owner of a used book that you don’t need any more. What is the minimum amount of money you are willing to accept?
- **Seller’s Reservation Price**
  - The minimum amount of money that you are willing to accept in exchange for something.

Bargaining Range

- Assume student A want to buy a used book, and his reservation price is $40. If the price goes over $40, he would rather spend his money on something else.
- Assume student B is selling a used book, and her reservation price is $20. If she were offered less than $20, she would prefer not to sell.
- **Bargaining Range**
  - — The range of all possible transaction prices when two people trade without coercion.



The Model of Demand and Supply

- The Perfectly Competitive Market Assumption
  - The Market meets the requirements of having
    - Many buyers and sellers
    - All firms selling identical products
    - No barriers to new firms entering the market
- The Ceteris Paribus Condition
  - When analyzing the relationship between two variables – such as price and quantity demanded – other variables must be held constant

The Demand Side of the Market

- Demand Schedule
  - A table that shows the relationship between the price of a product and the quantity of the product demanded
- Quantity Demanded
  - The amount of a good or service that a consumer is willing and able to purchase at a given price
- Demand Curve
  - A curve that shows the relationship between the price of a product and the quantity of the product demanded
- Market Demand
  - The demand by all consumers of a given good or service

The Law of Demand

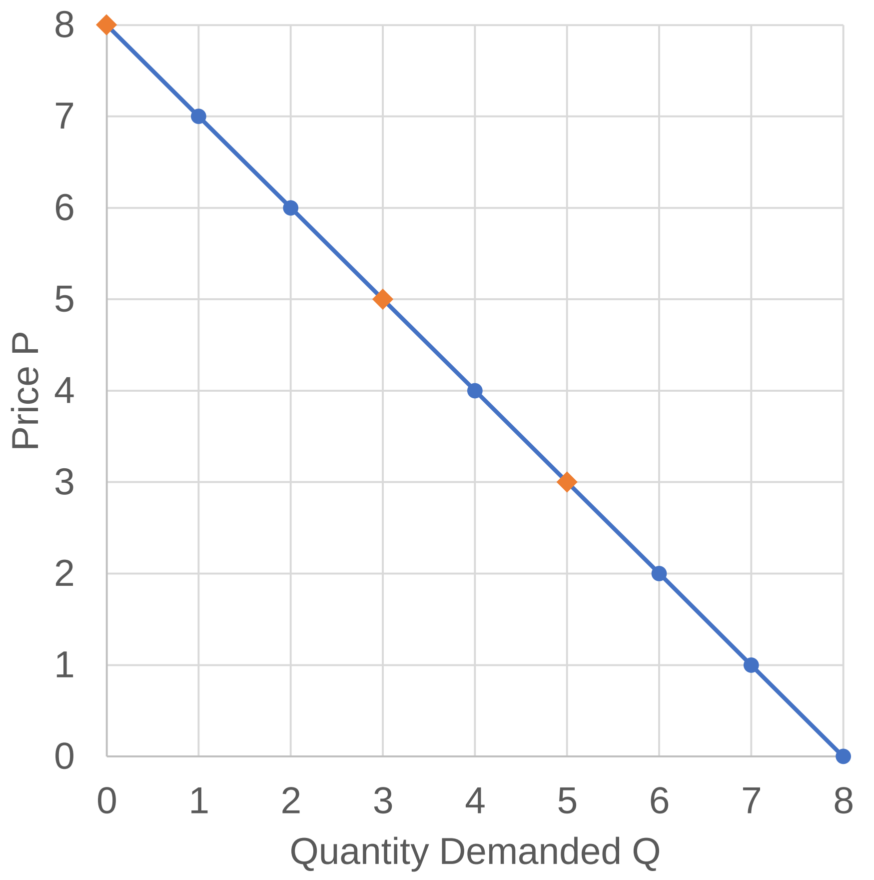
- Holding everything else constant, people will
  - Buy less of a good when its price is higher.
  - Buy more of a good when its price is lower.
- The law of demand states that there is an inverse relationship between price and quantity demanded.
- Thus, the demand curve captures an individual’s marginal willingness to pay, whereas the marginal willingness to pay is again a reflection of the law of diminishing marginal benefit from consumption.

Explaining the Law of Demand

- Substitution Effect
  - The change in the quantity demanded of a good that results from a change in price, making the good more or less expensive relative to other goods that are substitutes.
- Income Effect
  - The change in the quantity demanded of a good that results from the effect of a change in the good's price on consumers' purchasing power
- The substitution and income effect occur simultaneously as prices change.

Drawing a Demand Curve

- The most important factor in determining the quantity demanded (purchased) of a good is its price.
- Plotting and connecting all possible combinations of prices and quantities demanded gives the demand curve.
  - — At a price of P=8, quantity demanded is Q=0.
  - — At a price of P=5, quantity demanded is Q=3.
  - — At a price of P=3, quantity demanded is Q=5.
  - — Thus, Q=8-P.



Drawing a Demand Curve – Ctd.

- Draw the following demand functions:
  - $Q = 10 - P$
  - $Q = 4 - 0.5P$
  - $Q = 8 - 2P$
- Write the inverse demand function P(Q), meaning P as a function of Q. For example:
  - $Q = 10 – P \quad | +P$
    $Q + P = 10 \quad | - Q$

    $P(Q)= 10 – Q$
  - Price = Intercept – Slope x Quantity

- The Demand Schedule

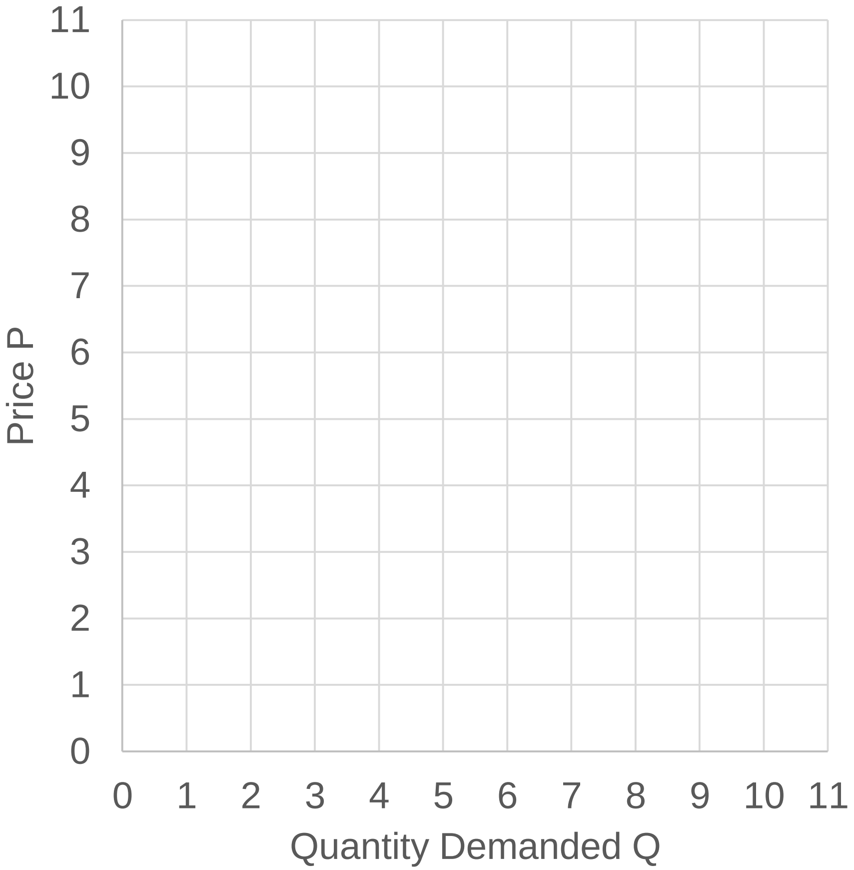
Q = 10 - P		Q = 4 – 0.5P		Q = 8 – 2P	
P	**Q**	**P**	**Q**	**P**	**Q**

Drawing a Demand Curve – Ctd.

