The University of Georgia
TERRY
College of Business

Supply and Demand

Chapter 3

Scott Spitze *

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- Because food and water are so necessary, society spends lots of resources to produce them. If there were as many diamond rings as there were tacos, they would also sell for less than $3.00

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- Close to competitive: corn, HDMI cables, lawn care
- Not close to competitive: oil, laptops, internet services

Demand Curve

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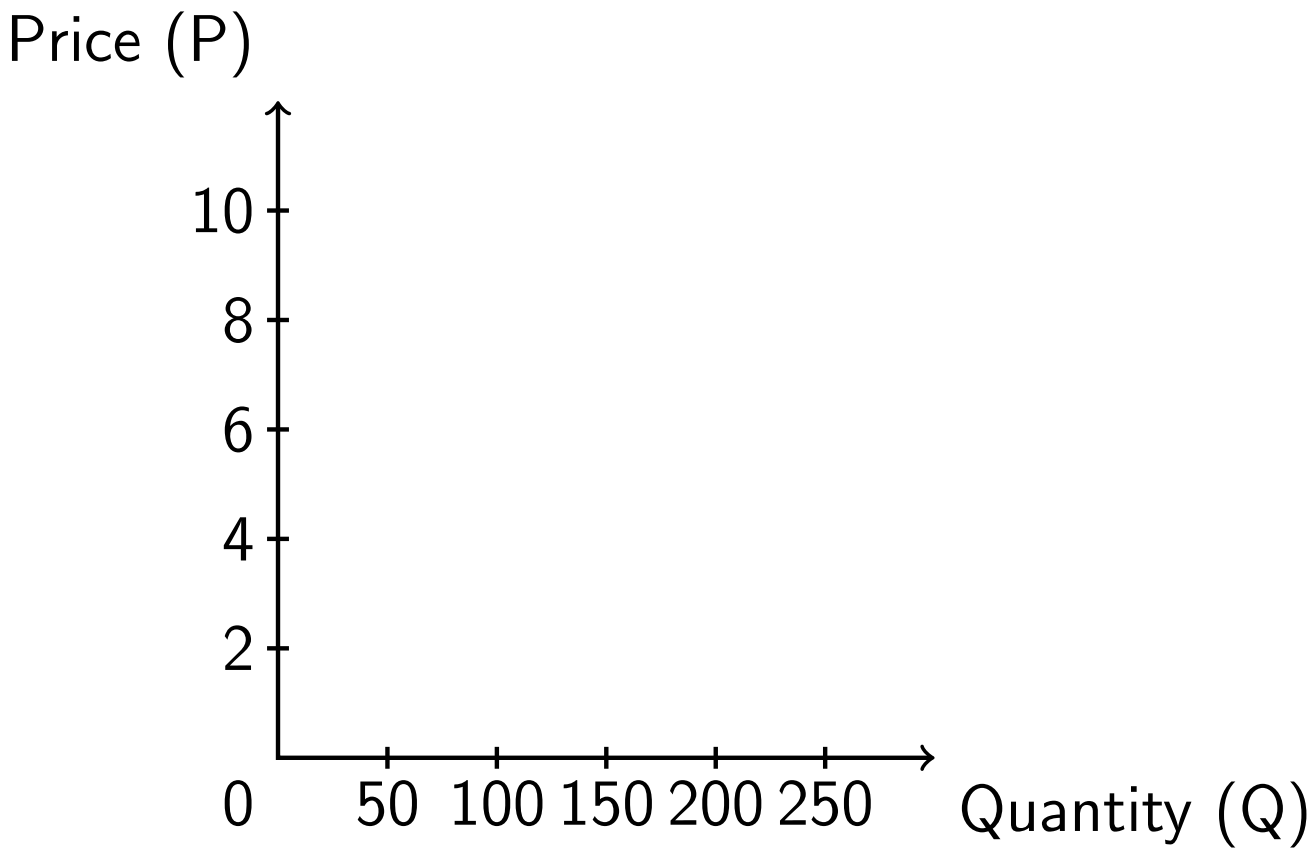
- Demand $\neq$ Quantity Demanded

Example Demand Curve

Chocolate
Demand Schedule

Price	Quantity Demanded
$10	50 kgs
$8	100 kgs
$6	150 kgs
$4	200 kgs
$2	250 kgs



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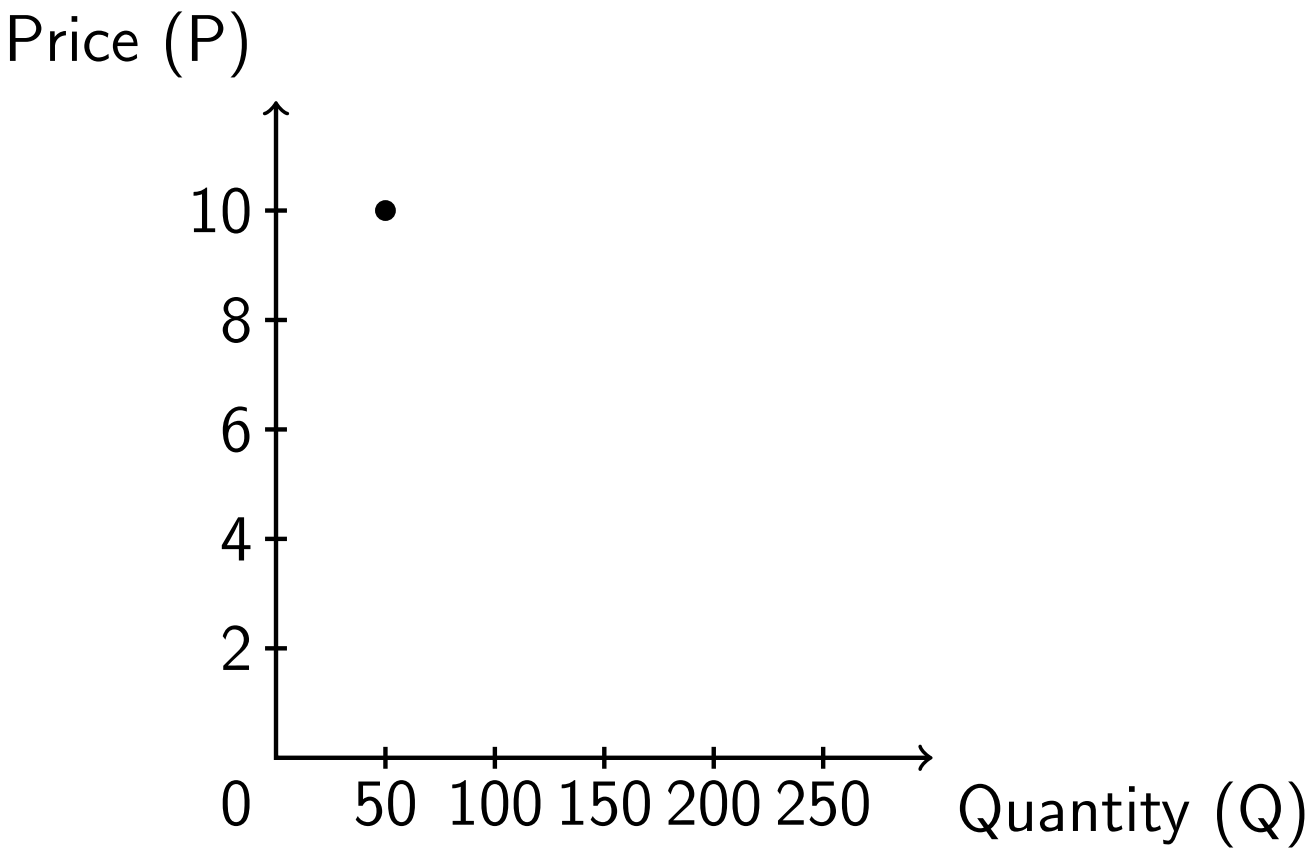

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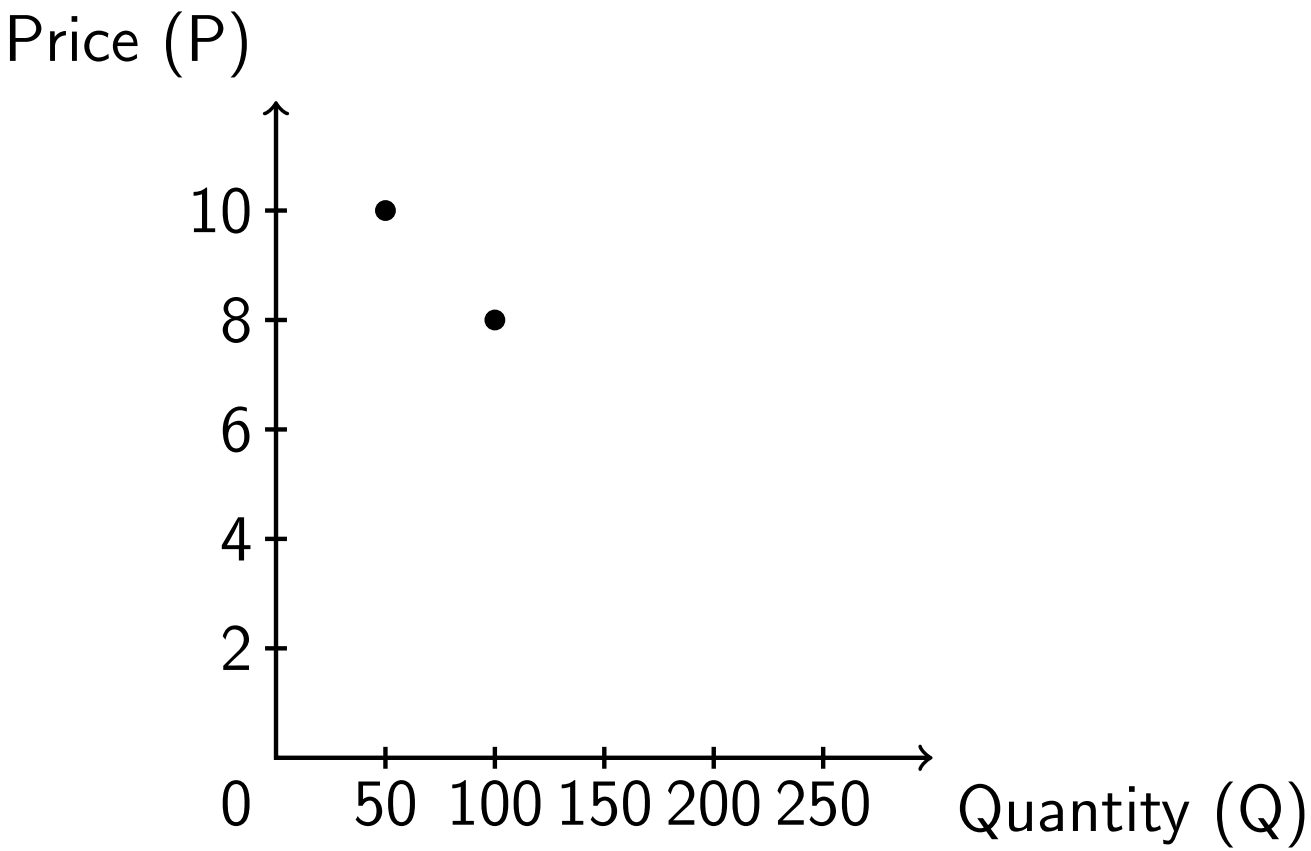

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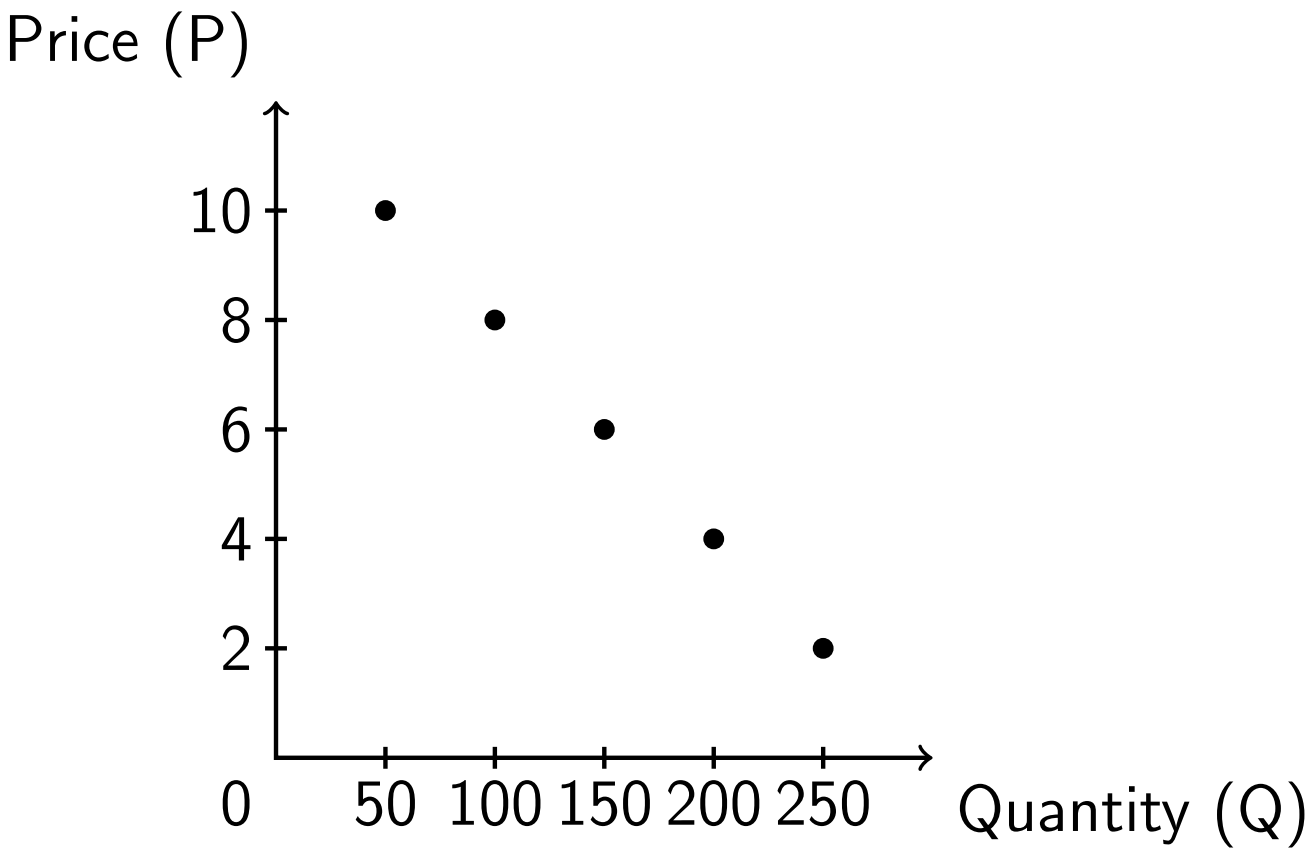