Q = 10 - P P = 10 - Q	
P	**Q**
10	0
9	1
8	2
7	3
6	4
5	5
4	6
3	7
2	8
1	9
0	10

Q = 4 – 0.5P P = 8 – 2Q	
P	**Q**
8	0
7	0.5
6	1
5	1.5
4	2
3	2.5
2	3
1	3.5
0	4

Q = 8 – 2P P = 4 – 0.5Q	
P	**Q**
4	0
3	2
2	4
1	6
0	8



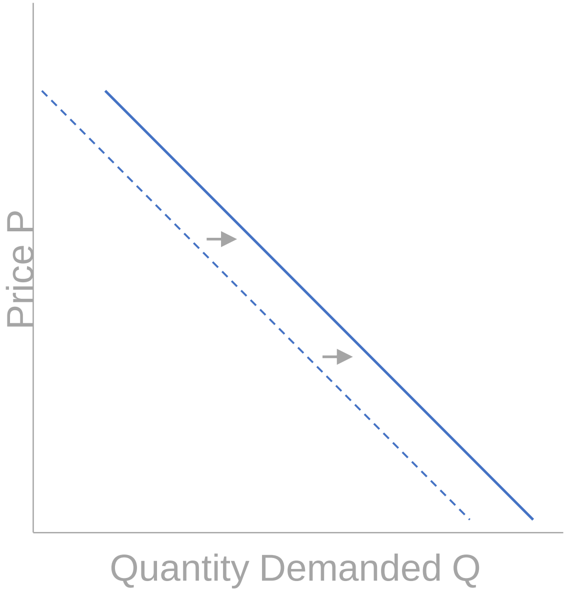
Determinants of Demand

- What determines a change in quantity demanded?
  - A change in quantity demanded means a movement along a demand curve.
  - This means that the only determinant of quantity demanded is the price.
- What determines a change in demand?
  - A change in demand is a shift of the whole demand curve.
  - An increase (decrease) in demand is a rightward (leftward) shift of the demand curve.
  - So what causes the demand curve to shift?

Determinants of Demand – Ctd.

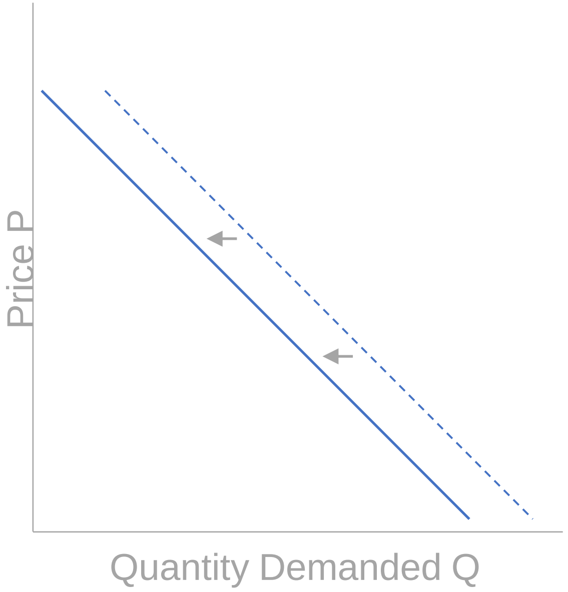
Income

- Assume you get a raise. Then, at any given price, you demand more.



Wealth

- Assume you own stocks and their value goes down. Then, at any given price, you demand less.



Normal and Inferior Goods

- Normally, an increase of income allows people to buy more at every given price.
  - Because wants are unlimited, an increase of income shifts the demand curve to the right.
  - Whenever income goes up and demand increases, the good is said to be a normal good.
  - Normal goods are, for example, beef, strawberries, and health care services.
- However, some goods are inferior goods, meaning that they will be demanded less as people become richer.
  - For inferior goods, when incomes go up, the demand curve shifts to the left.
  - Inferior goods are, for example, potatoes, rice, and scooters.

Determinants of Demand – Ctd.

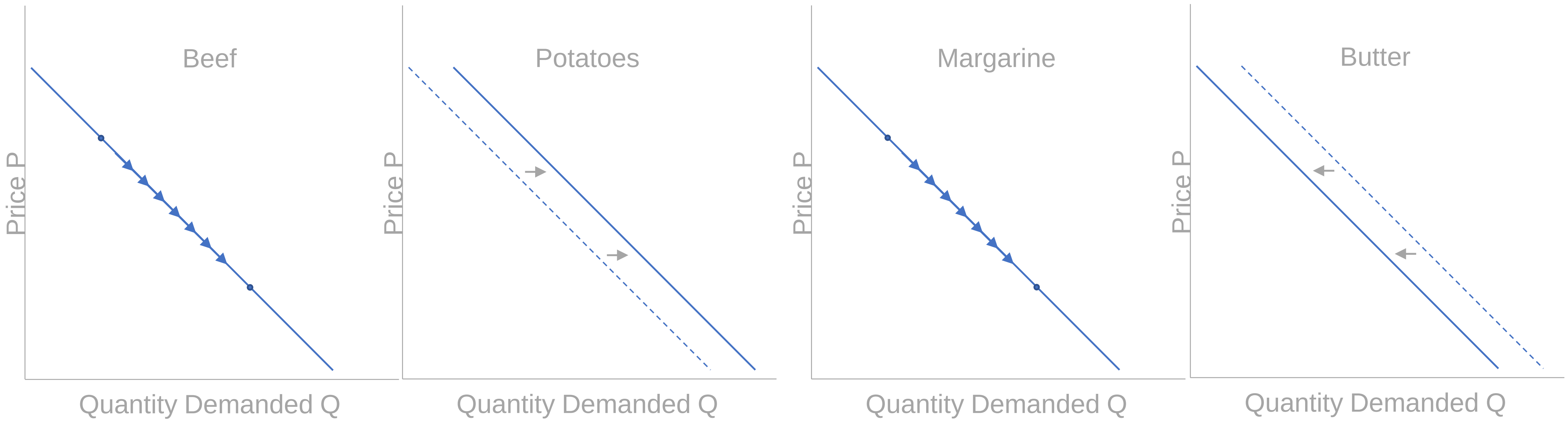
Prices of Related Goods

Complements

- A good whose appeal increases with the popularity of its complement.

Substitutes

- A good that can be used in place of another.

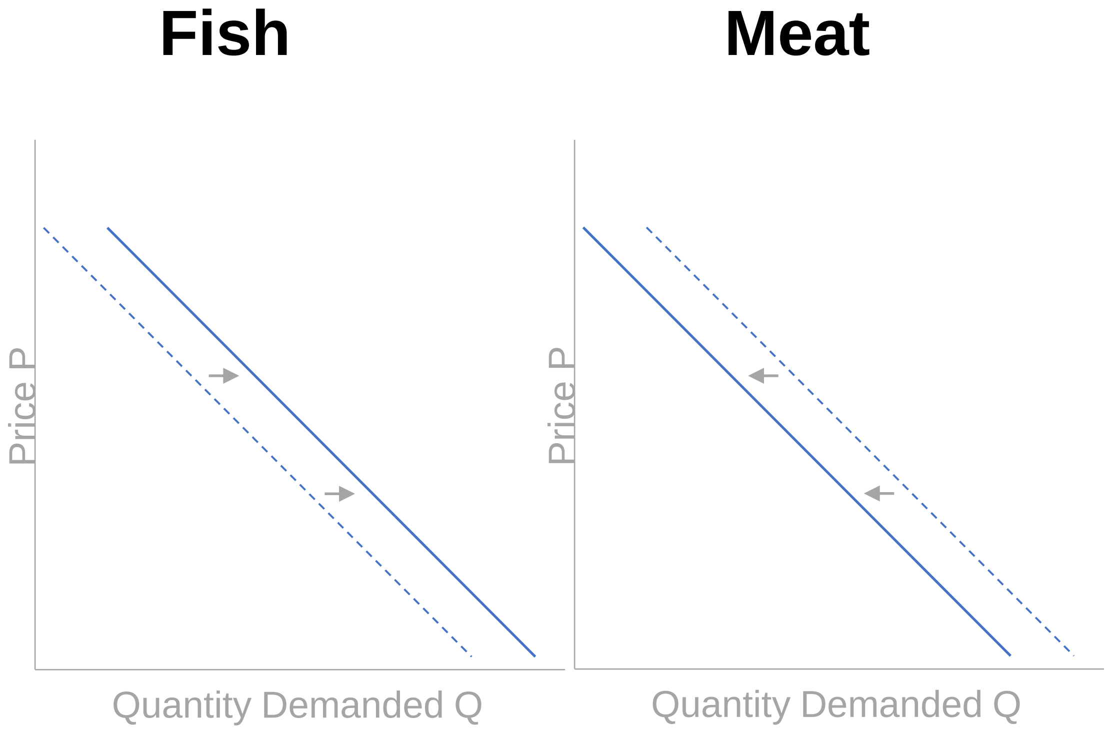


Determinants of Demand – Ctd.

Preferences/ Tastes

- Assume new research shows that eating meat is bad for your health but eating fish is good for your health.
- As a result of this study, people develop a stronger preference for fish and a lesser preference for beef.
- As a result of the change of preferences:
  - — the demand curve for beef shifts.
  - — the demand curve for fish shifts.

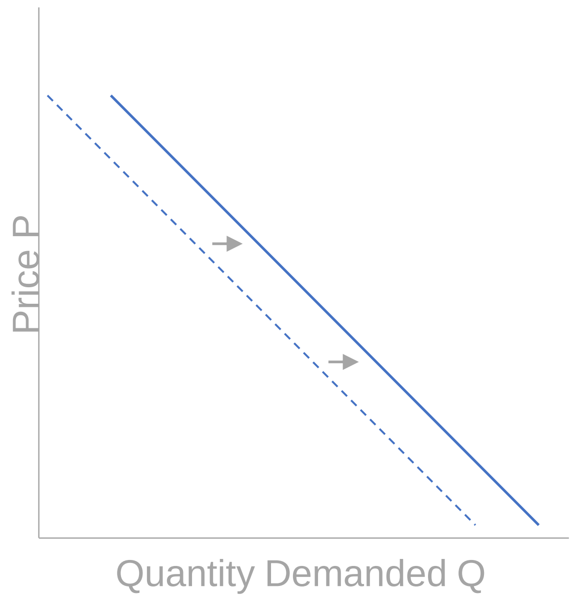
Demand for



Determinants of Demand – Ctd.

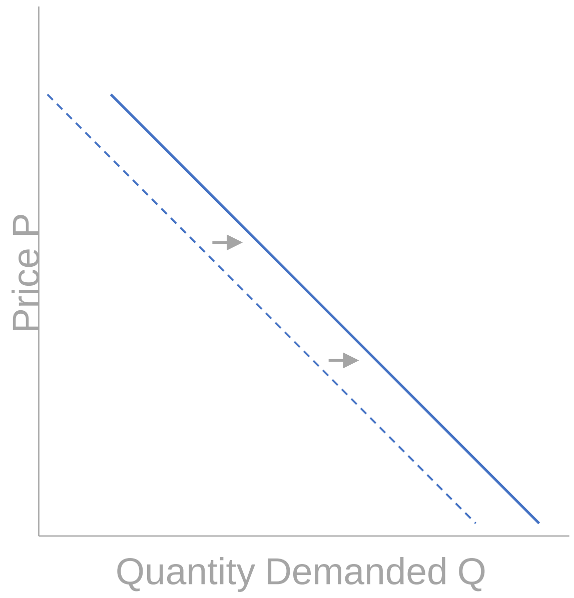
Population and Demographics

- Assume the population grows. Then, at any given price, quantity demanded is greater.



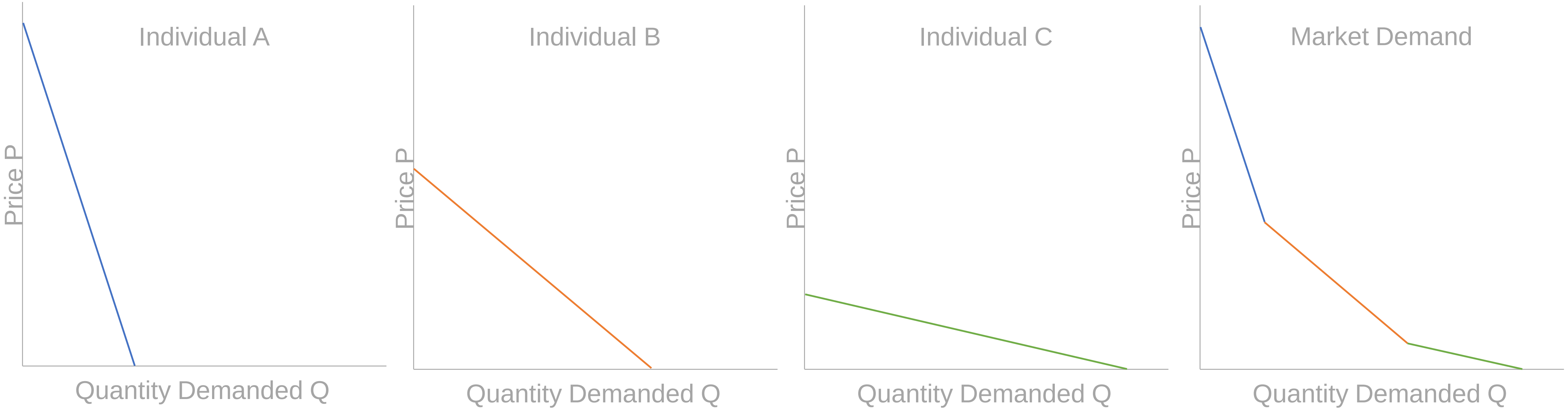
Expected Future Prices

- Assume prices for cars will increase next year. Then you rather buy a car today.



The Market Demand

- The market demand is the horizontal aggregation of individual demand functions.



Let's Exercise!

- Apples and pears are substitutes.
- How would a decrease in the price of apples affect the demand for pears?

Let’s Exercise!

- Buns and beef paddies are complements.
- How would a decrease in the price of beef affect the demand for buns?

Let’s Exercise!