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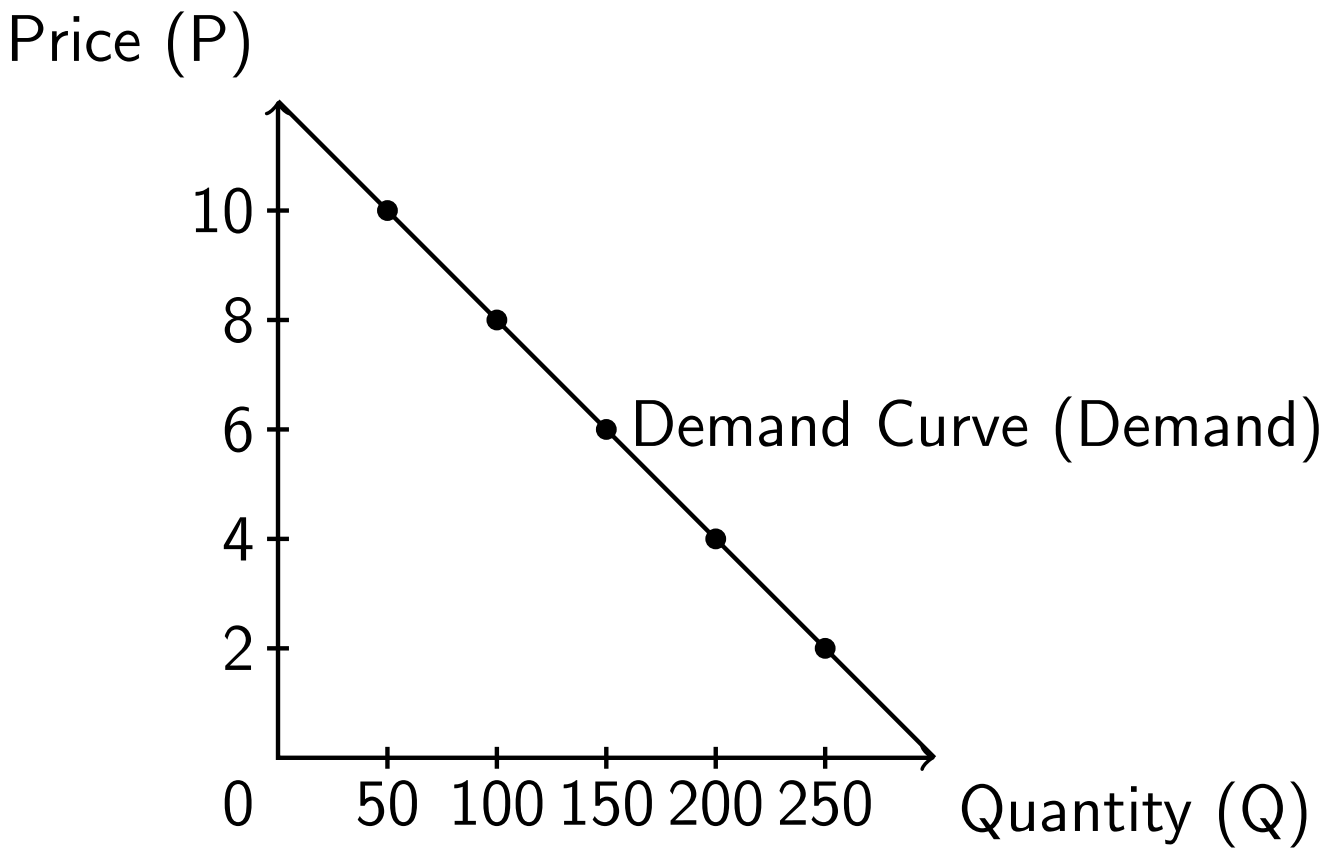

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- **Substitution Effect** If the price of a good falls, it becomes less expensive compared to other goods, so people purchase more
- **Income Effect** If the price of a good falls, consumer's **Purchasing Power** increases. This may raise or lower demand
- **Purchasing Power** The quantity of goods a consumer can buy with a fixed amount of income

Income Effect Example

- Imagine three friends Gabby, Harold, and Isaiah, who are all students. All three enjoy eating out but they can only afford one weekly meal (4 per month) at *The Varsity*. One day, the three friends receive a raise at work. How do they respond?

Income Effect Example

- Imagine three friends Gabby, Harold, and Isaiah, who are all students. All three enjoy eating out but they can only afford one weekly meal (4 per month) at *The Varsity*. One day, the three friends receive a raise at work. How do they respond?

- For Gabby, fast food is a **Normal Good**. She will use some of her higher income to buy more fast food, now eating 5 meals at *The Varsity* a month

- **Normal Good** Demand for the good increases with a rise in income/purchasing power. Most goods are normal goods

Income Effect Example

- Imagine three friends Gabby, Harold, and Isaiah, who are all students. All three enjoy eating out but they can only afford one weekly meal (4 per month) at *The Varsity*. One day, the three friends receive a raise at work. How do they respond?

- For Harold and Isaiah, fast food is an **Inferior Good**. They will use their higher income to replace one fast food meal with a meal at the sit down restaurant *Cali n Tito's*

- **Inferior Good** Demand for the good decreases with a rise in income/purchasing power

  Ex. Public transportation, instant noodles

Income vs Substitution Effect Example

- The same three friends, Gabby, Harold, and Isaiah are enjoying their raises. One day, *The Varsity* lowers its prices. How do our students react?

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- The same three friends, Gabby, Harold, and Isaiah are enjoying their raises. One day, *The Varsity* lowers its prices. How do our students react?
- For Gabby, fast food is a **Normal Good**. Fast food becomes cheaper compared to other meals (substitution effect) and her increased **Purchasing Power** makes her want more fast food (income effect). She now eat 7 meals at *The Varsity* per month
  - Substitution effect: Buy more fast food
  - Income effect: Buy more fast food
  - Total effect: Buy more fast food

Income vs Substitution Effect Example

- The same three friends, Gabby, Harold, and Isaiah are enjoying their raises. One day, *The Varsity* lowers its prices. How do our students react?
- For Harold, fast food is an **Inferior Good**. Fast food becomes cheaper compared to other meals (substitution effect) but his increased **Purchasing Power** makes him want less fast food (income effect). He still buys more fast food, eating 4 meals at *The Varsity* per month and 1 at *Cali n Tito's*
  - Substitution effect: Buy more fast food
  - Income effect: Buy less fast food
  - Total effect: Buy more fast food (not as much as Gabby)

Income vs Substitution Effect Example

- The same three friends, Gabby, Harold, and Isaiah are enjoying their raises. One day, *The Varsity* lowers its prices. How do our students react?
- For Isaiah, fast food is an **Inferior Good**. Fast food becomes cheaper compared to other meals (substitution effect) but his increased **Purchasing Power** makes him want much less fast food (income effect). He buys less fast food, now eating only 2 meals at *The Varsity* per month and 2 at *Cali n Tito's*
  - Substitution effect: Buy more fast food
  - Income effect: Buy less fast food
  - Total effect: Buy less fast food
- **Giffen Good** A good that defies the **Law of Demand**, as price falls, quantity demanded falls. *Ex* Bread during famine

What Determines Demand?

- Demand is the relationship between price and quantity demanded. This relationship is determined by a number of factors. If any of these factors change, we get a **Shift in Demand**

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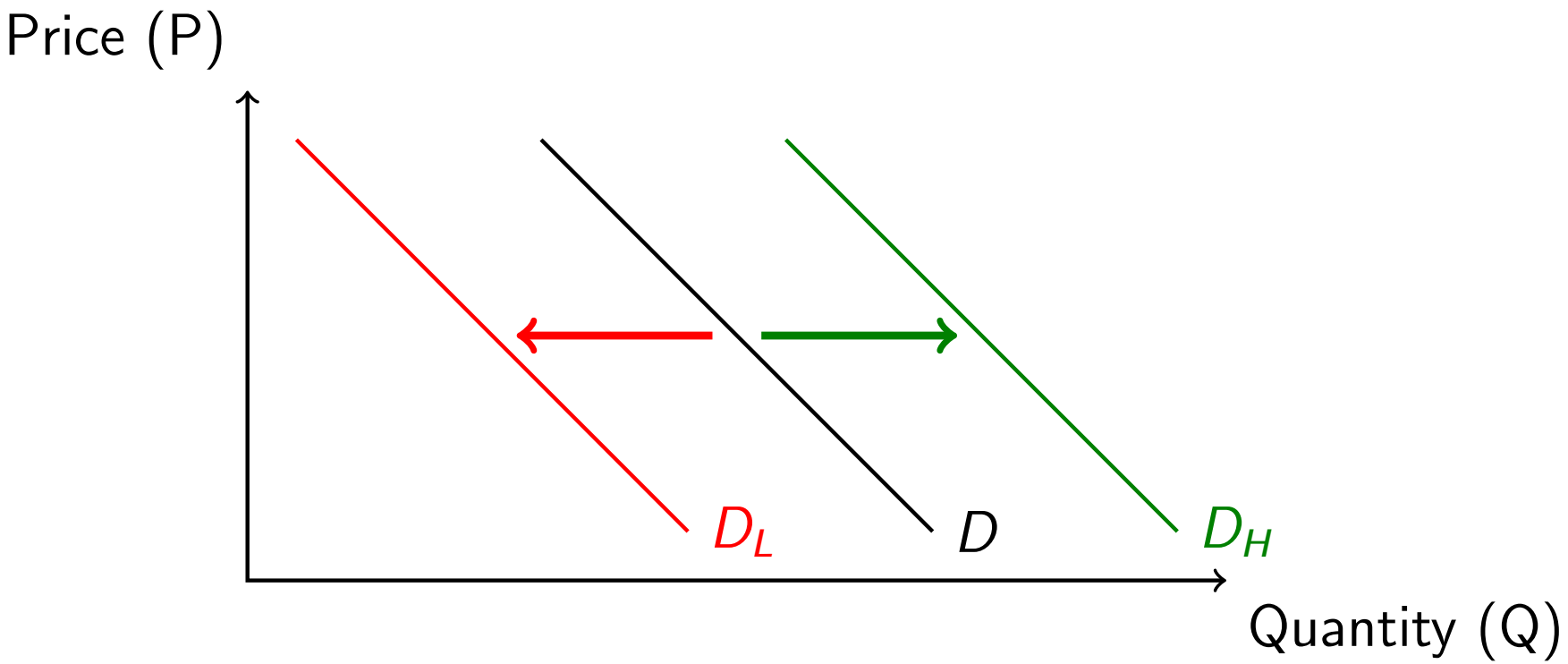
- Changes in the following cause a shift in demand
  1. Income
  2. Prices of other goods
  3. Tastes
  4. Population and demographics
  5. Expected future prices

Income

Income Effect depends on whether the good is normal or inferior

Normal Good:

Inferior Good:



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Normal Good: income decrease $\leftarrow$, income increase $\rightarrow$

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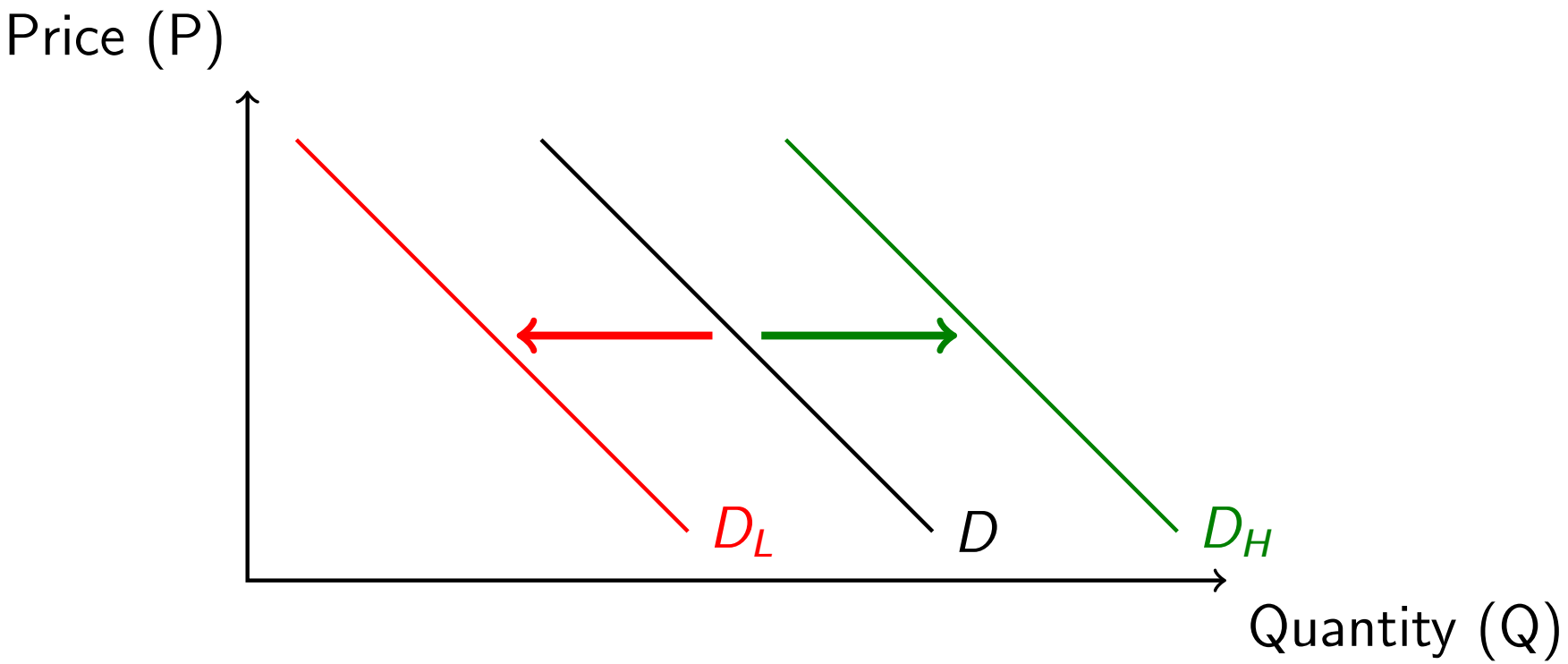

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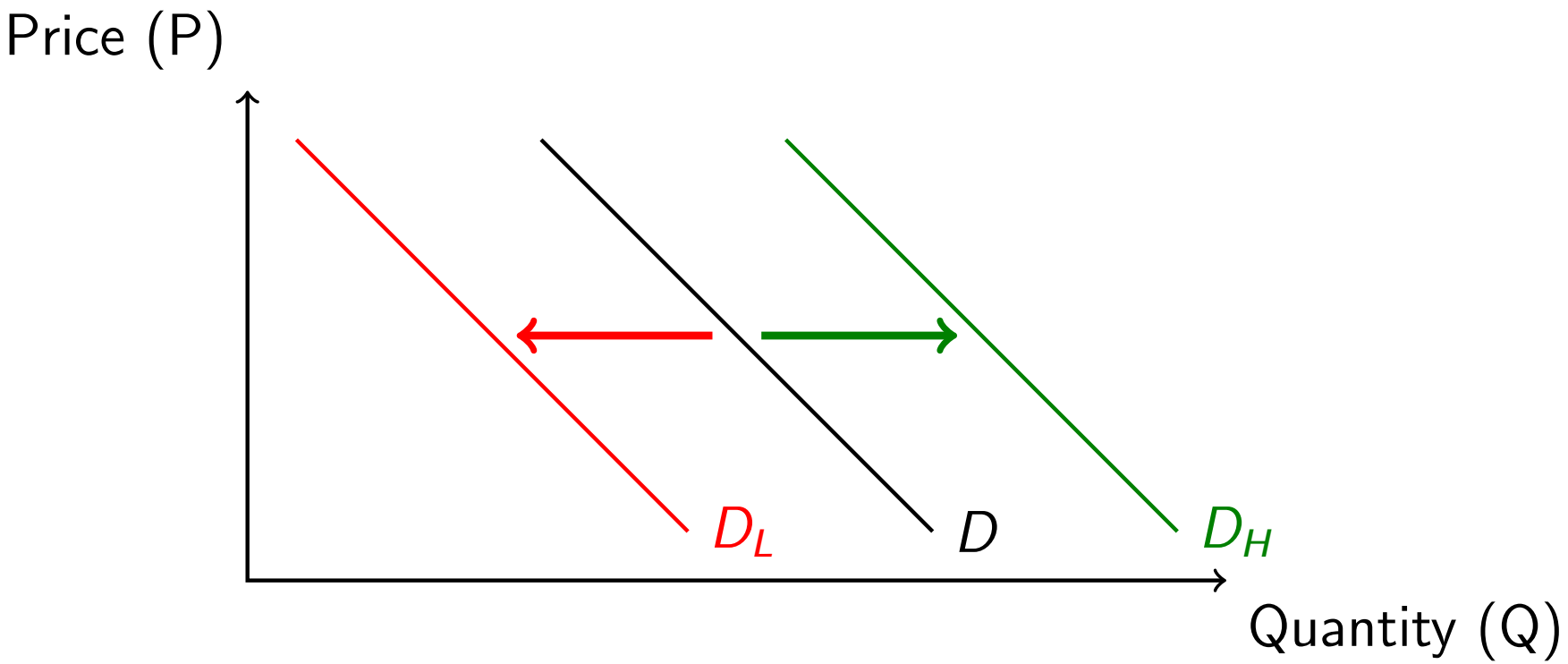