- At a price of $5, a novel is expected to sell 10,000 copies.
- What would be the consequence of a decrease in price?
- What would be the consequence of an increase in price?

Let’s Exercise!

- During a recession, economies experience increased unemployment and a reduced level of activity. How would a recession be likely to affect the market demand for new cars?

Let’s Exercise!

- Potatoes are considered to be an inferior good.
- What are the consequences for the market of potatoes if the average income increases?

The Supply Side of the Market

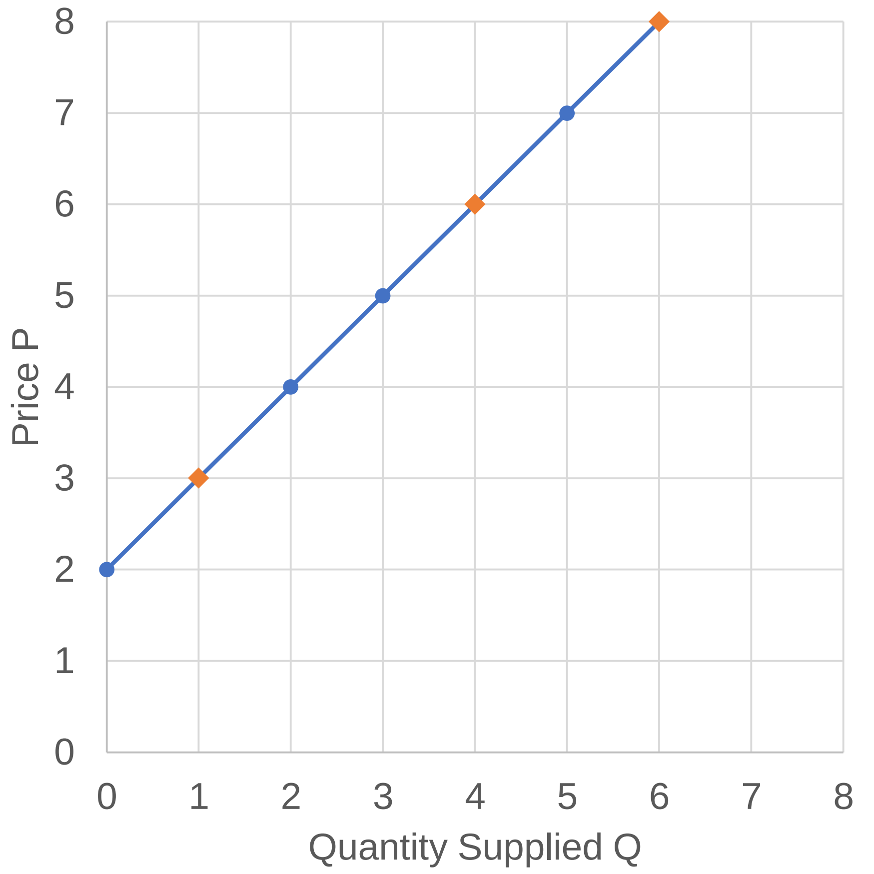
- Supply Schedule
  - A table that shows the relationship between the price of a product and the quantity of the product supplied
- Quantity Supplied
  - The amount of a good or service that a producer is willing and able to sell at a given price
- Supply Curve
  - A curve that shows the relationship between the price of a product and the quantity of the product supplied
- Market Supply
  - The supply by all producers of a given good or service

The Law of Supply

- Holding everything else constant, people will
  - Sell less of a good when its price is lower
  - Sell more of a good when its price is higher
- The law of supply states that there is a positive relationship between price and quantity supplied.
- Thus, the supply curve captures an individual’s marginal willingness to sell, whereas the marginal willingness to sell is again a reflection of the law of increasing cost from production.

Drawing a Supply Curve

- The most important factor in determining the quantity supplied of a good is its price.
- Plotting and connecting all possible combinations of prices and quantities supplied gives the supply curve.
  - — At a price of P=8, quantity supplied is Q=6.
  - — At a price of P=5, quantity supplied is Q=3.
  - — At a price of P=3, quantity supplied is Q=1.
  - — Thus, Q=-2+P.



Drawing a Supply Curve – Ctd.

- Draw the Following supply functions:
  - $Q = -2 + P$
  - $Q = -8 + 2P$
  - $Q = -30 + 5P$
- Write the inverse supply function P(Q), meaning P as a function of Q. For example:
  - $Q = -2 + P \quad | +2$

    $P(Q) = 2 + Q$
  - Price = Intercept + Slope x Q

- The Supply Schedule

Q = -2 + P		Q = -8 + 2P		Q = -30 + 5P	
P	**Q**	**P**	**Q**	**P**	**Q**

Drawing a Supply Curve – Ctd.

$Q = -2 + P$
$P = 2 + Q$

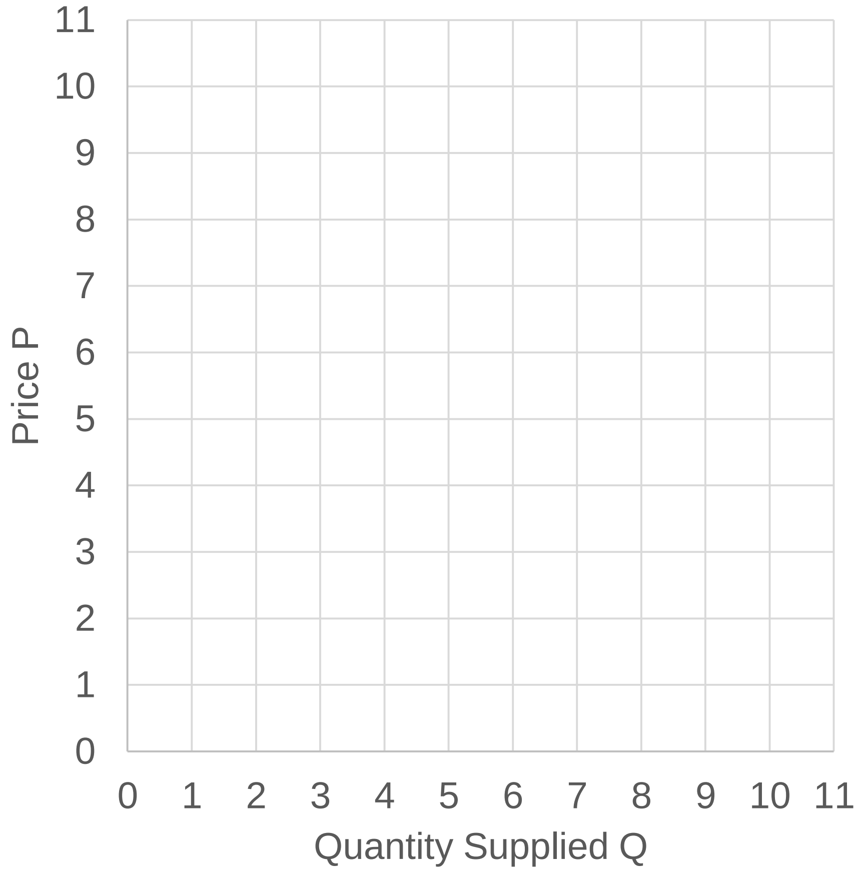
P	Q
2	0
3	1
4	2
5	3
6	4
7	5
8	6
9	7
10	8
11	9

$Q = -8 + 2P$
$P = 4 + 0.5Q$

P	Q
4	0
5	2
6	4
7	6
8	8
9	10
10	12
11	14

$Q = -30 + 5P$
$P = 6 + 1/5\ Q$

P	Q
6	0
7	5
8	10
9	15
10	20
11	25



Determinants of Supply

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- What determines a change in supply?
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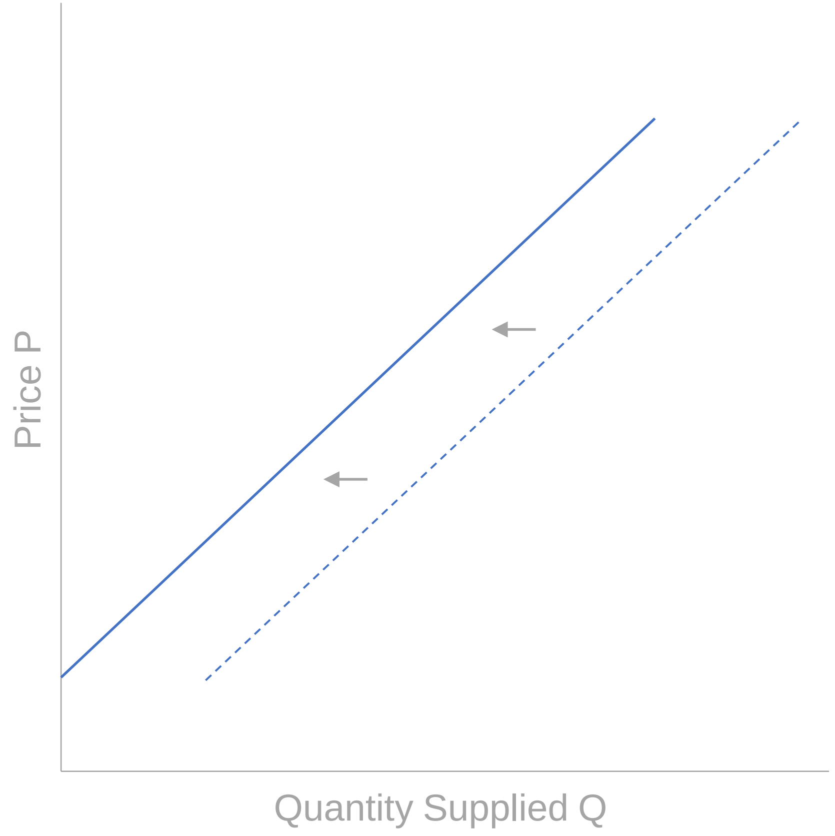
Determinants of Supply – Ctd.

Prices of Inputs/ Production Cost

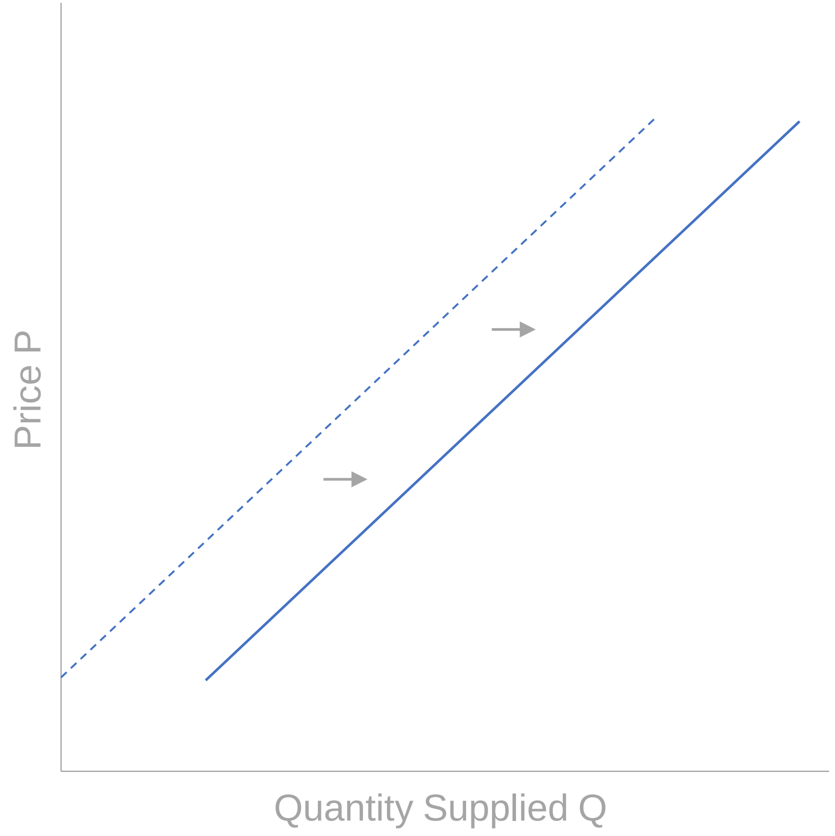
- If, for example, oil prices increase, production costs go up as well.
- For every unit produced, firms then need to charge a higher price in order to cover for the higher cost.
- As a result of the change in production cost the supply curve shifts.



Determinants of Supply – Ctd.

Technological Change

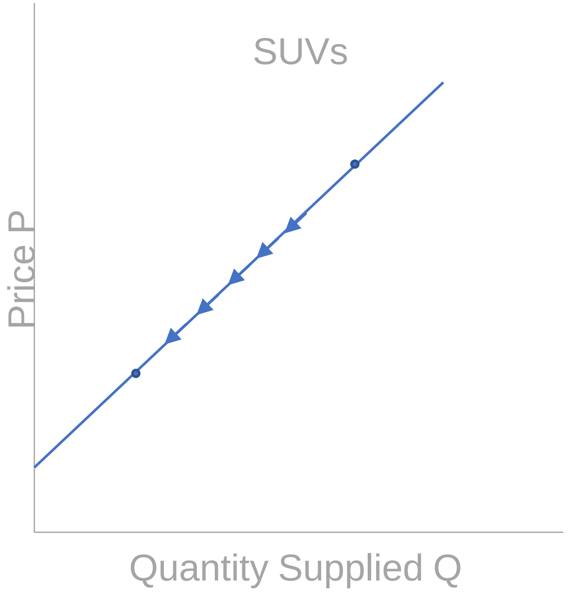
- If, for example, technological advancements in the production chain happen, production costs go down.
- For every unit produced, firms then can charge a lower price.
- As a result of the change in production cost the supply curve shifts.

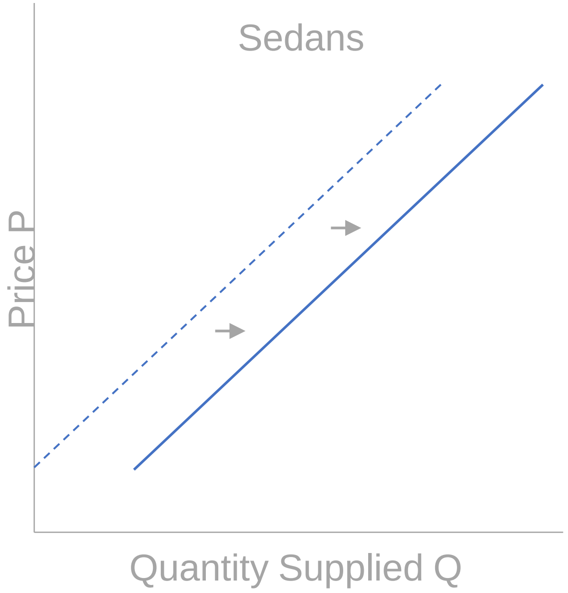


Determinants of Supply – Ctd.