Other Goods: Substitutes

Substitutes Goods that can be used for the same purpose

Ex. Hot dogs vs hamburgers, Uber vs public transportation

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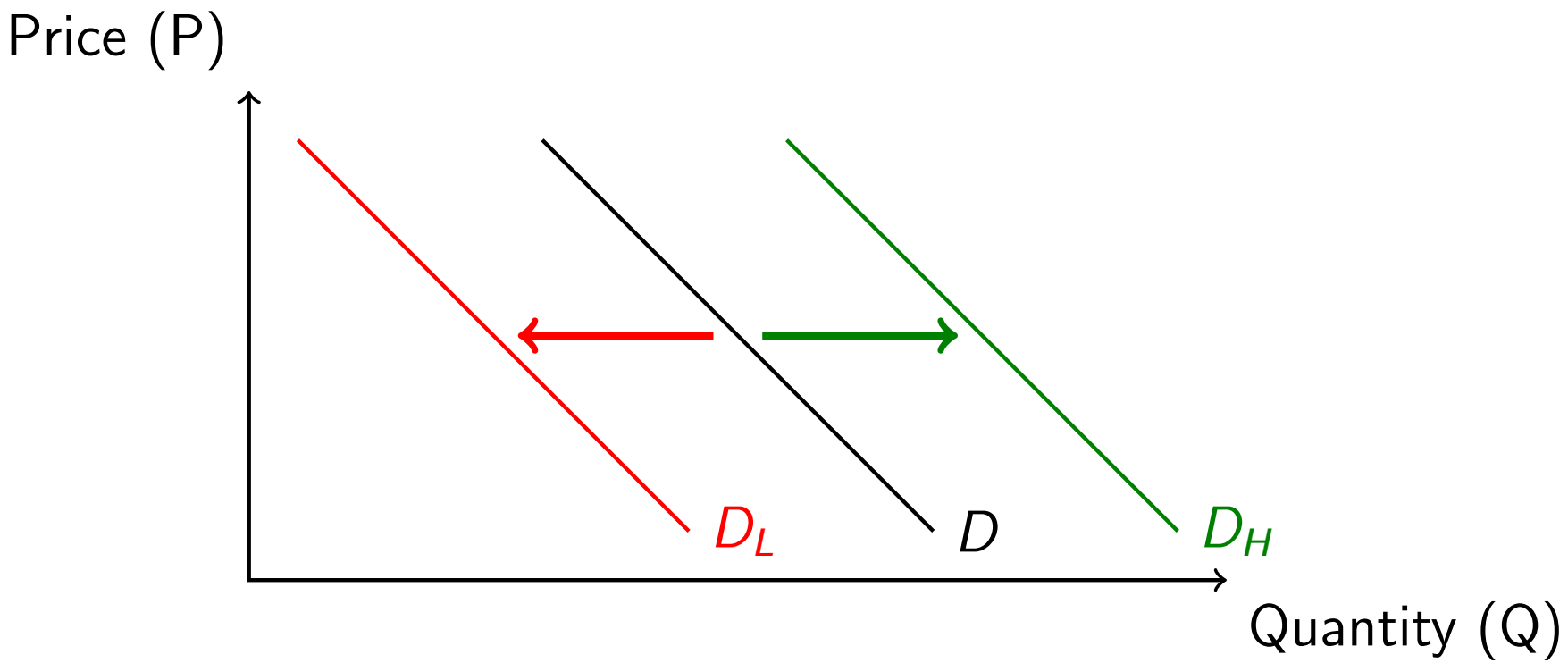

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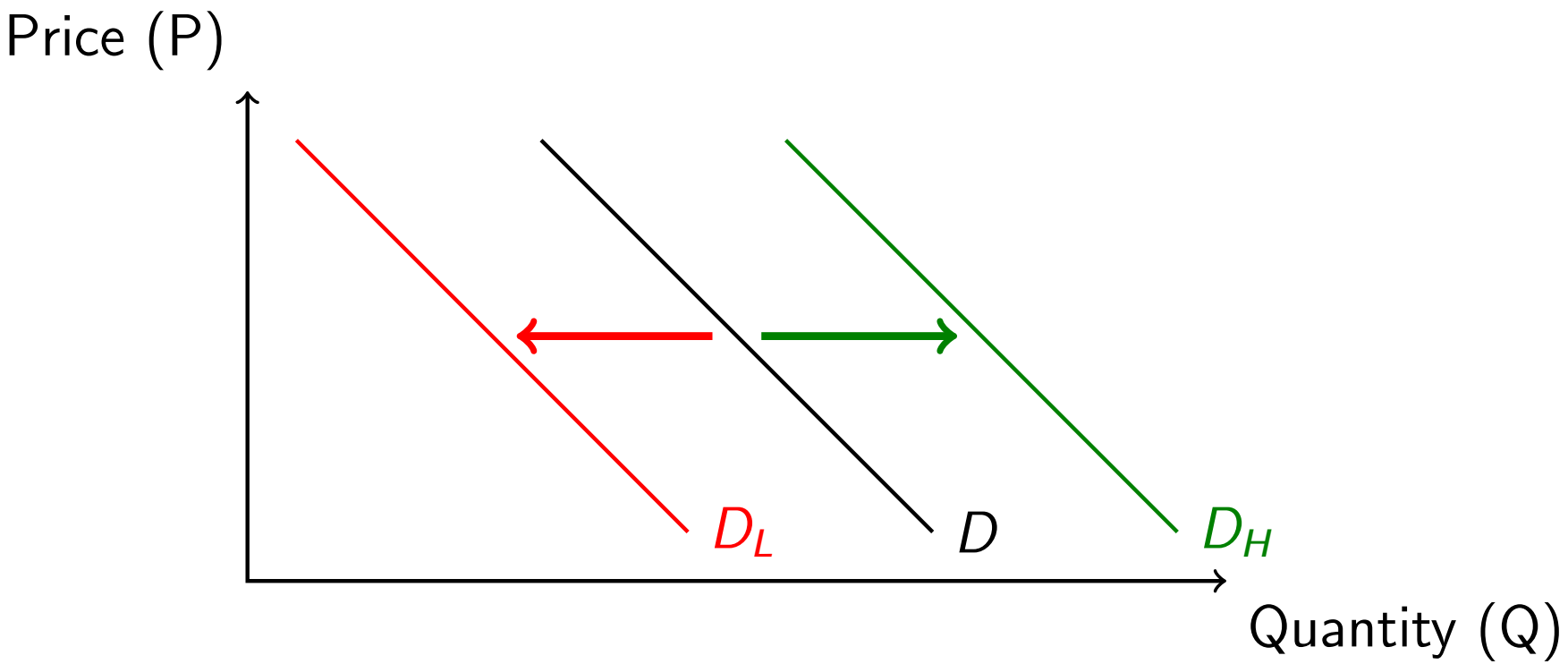

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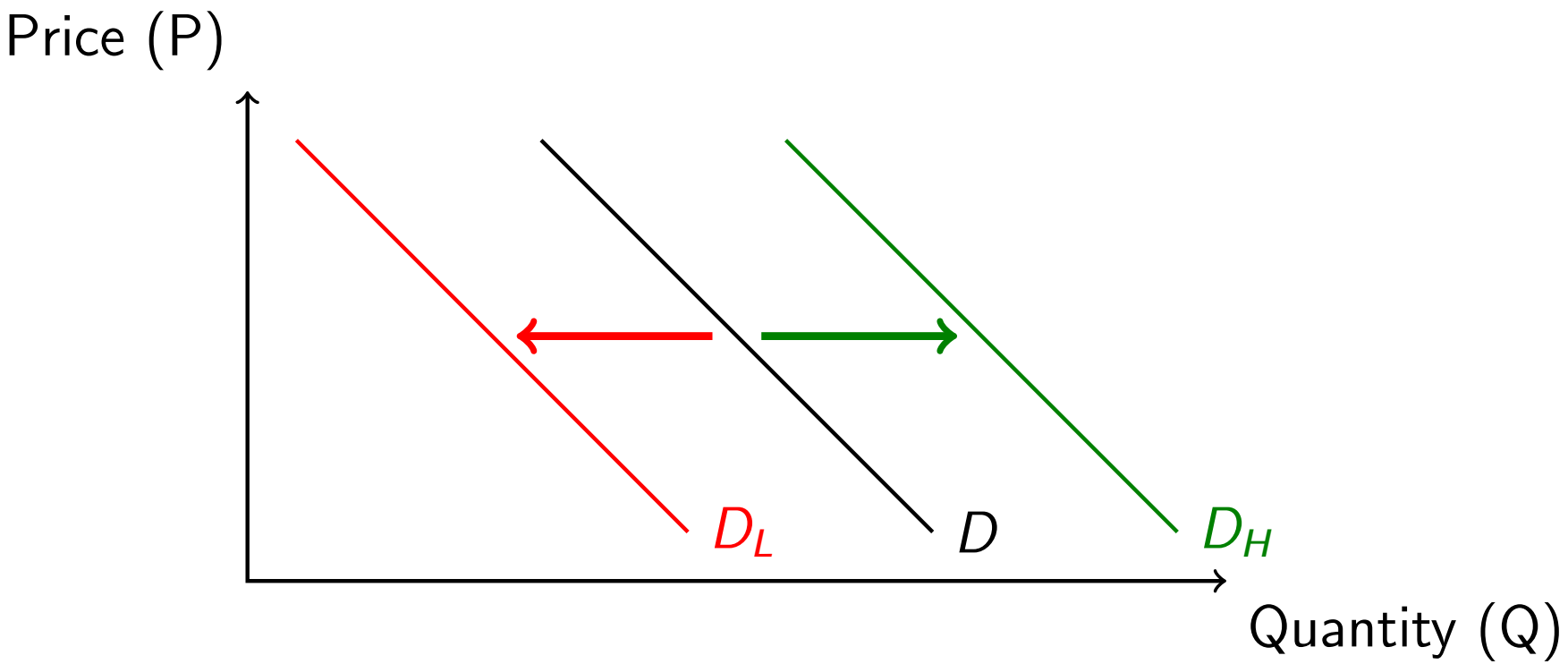

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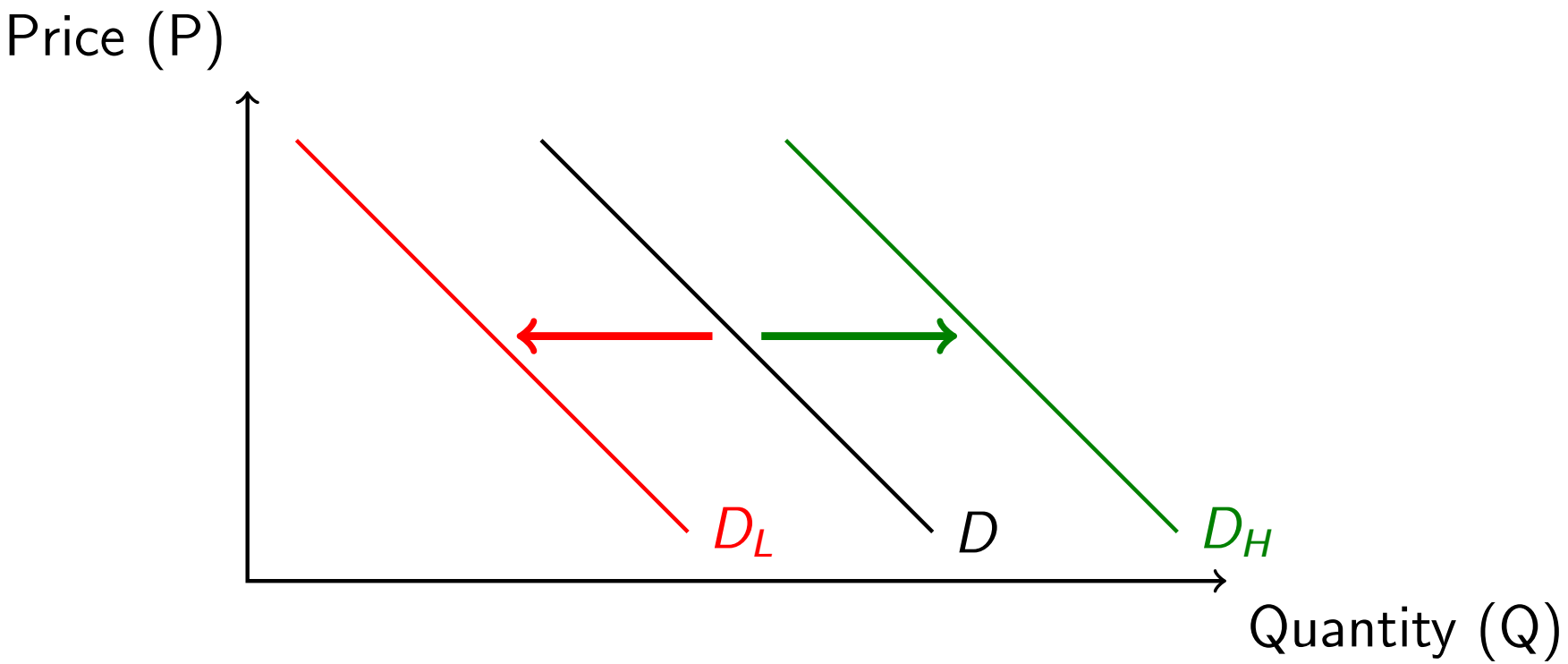

Tastes

Tastes What consumers like and don't like

Ex. Gluten free diets, effects of advertising

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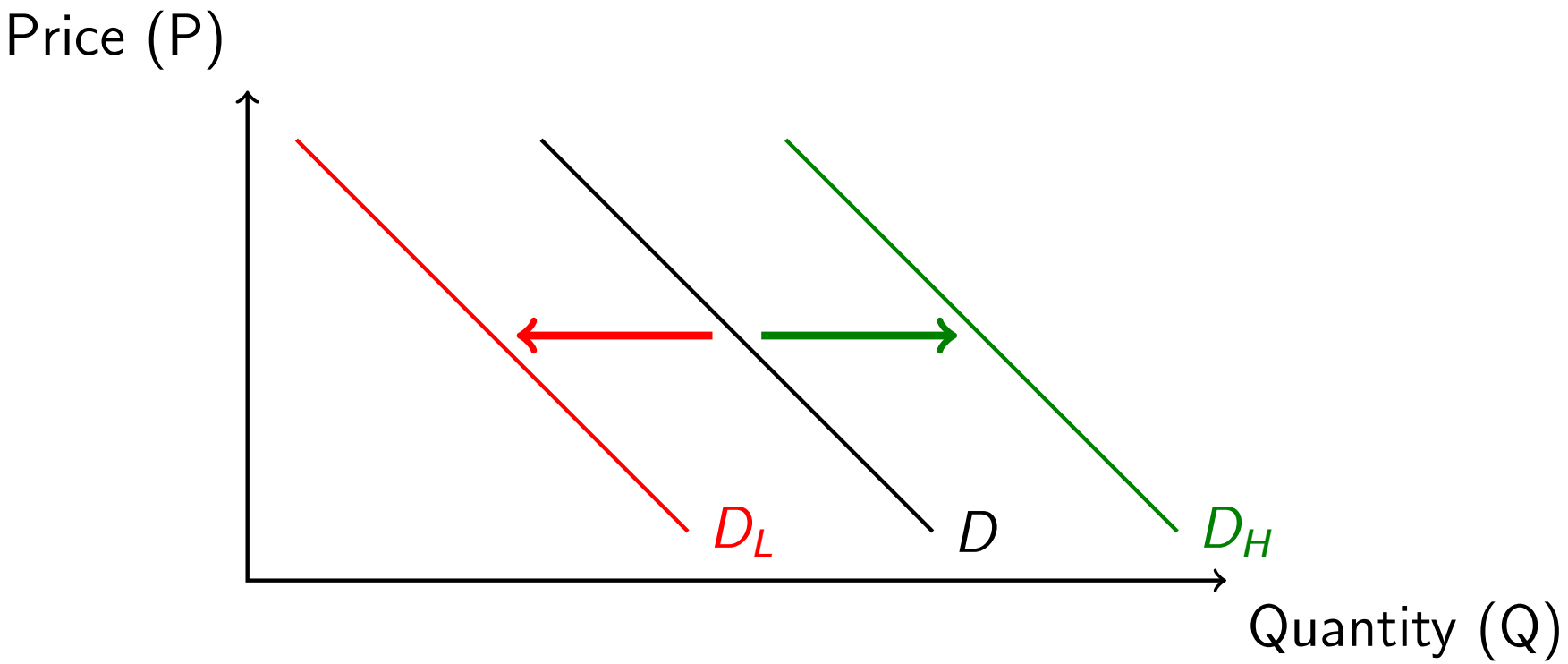

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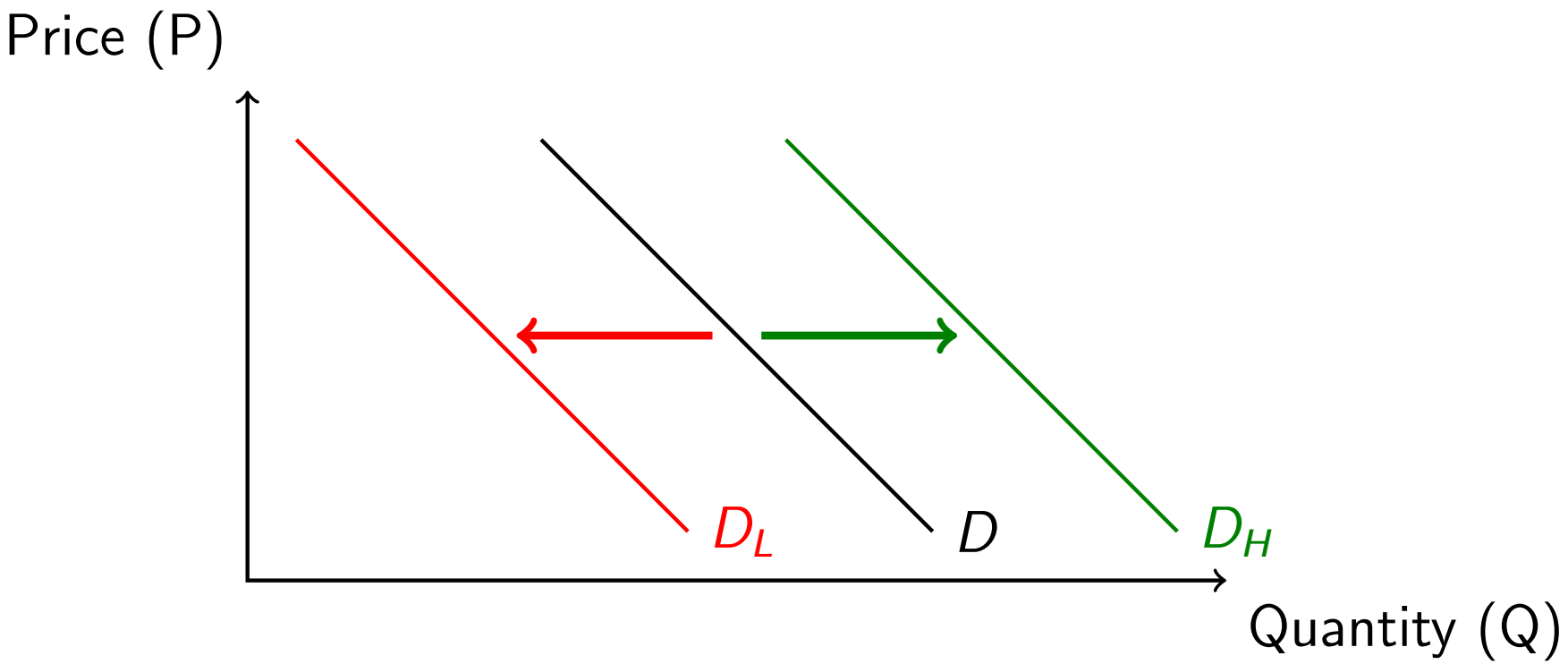
Tastes: like less $\leftarrow$, like more $\rightarrow$



Population

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Ex. People moving to cities/countries, population booms/busts

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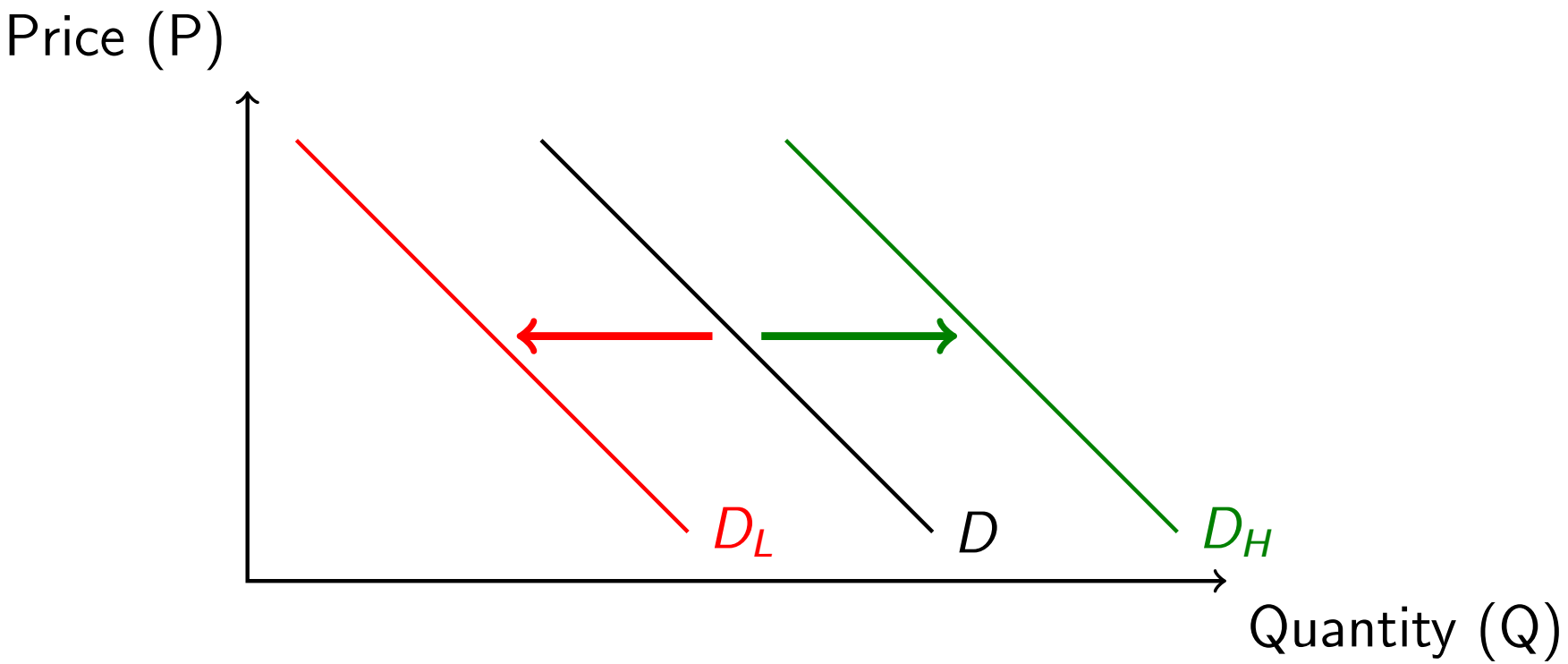

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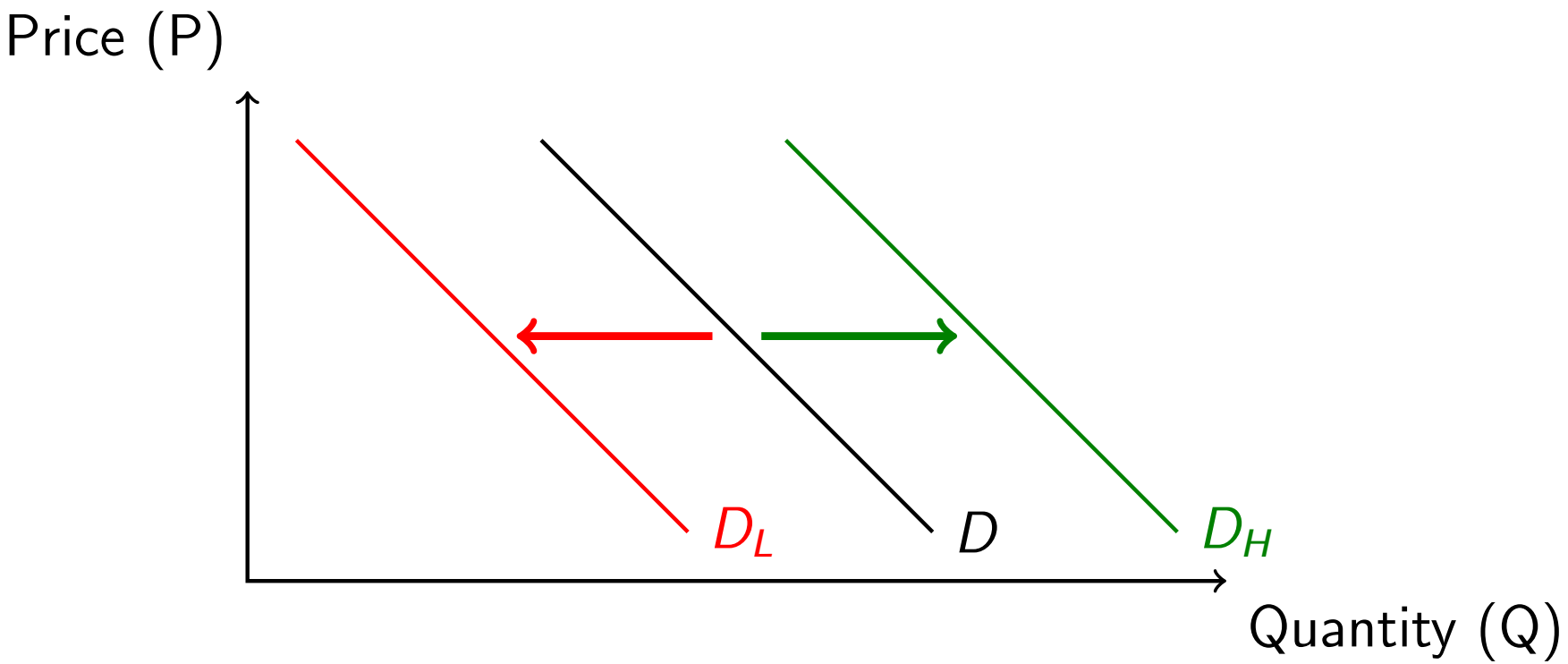
Population: less people $\leftarrow$, more people $\rightarrow$



Demographics

Demographics Characteristics of the population, such as age, race, or gender

Ex. Immigrants and food, Millennials are killing _____

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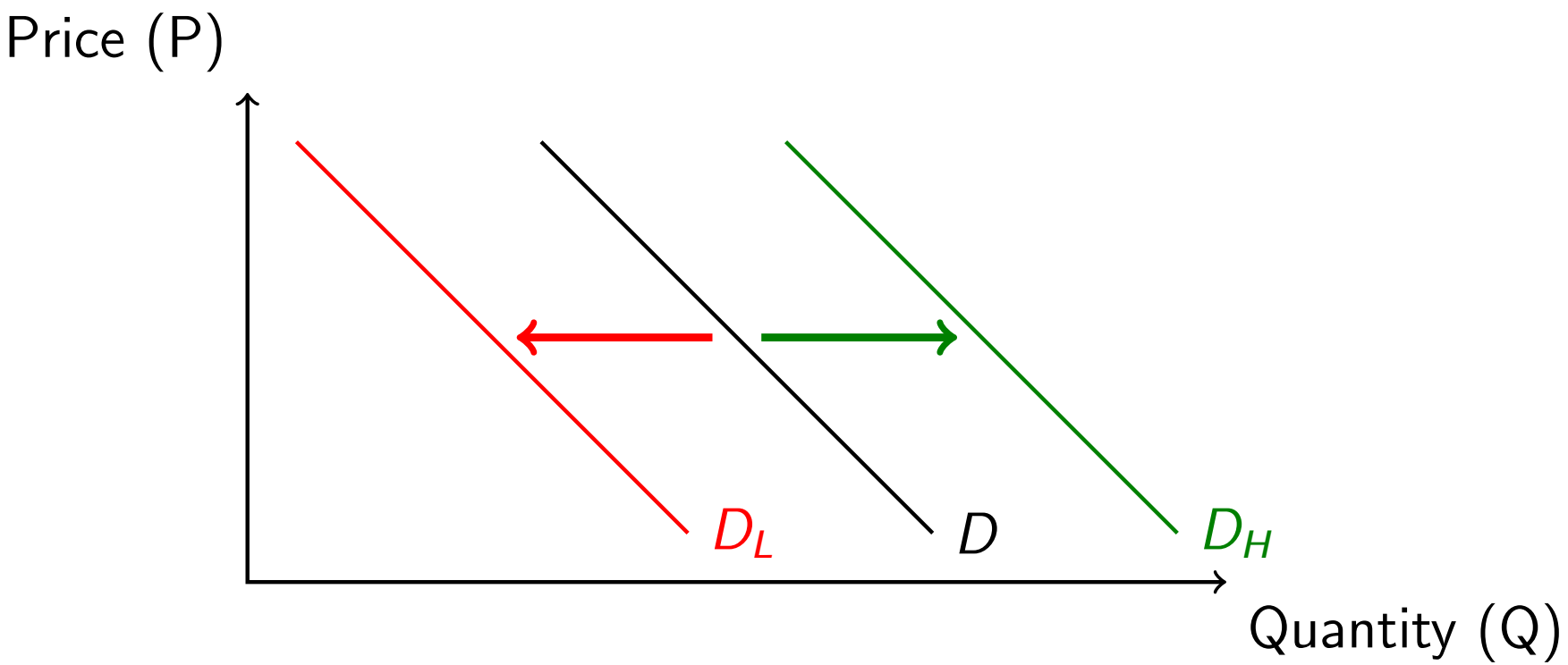

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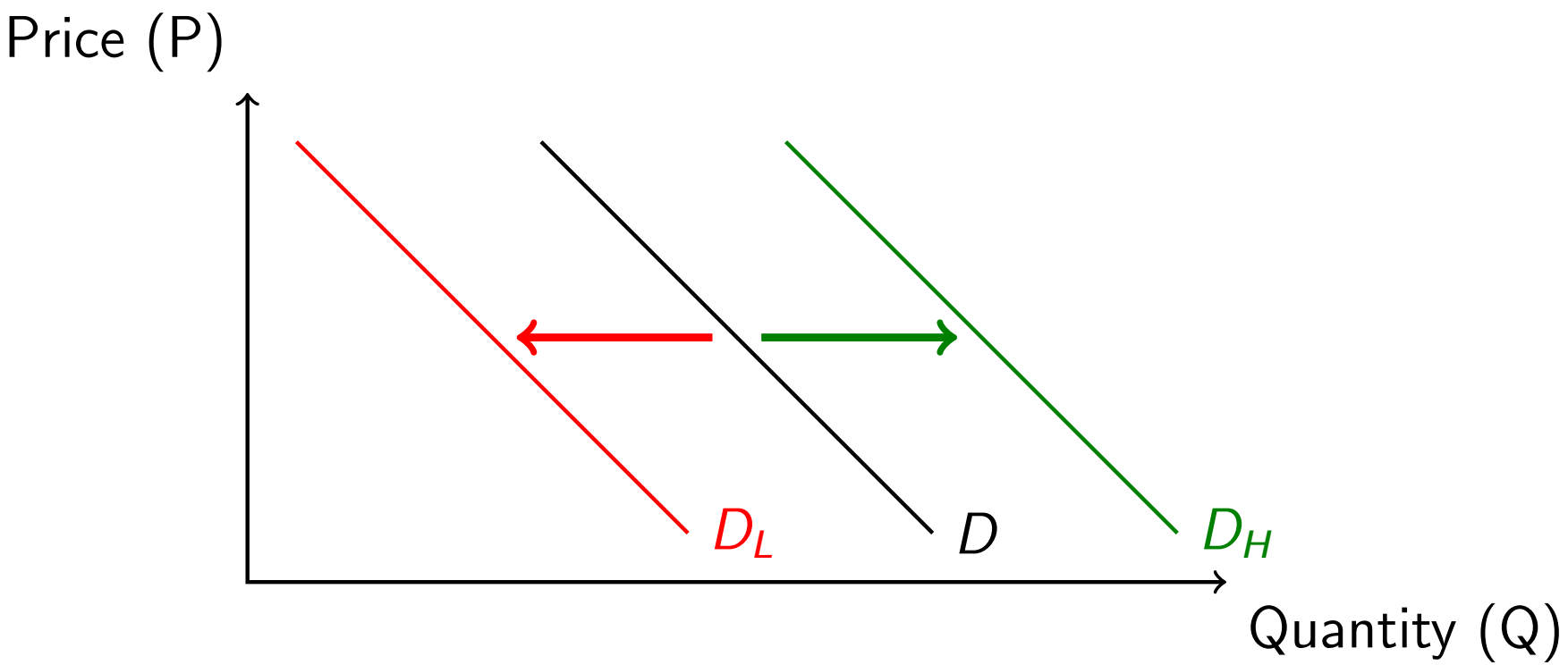
Demographics: less favorable ←, more favorable →