Prices of Related Goods in Production

- Assume the price for SUVs decreases, which will decrease quantity supplied of SUVs.
- The resources freed up will be used to increase the supply of sedans.

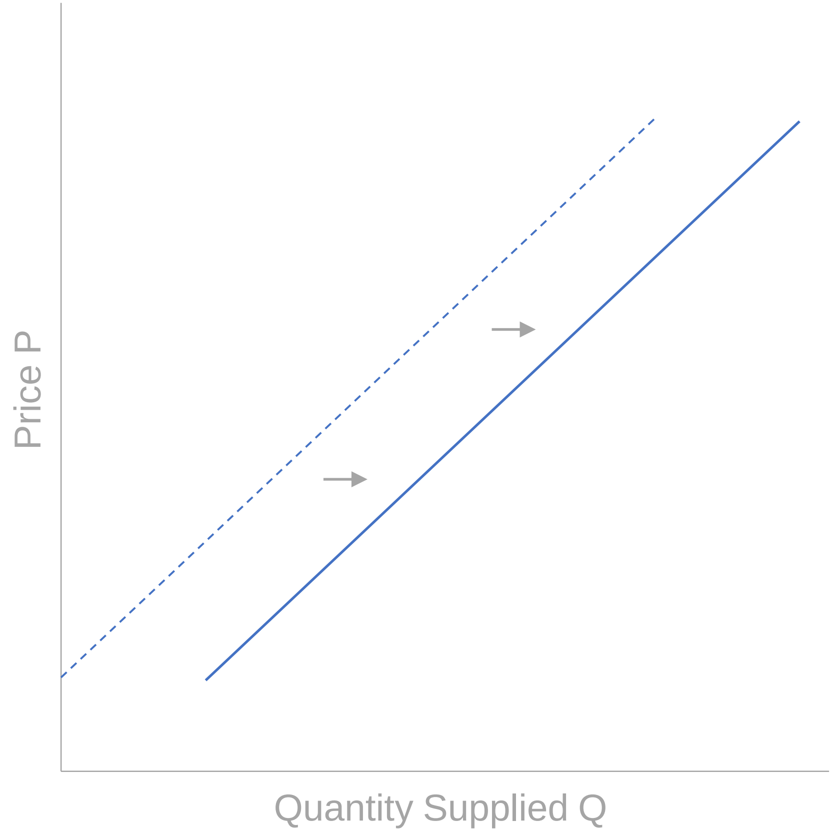




Determinants of Supply – Ctd.

Number of Firms in the Market

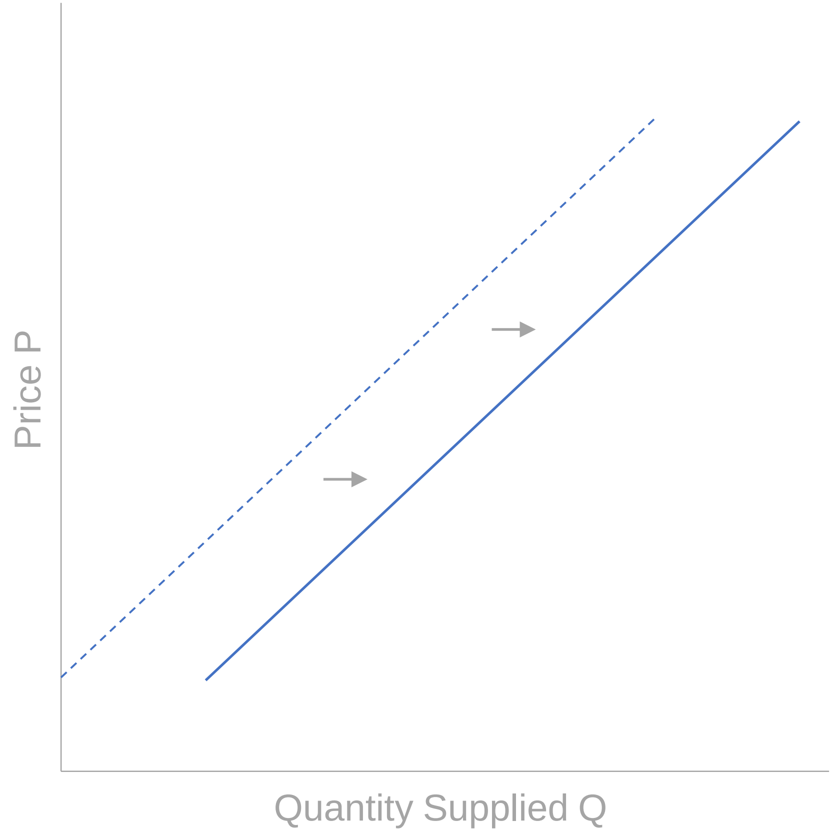
- An increase of competition through market entry that increases the number of sellers shifts the supply curve.



Determinants of Supply – Ctd.

Expected Future Price

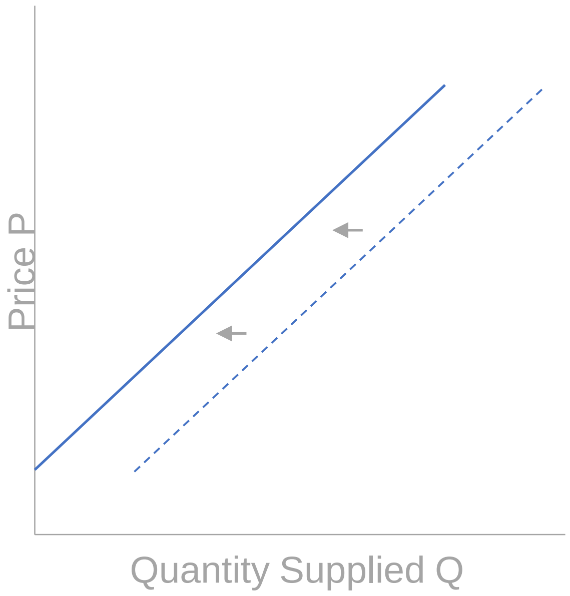
- Assume that the government announces plans to tax SUVs beginning next year.
- SUV producers will then still try to sell as many cars this year.
- As a result of the changes in expectations the supply curve shifts.



Determinants of Supply – Ctd.

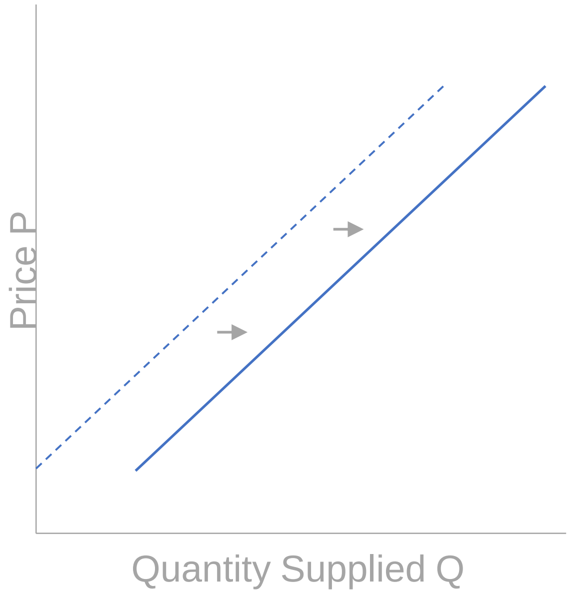
Taxes

- A tax shifts the supply curve up (left).