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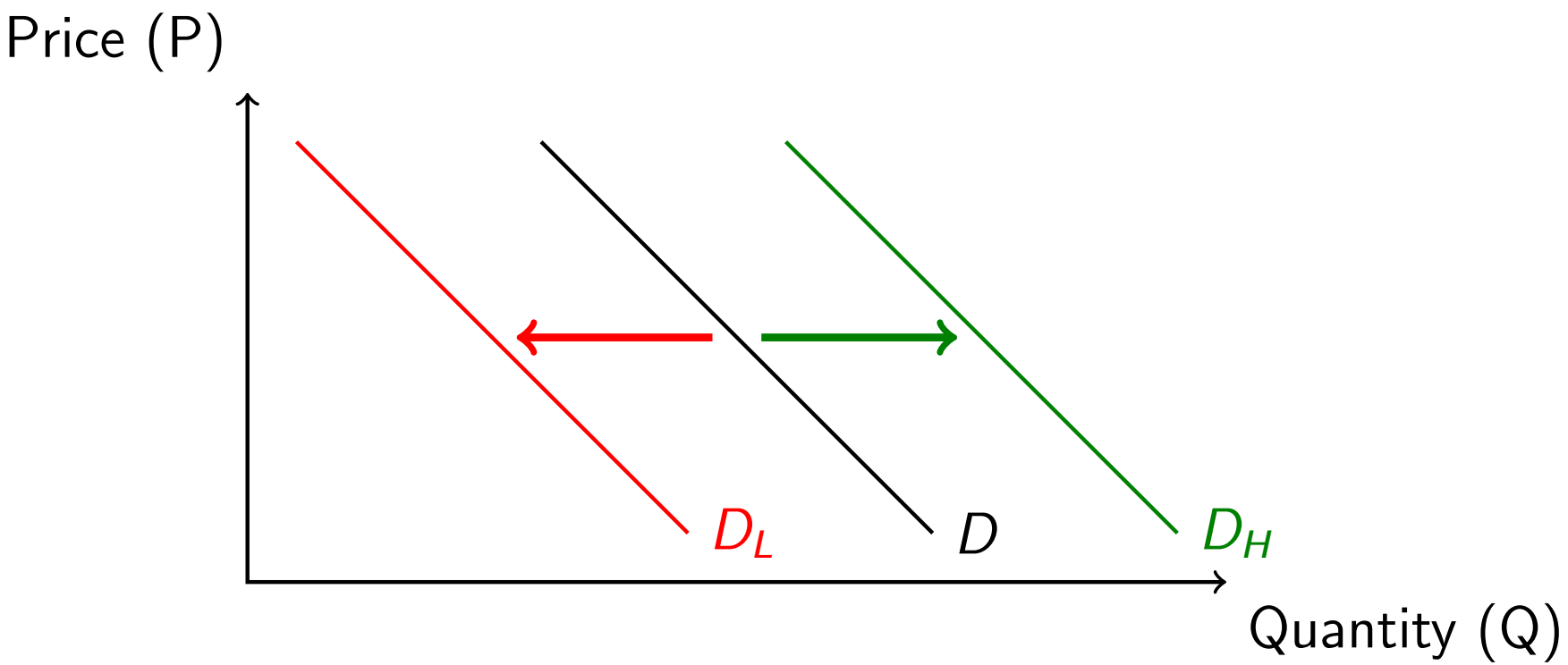

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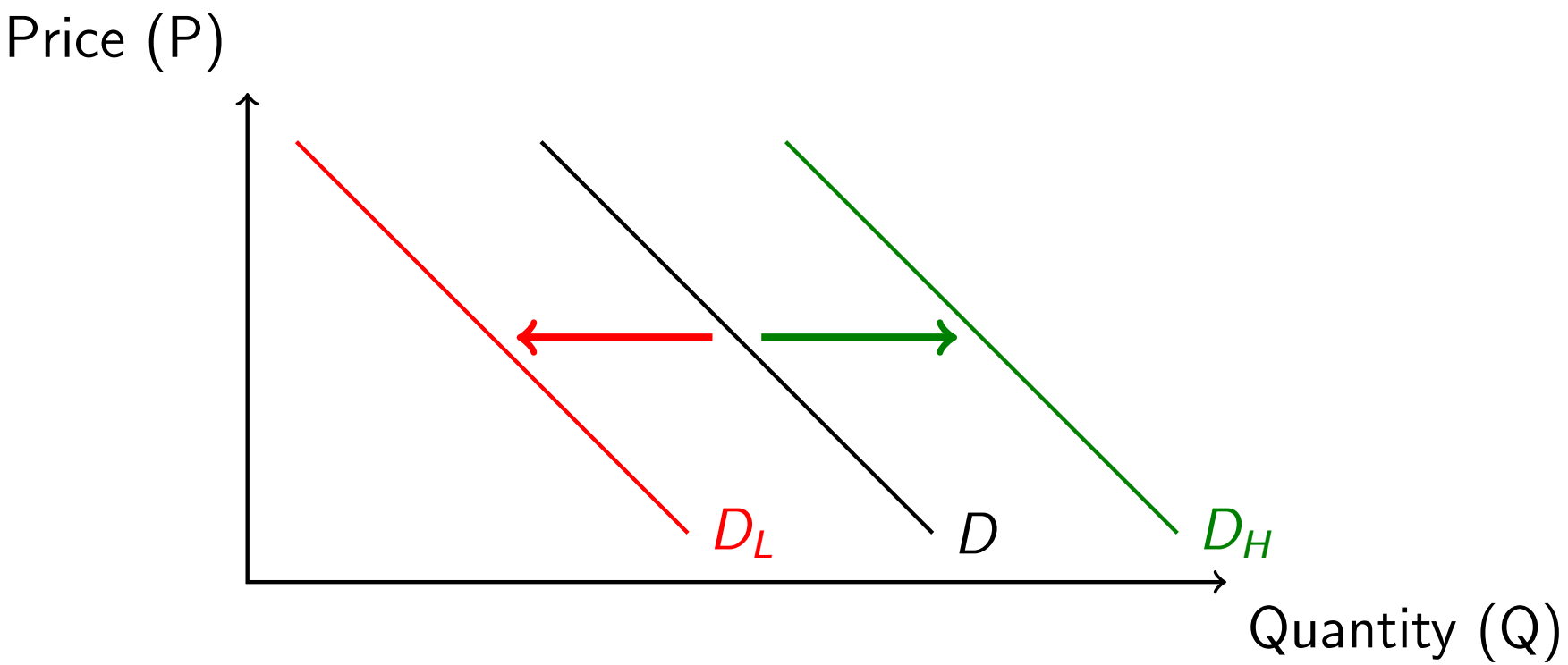
Future Prices: lower prices $\leftarrow$, higher prices $\rightarrow$



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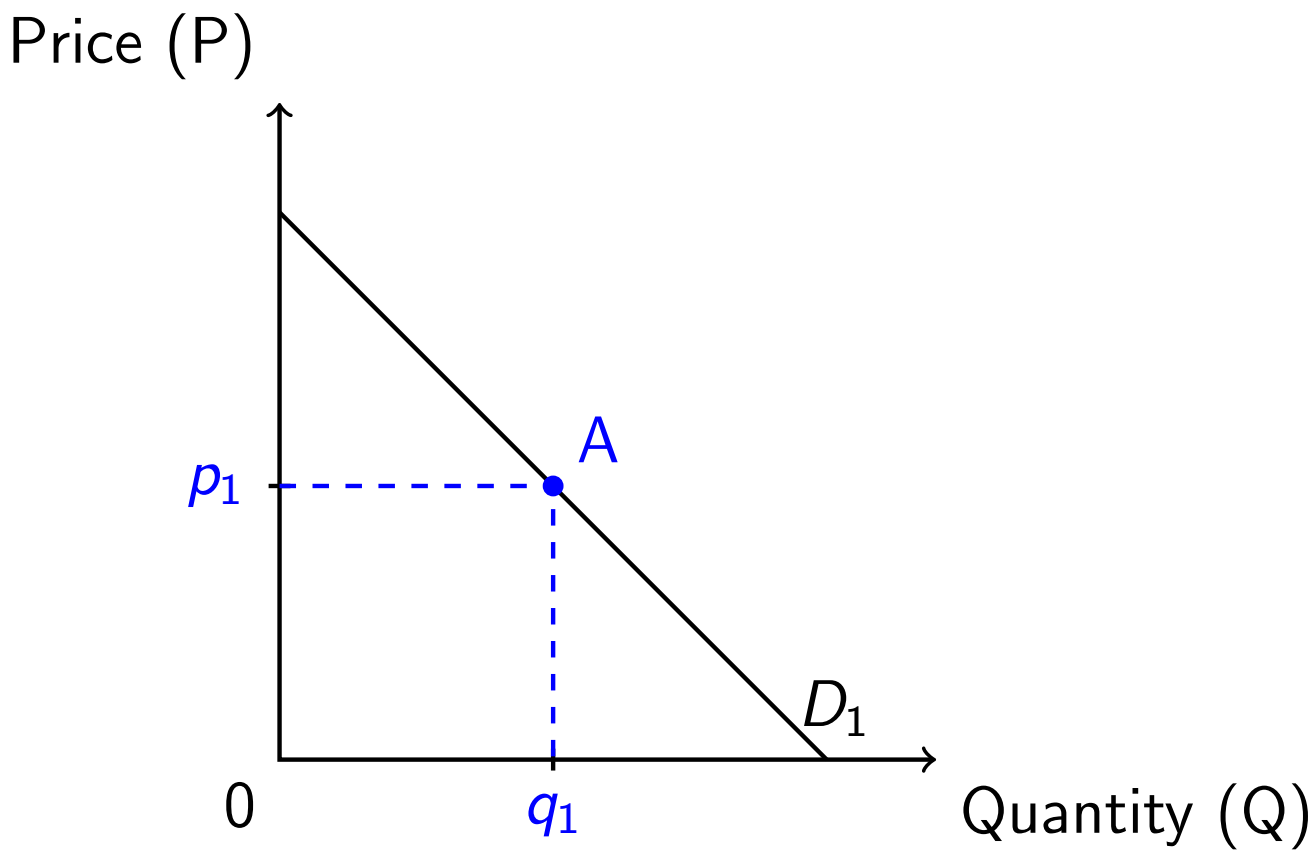

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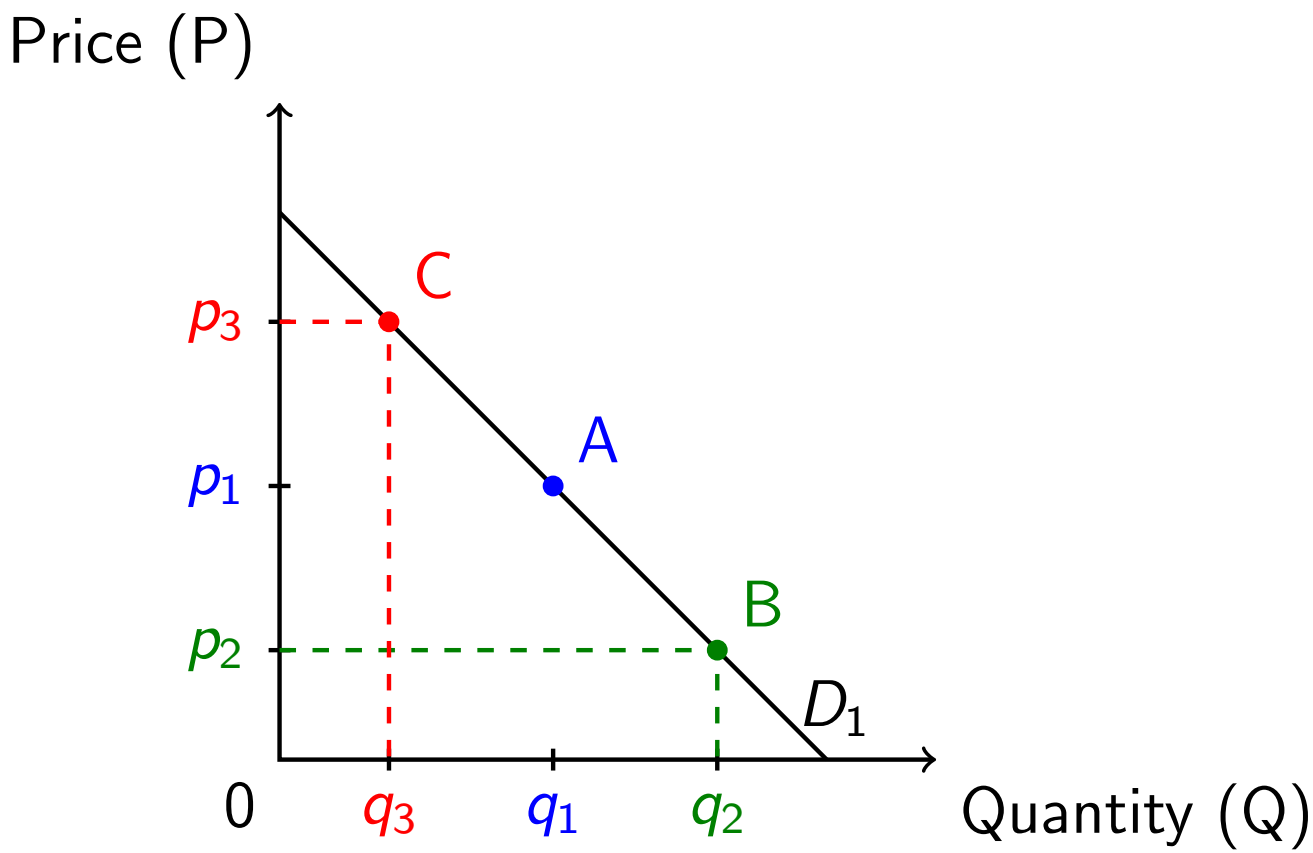

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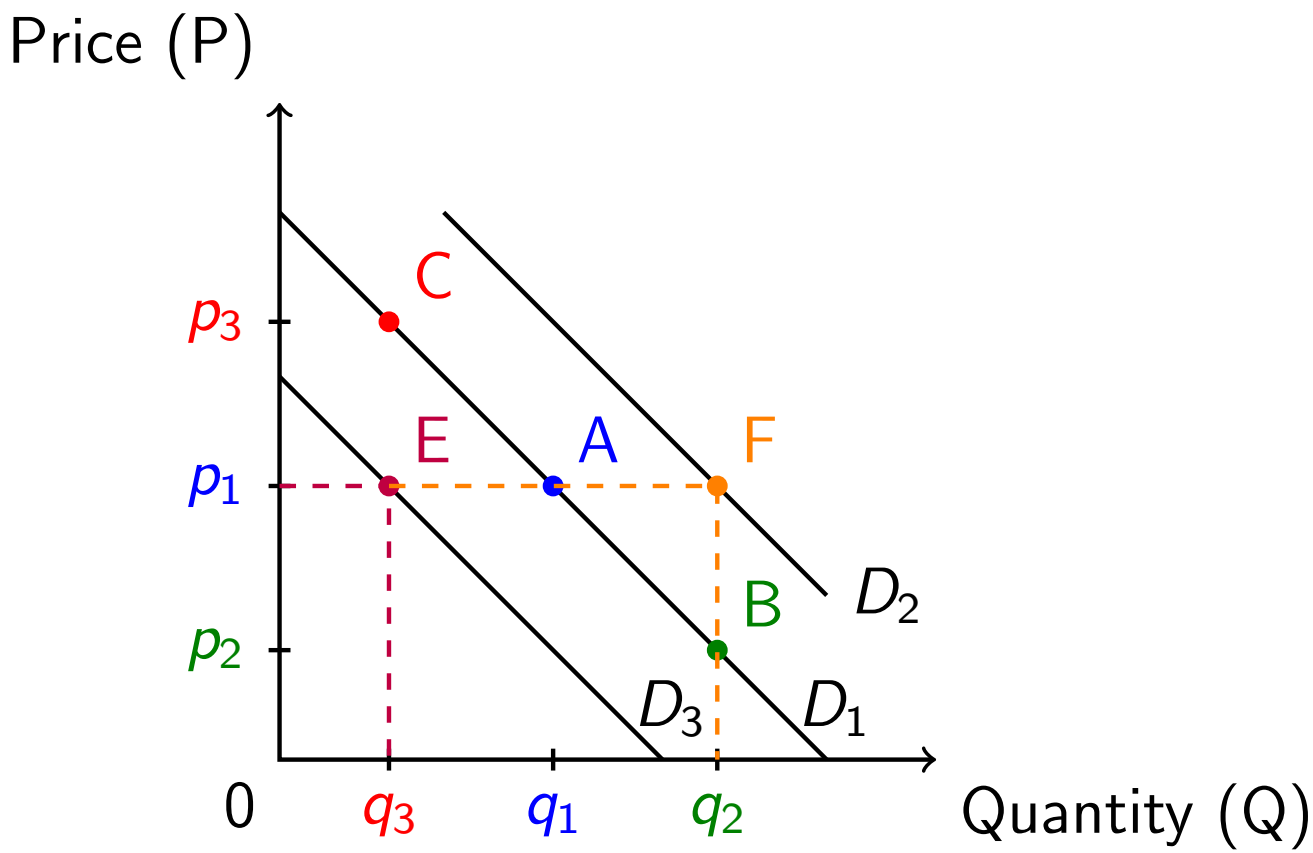
Change in quantity demanded: movement along demand curve

Change in demand: shift of demand curve



Example Scenarios

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Any Questions?

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- **Market Supply (Supply)** Adds up the supply curve of all sellers of a good
- **Law of Supply** All else constant, an increase in price causes an increase in quantity supplied

Example Supply Curve

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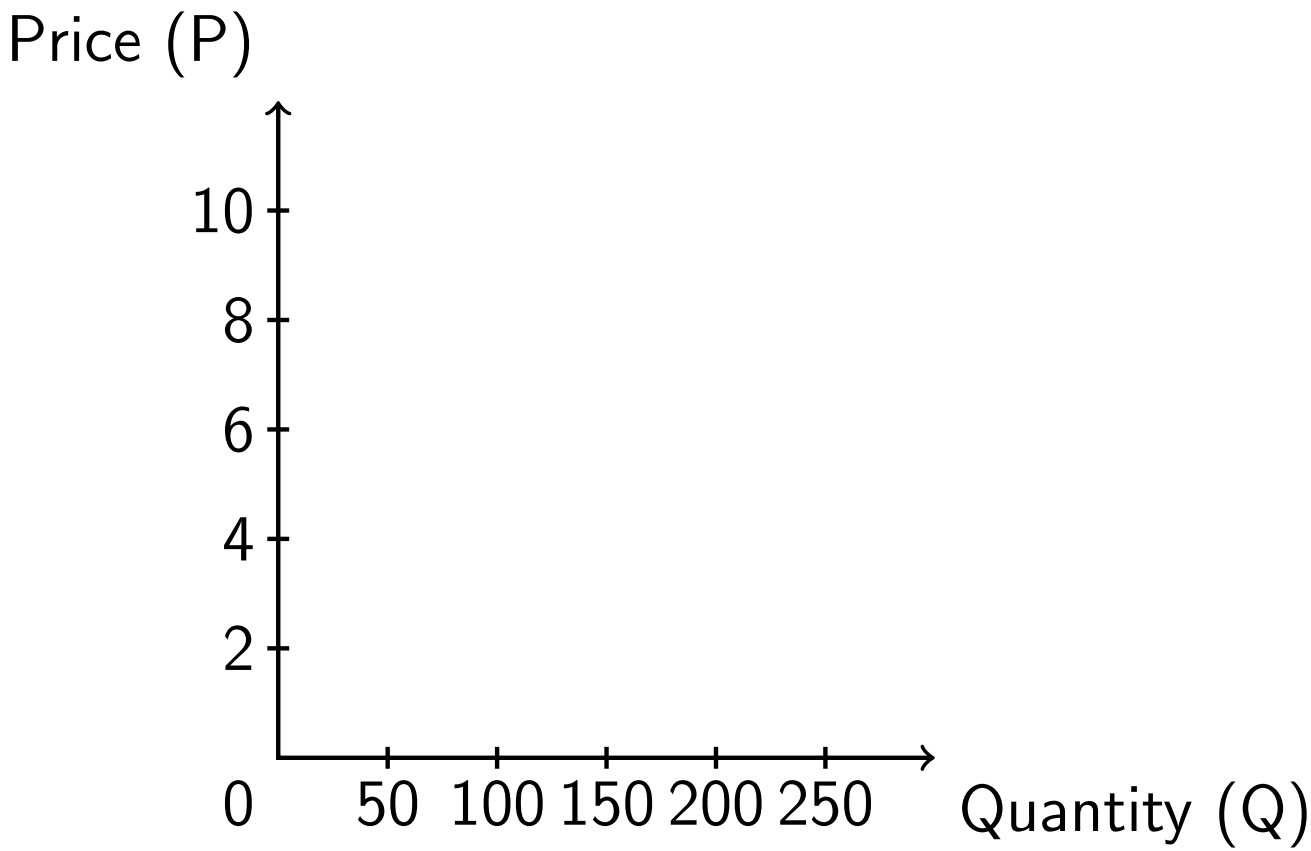

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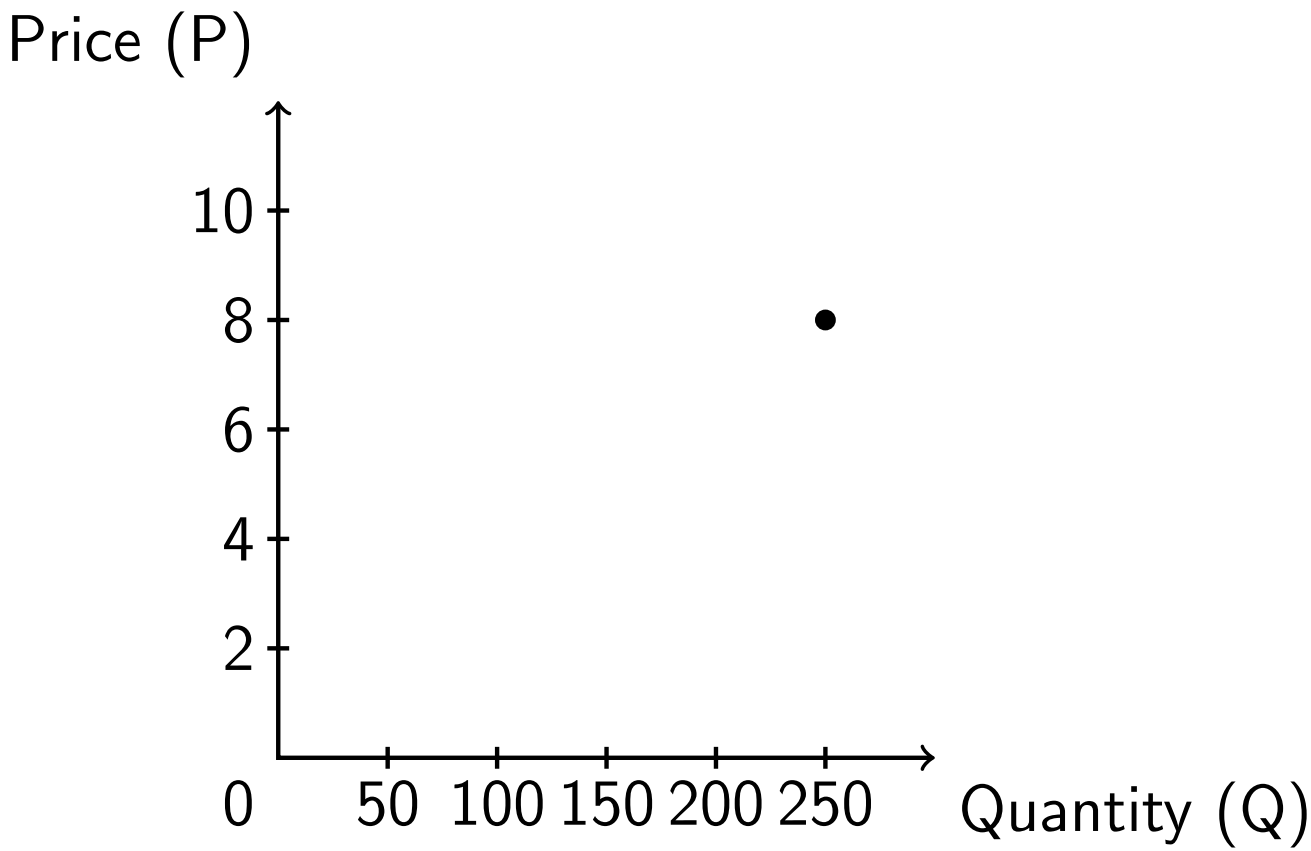
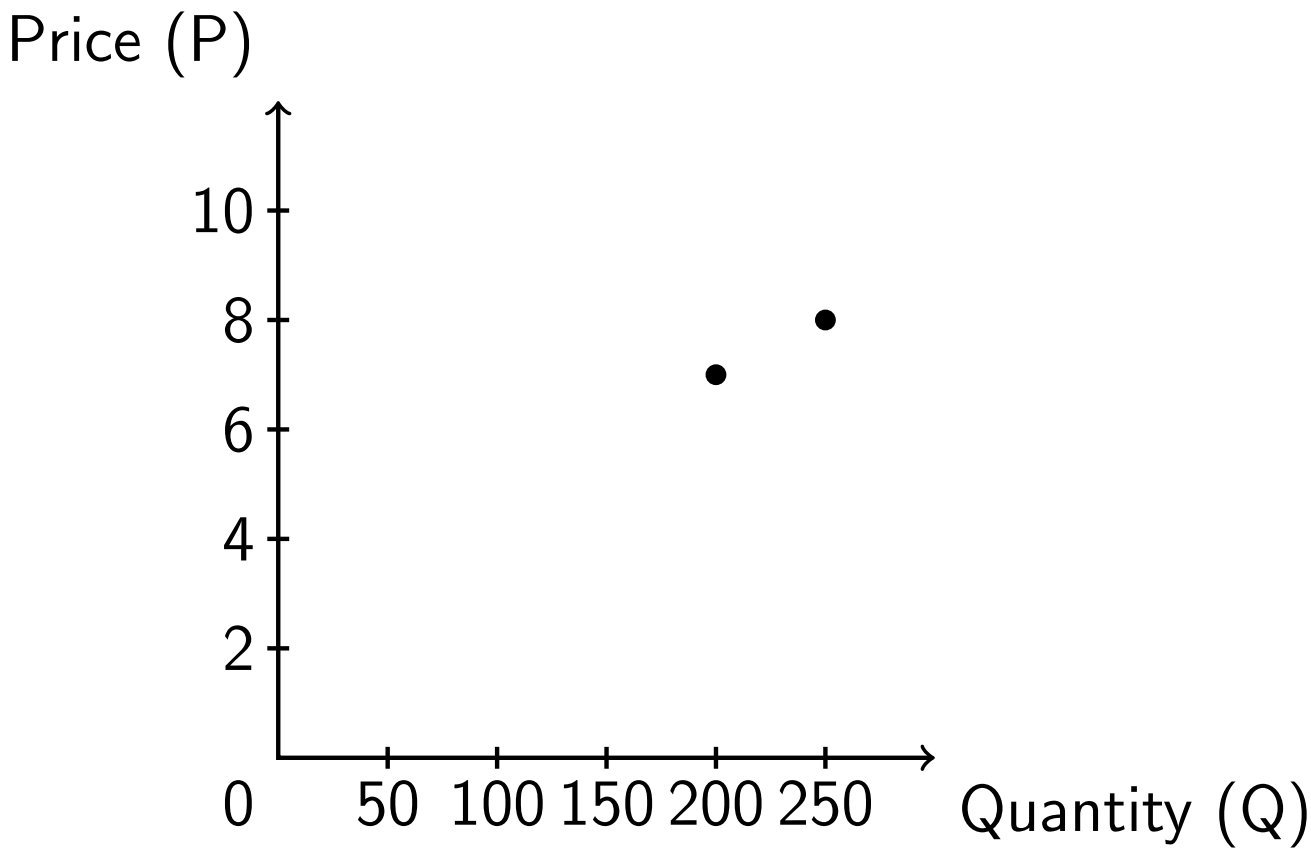


Example Supply Curve

Chocolate Supply Schedule

Price	Quantity Supplied
\$8	250 kgs
\$7	200 kgs
\$6	150 kgs
\$5	100 kgs
\$4	50 kgs



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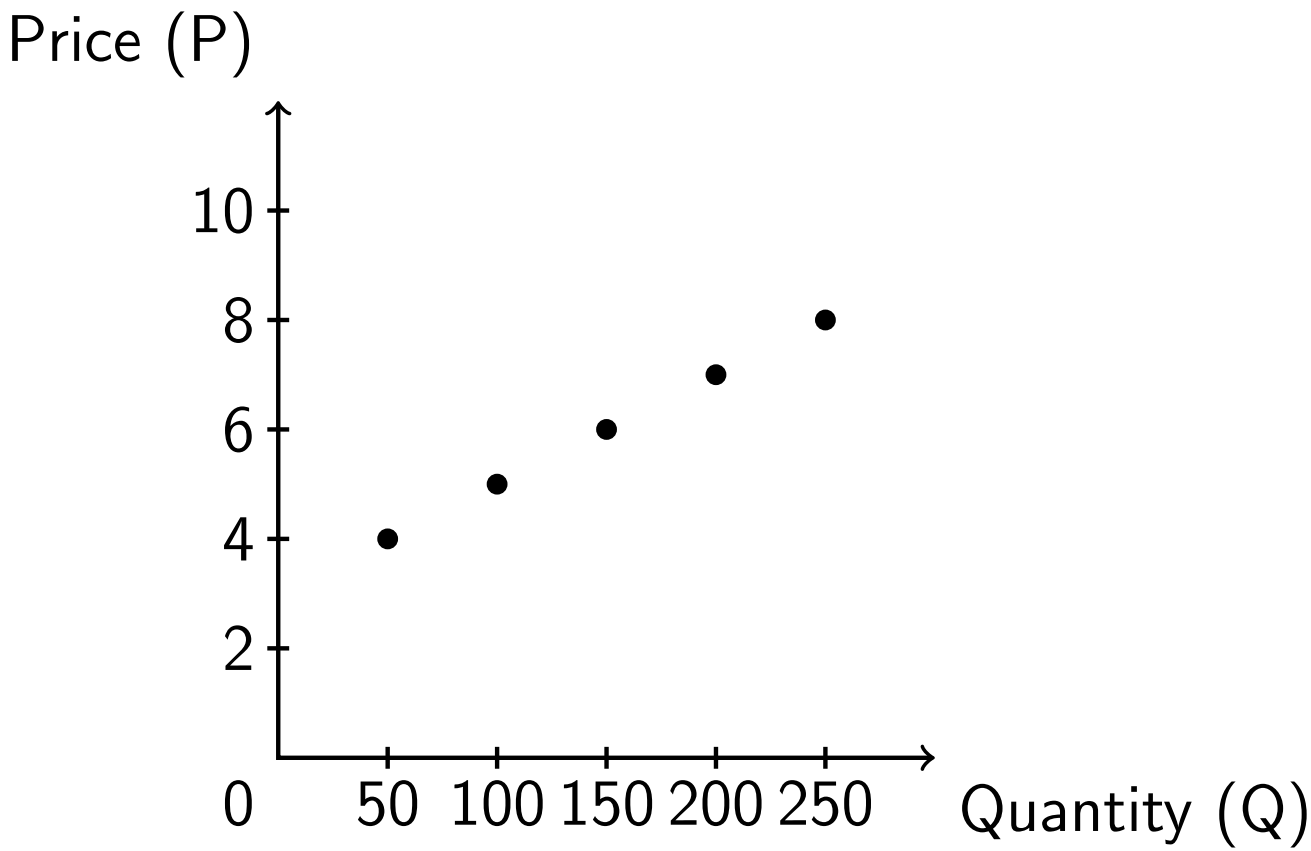