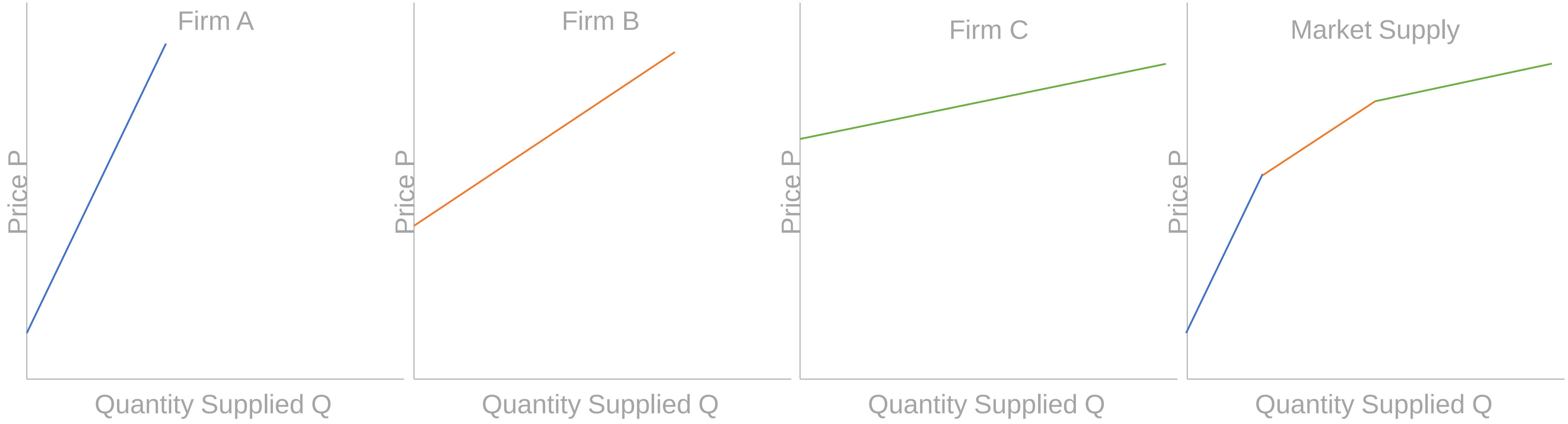
Subsidies

- A subsidy shifts the supply curve down (right).



The Market Supply

- The market supply is the horizontal aggregation of individual supply functions.



Let’s Exercise!

- Unions and employers have agreed on an increase in wages.
- What consequence does this have for Ford?

Let’s Exercise!

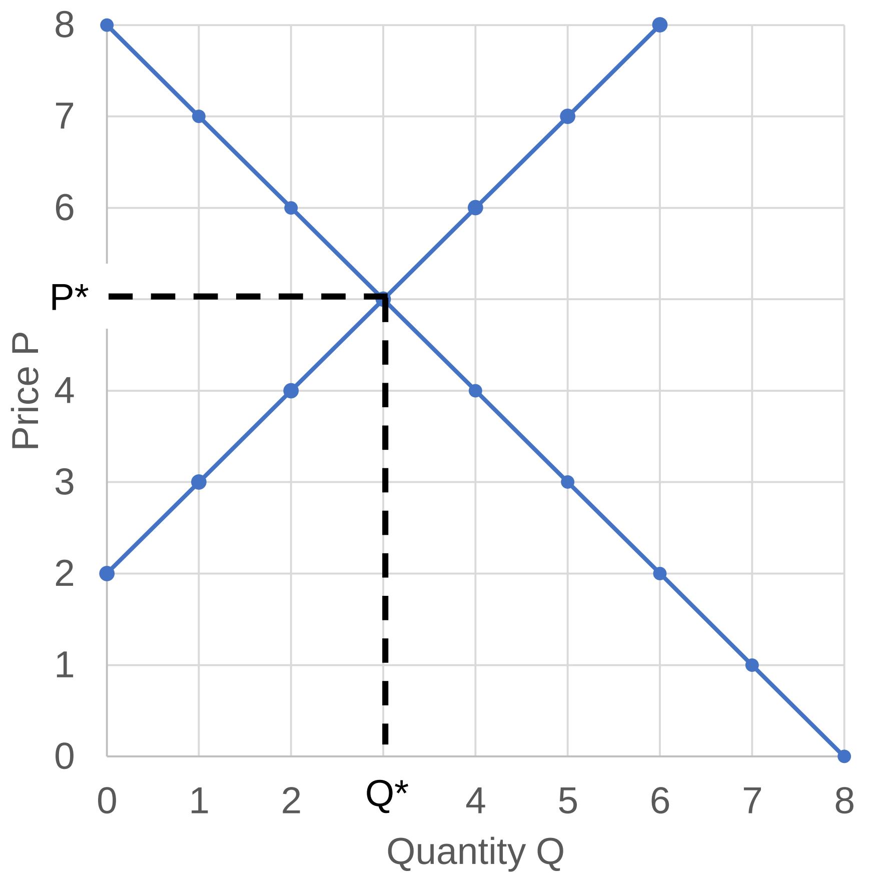
- Unions and employers have agreed to offer and participate in training activities to increase the productivity per worker.
- What consequence does this have for Ford?

The Market Equilibrium

- The interaction between buyers (households) and sellers (firms) takes place in a competitive market.
- Competitive Markets:
  - An environment in which no single seller and no single buyer has any significant, direct impact over the price.
  - The price is taken as given by all market participants.
- Market Equilibrium:
  - A stable price/quantity pair for which no individual market participant could improve the outcome for herself by altering her own behavior.

The Market Equilibrium – Ctd.

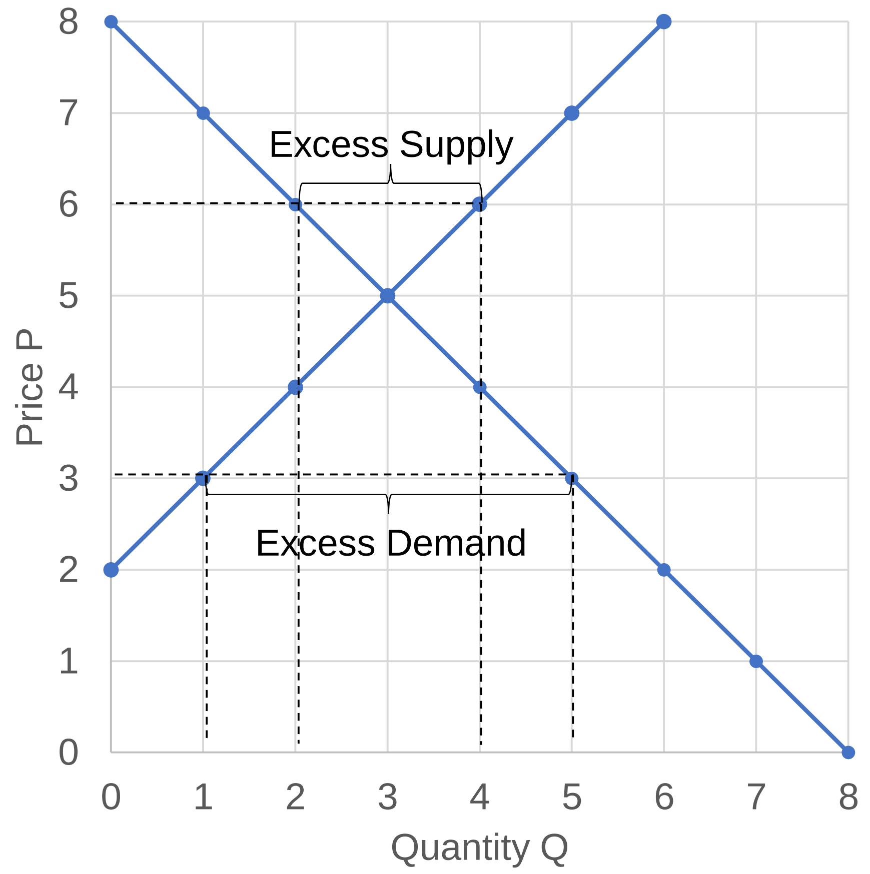
- The market equilibrium price arises spontaneously from the voluntary interactions of buyers and sellers
- The market equilibrium price is the market clearing price, which gets all consumers as a group to demand a quantity of the good that is exactly equal to the quantity of the good that suppliers want to sell.



The Market Equilibrium – Ctd.

Excess Supply and Excess Demand

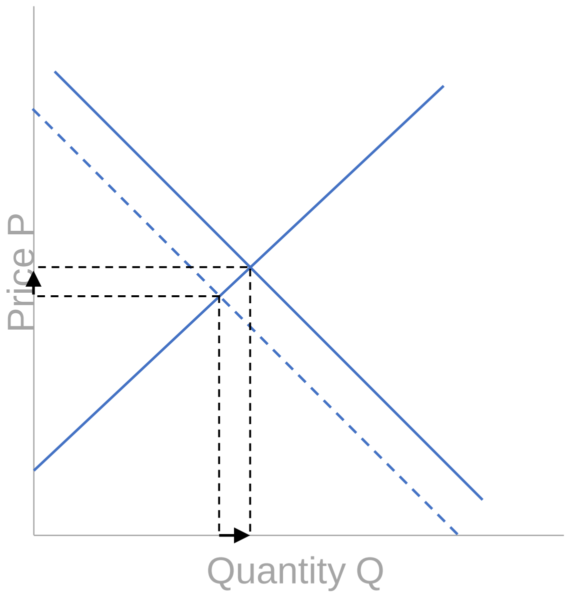
- Excess supply describes a situation in which quantity supplied is greater than quantity demanded.
- Excess demand describes a situation in which quantity demanded is greater than quantity supplied



Market Equlibrium – Ctd.

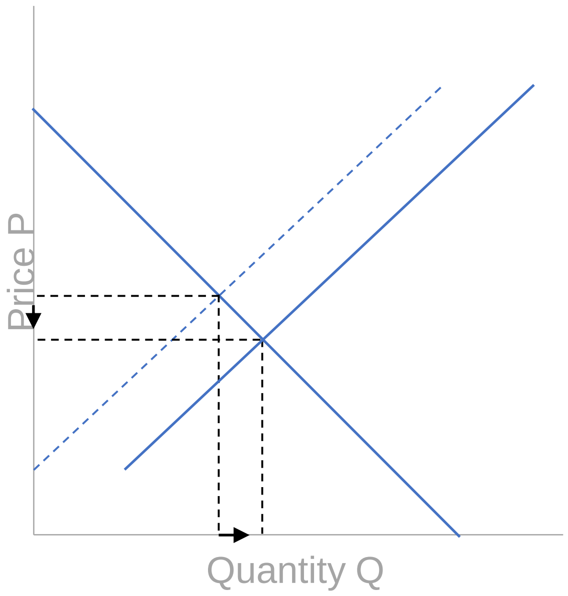
Changes in Demand

- What are the determinants of Demand?



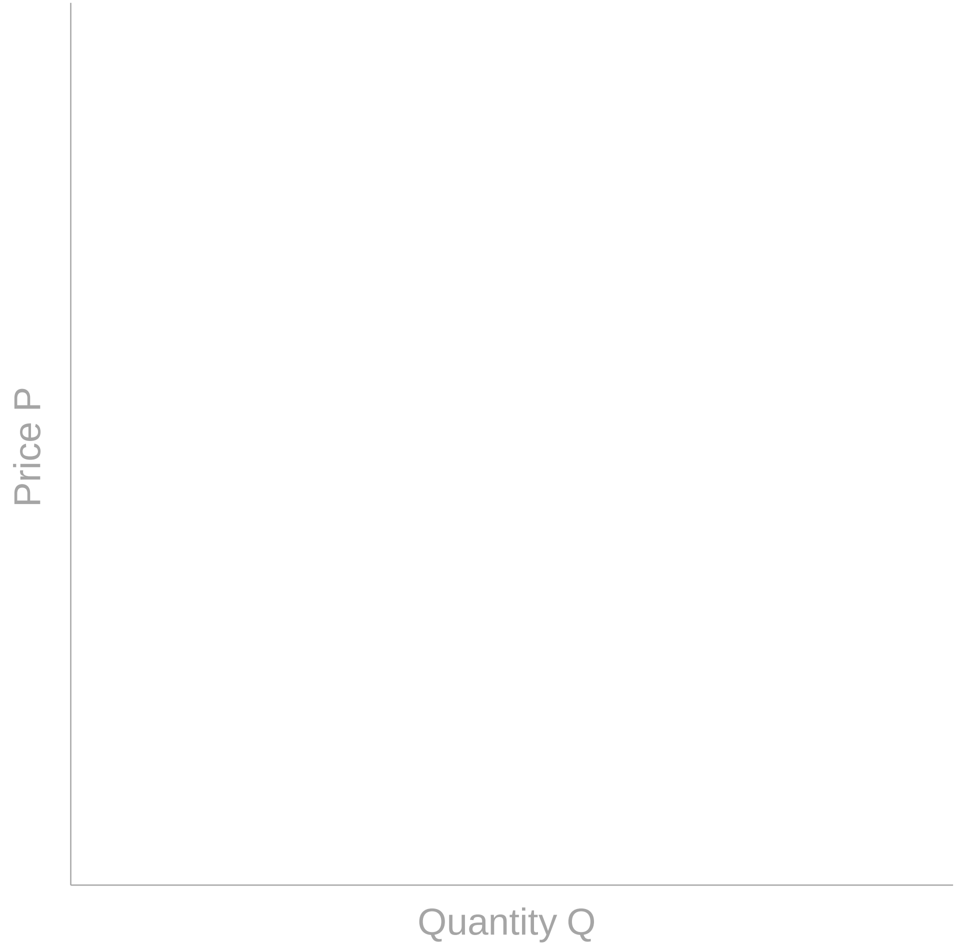
Changes in Supply

- What are the determinants of Supply?



Let’s Exercise!

- Both demand and supply increase at the same time.
- What happens to the equilibrium quantity?
- What happens to the equilibrium price?



Let’s Exercise!

- There is a decrease in demand for SUVs.
- Holding everything else constant, what will Ford do?

Conclusion

- The **demand curve** captures an individual’s marginal willingness to pay, whereas the marginal willingness to pay is again a reflection of the law of diminishing marginal benefit from consumption.
- The **supply curve** captures an individual’s marginal willingness to sell, whereas the marginal willingness to sell is again a reflection of the law of increasing cost from production.
- The **market equilibrium** is a stable price/quantity pair for which no individual market participant could improve the outcome for herself by altering her own behavior.