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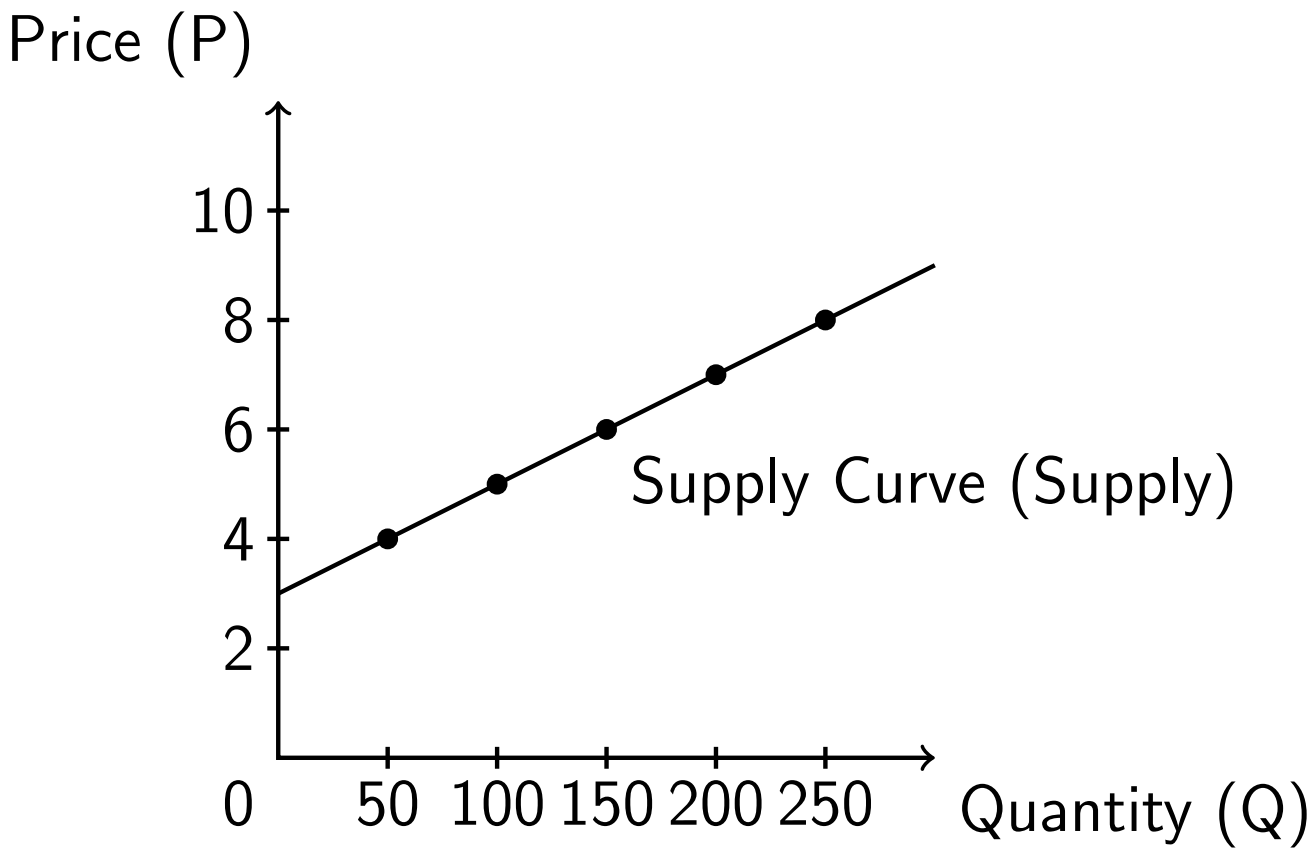

What Determines Supply?

- Supply is the relationship between price and quantity supplied. This relationship is determined by a number of factors. If any of these factors change, we get a **Shift in Supply**

- **Shift in Supply** a change in the relationship between price and quantity supplied that causes the supply curve to shift right (increase) or left (decrease)

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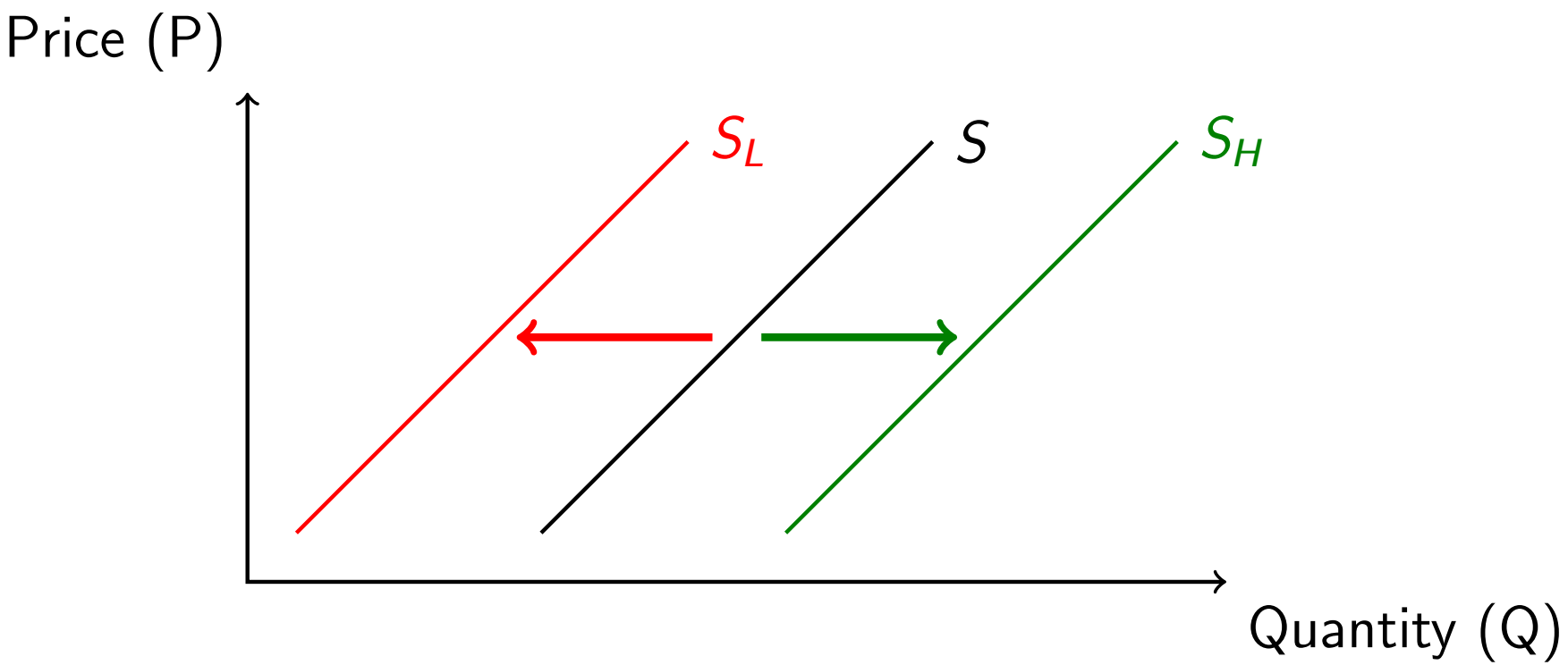
- Changes in the following cause a shift in supply
  1. Price of inputs
  2. Price of producing related goods
  3. Technological change
  4. Number of firms in the market
  5. Expected future prices

Price of Inputs

Price of Inputs Goods that are used to produce other goods

Ex. Beef for hamburger, Gasoline for airplane flight

Inputs:

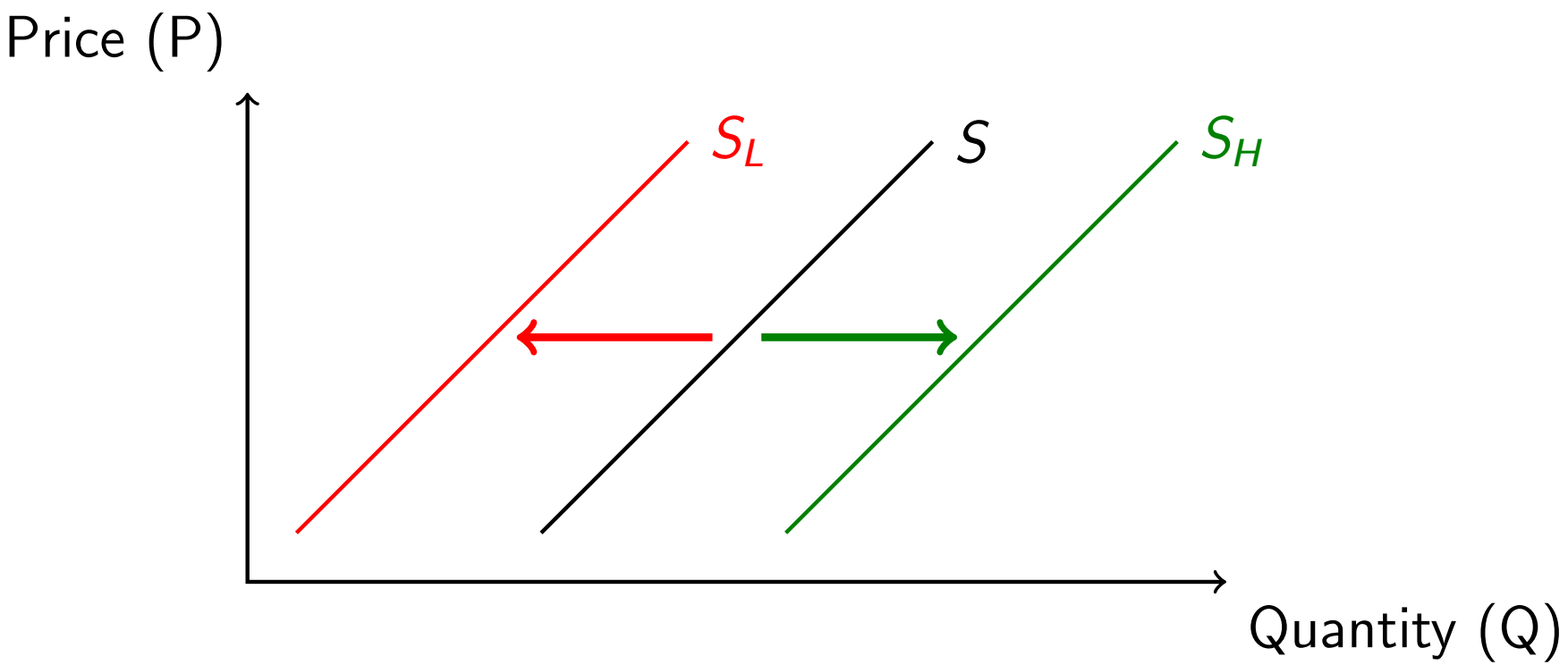


Price of Inputs

Price of Inputs Goods that are used to produce other goods

Ex. Beef for hamburger, Gasoline for airplane flight

Inputs: price increase $\leftarrow$, price decrease $\rightarrow$

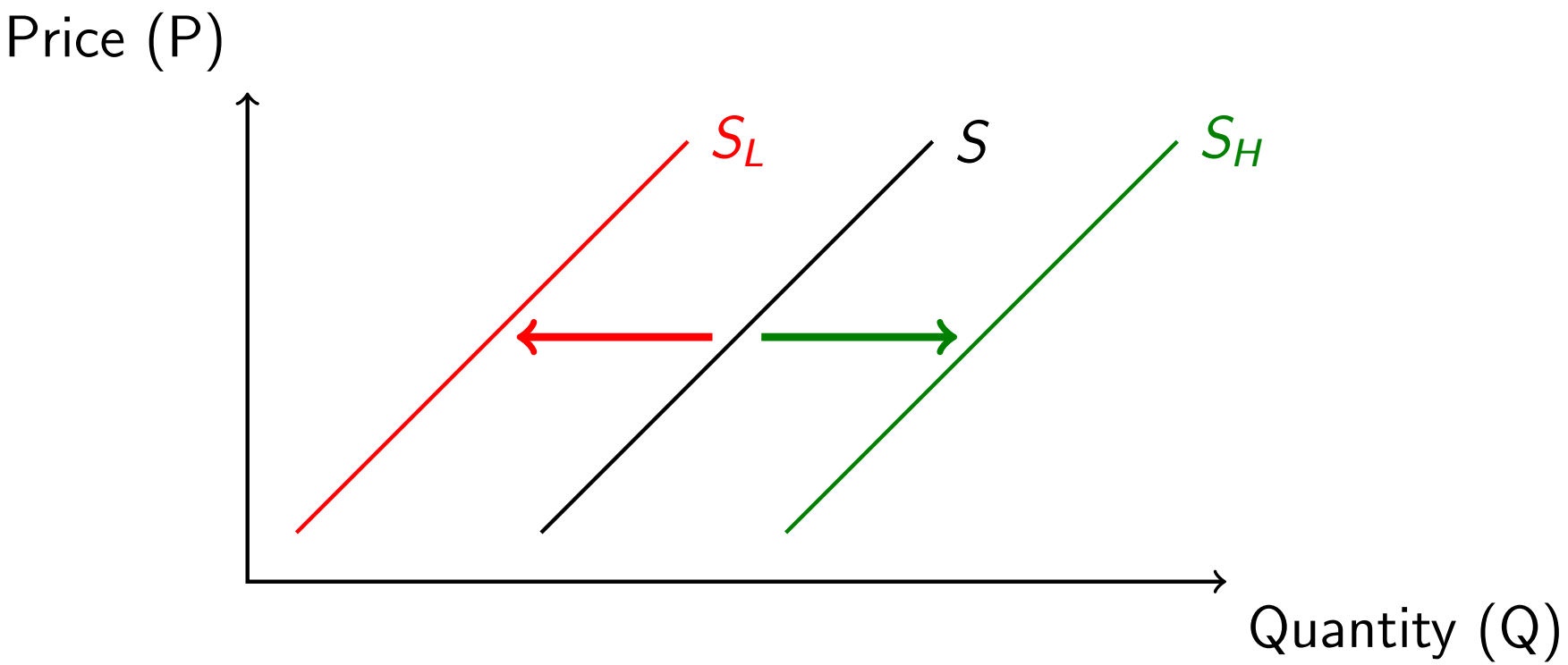


Other Goods: Substitutes in Production

Substitutes in Production Similar goods the firm could be producing instead

Ex. Corn vs soy beans, teaching college vs high school

Substitutes in production:



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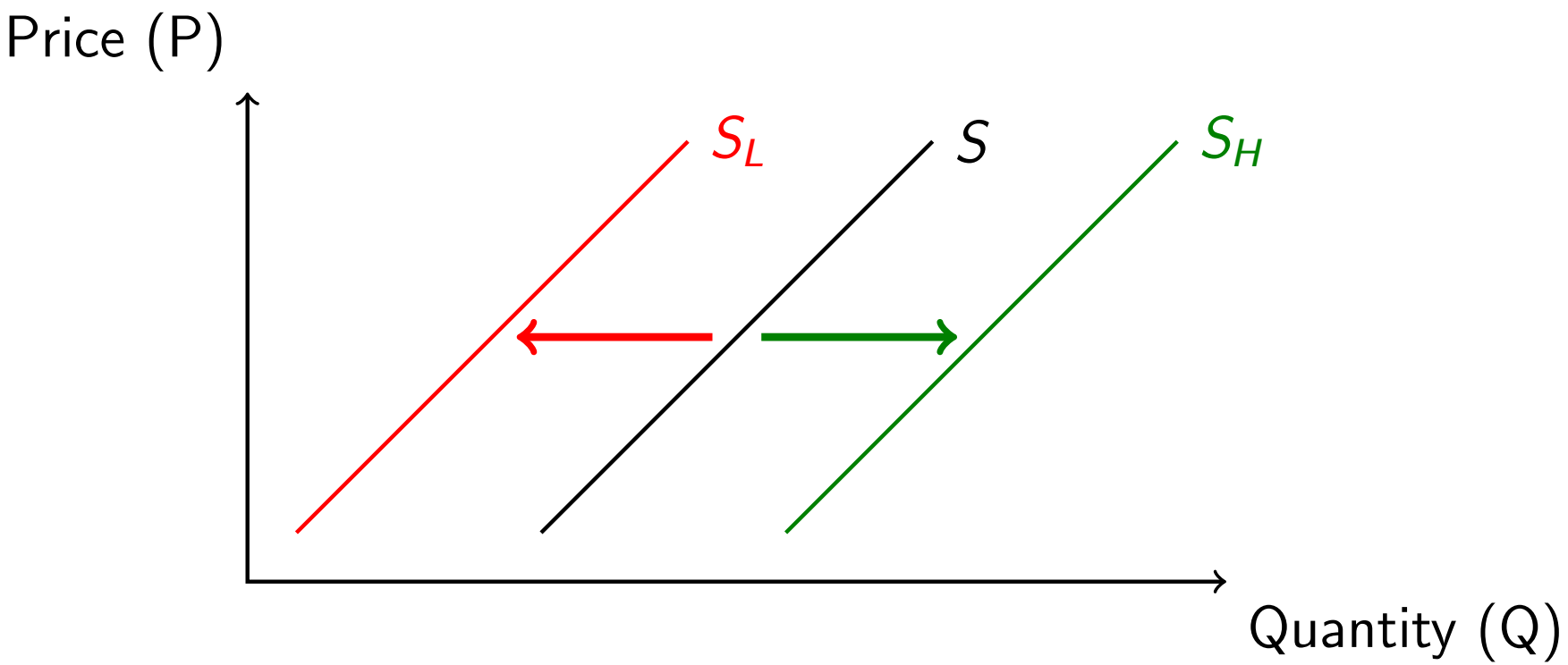
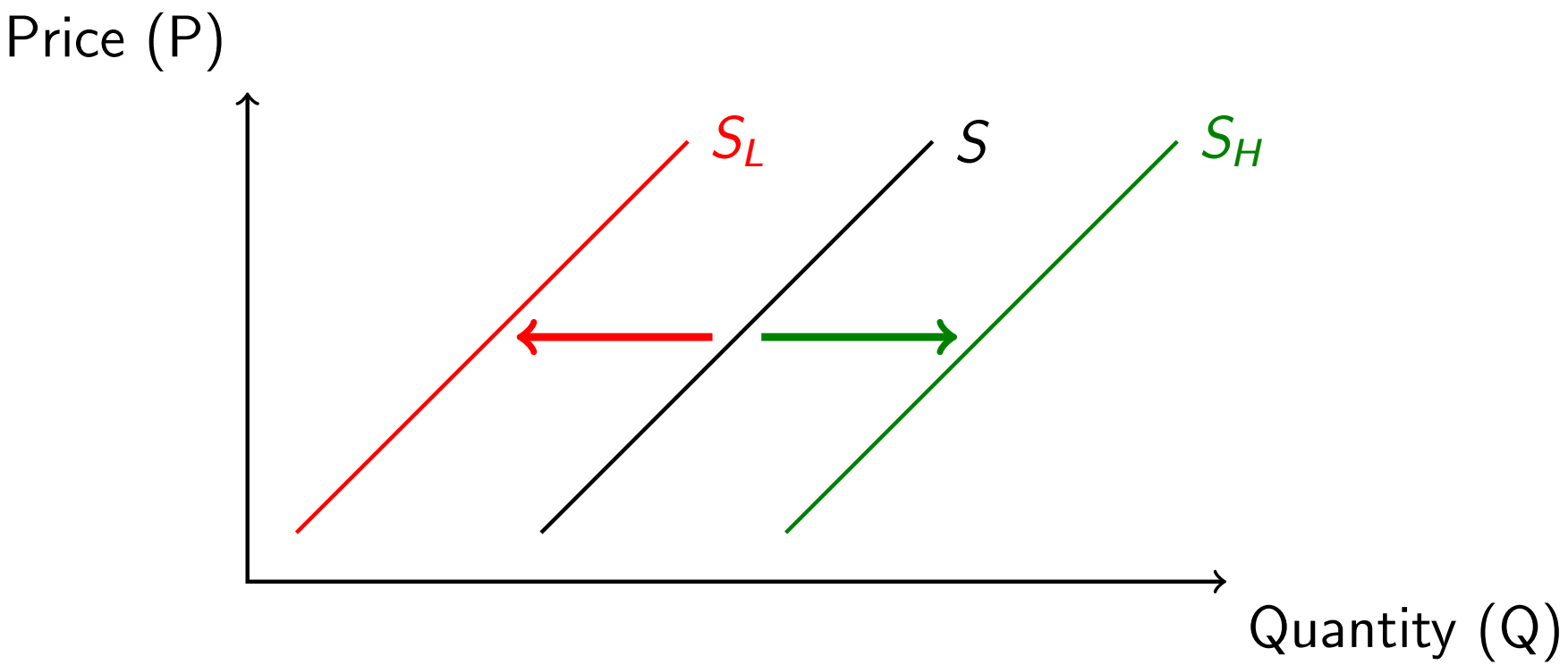


Other Goods: Complements in Production

Complements in Production Goods that are easier to produce together

Ex. Beef and milk, teaching and tutoring college students

Complements in production:

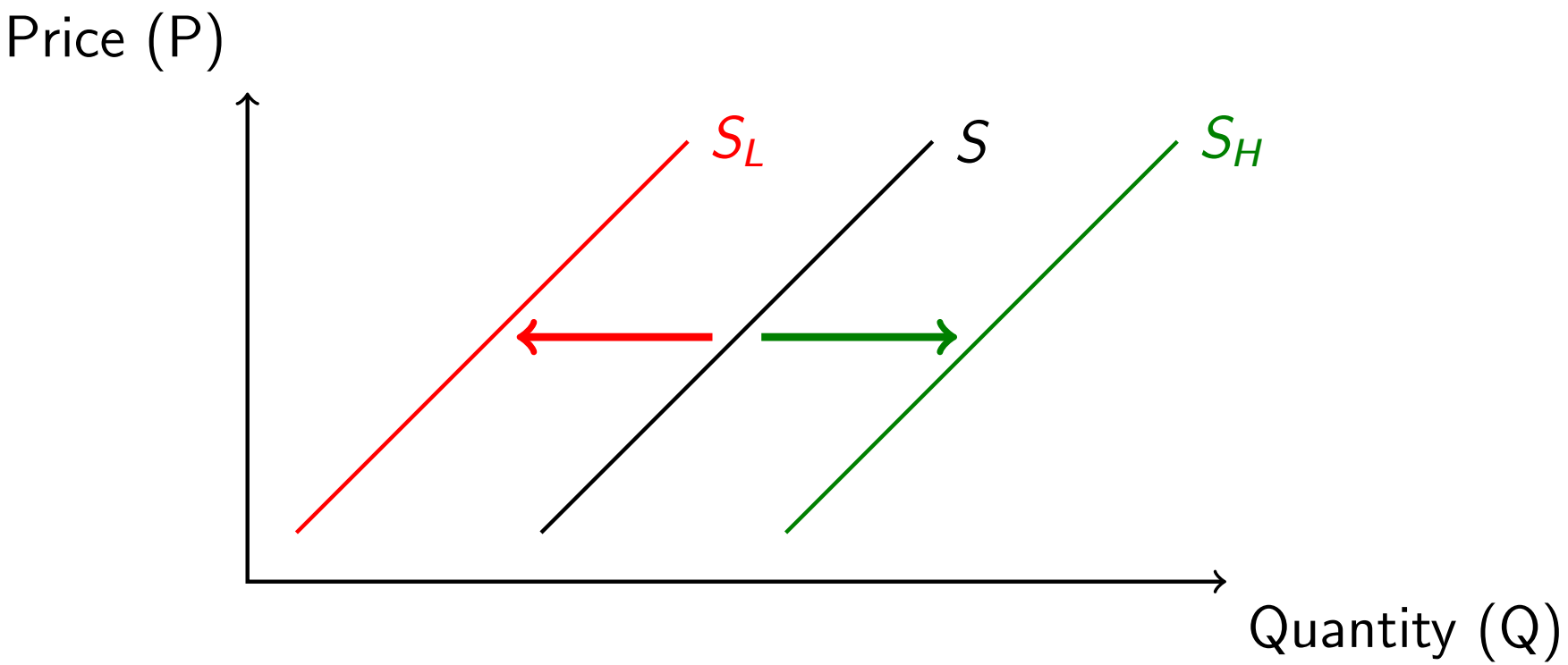


Other Goods: Complements in Production

Complements in Production Goods that are easier to produce together

Ex. Beef and milk, teaching and tutoring college students

Complements in production: price decrease $\leftarrow$, price increase $\rightarrow$

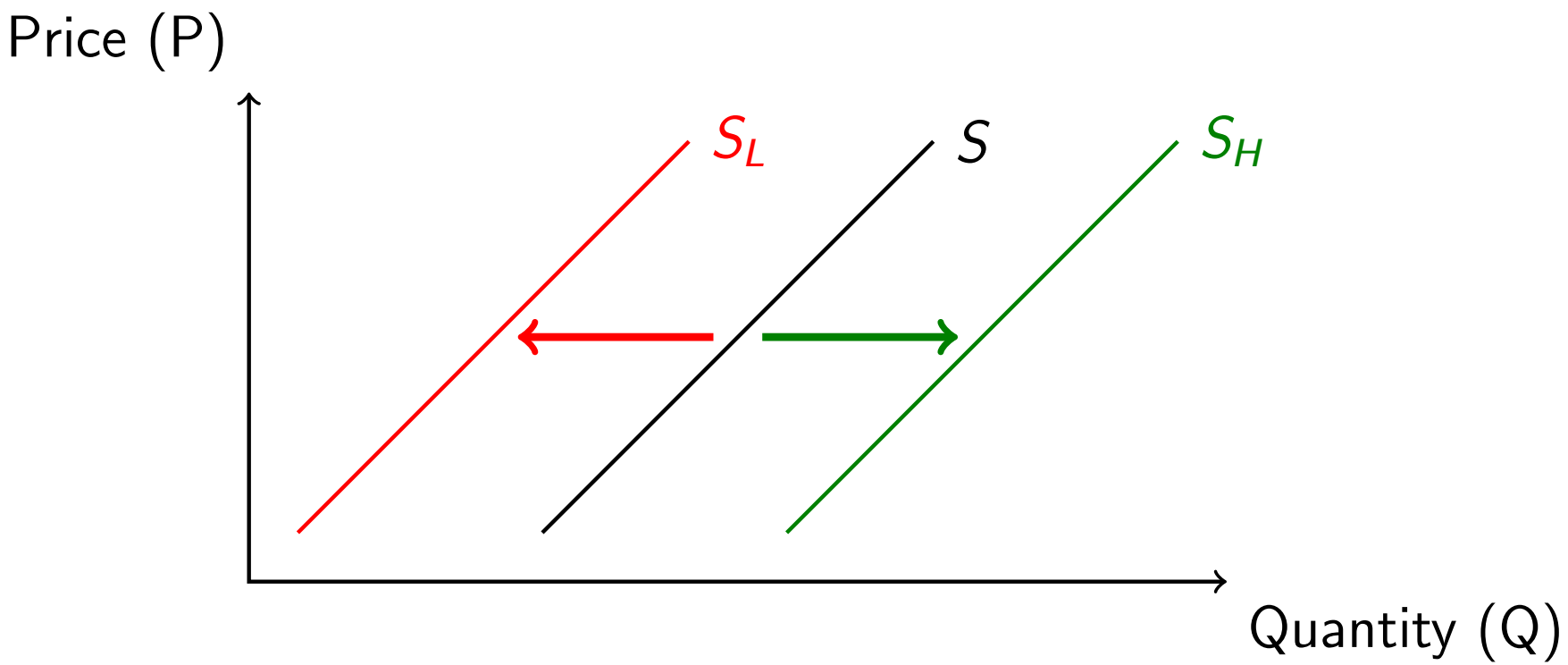


Technological Change

Technological Change Produce more output using same input

Ex. Moore's Law for transistors, natural disaster

Technological change:



Technological Change

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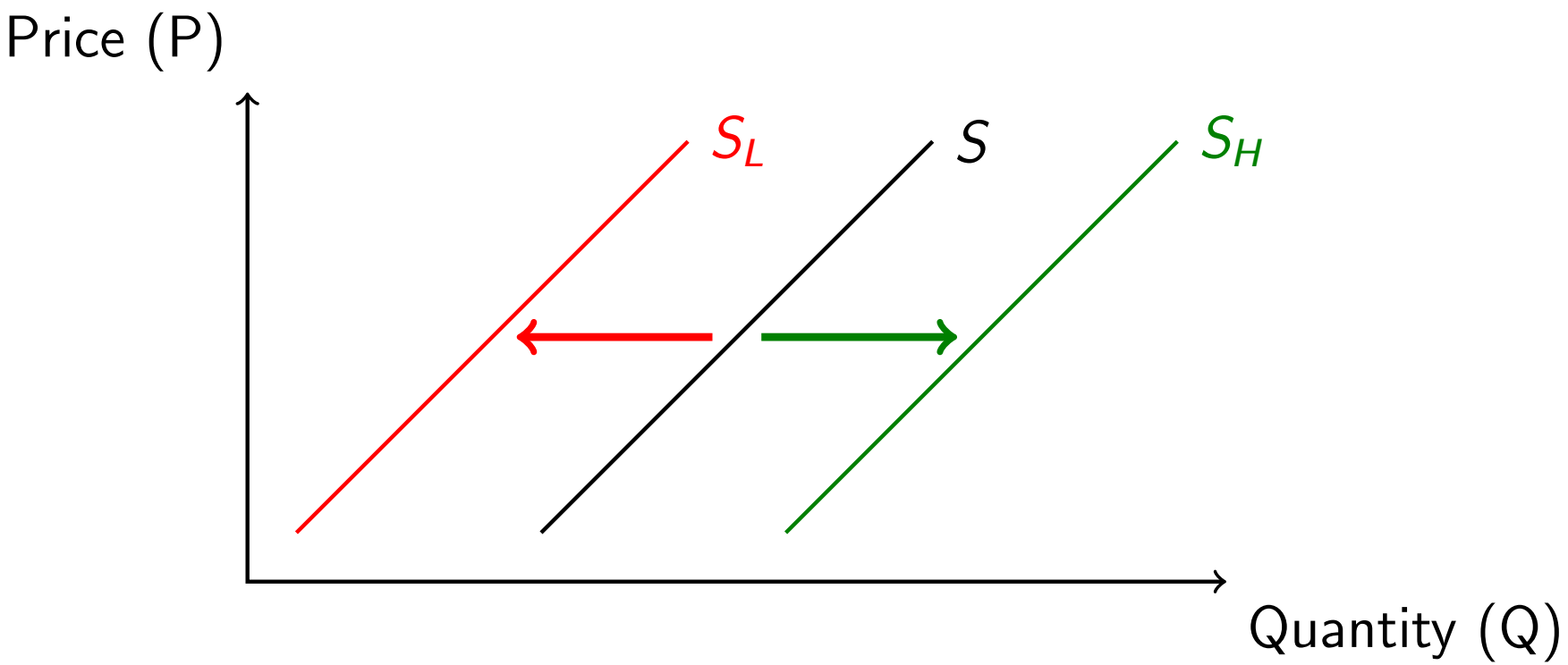
Ex. Moore's Law for transistors, natural disaster

Technological change: technology destroyed $\leftarrow$, technology improves $\rightarrow$

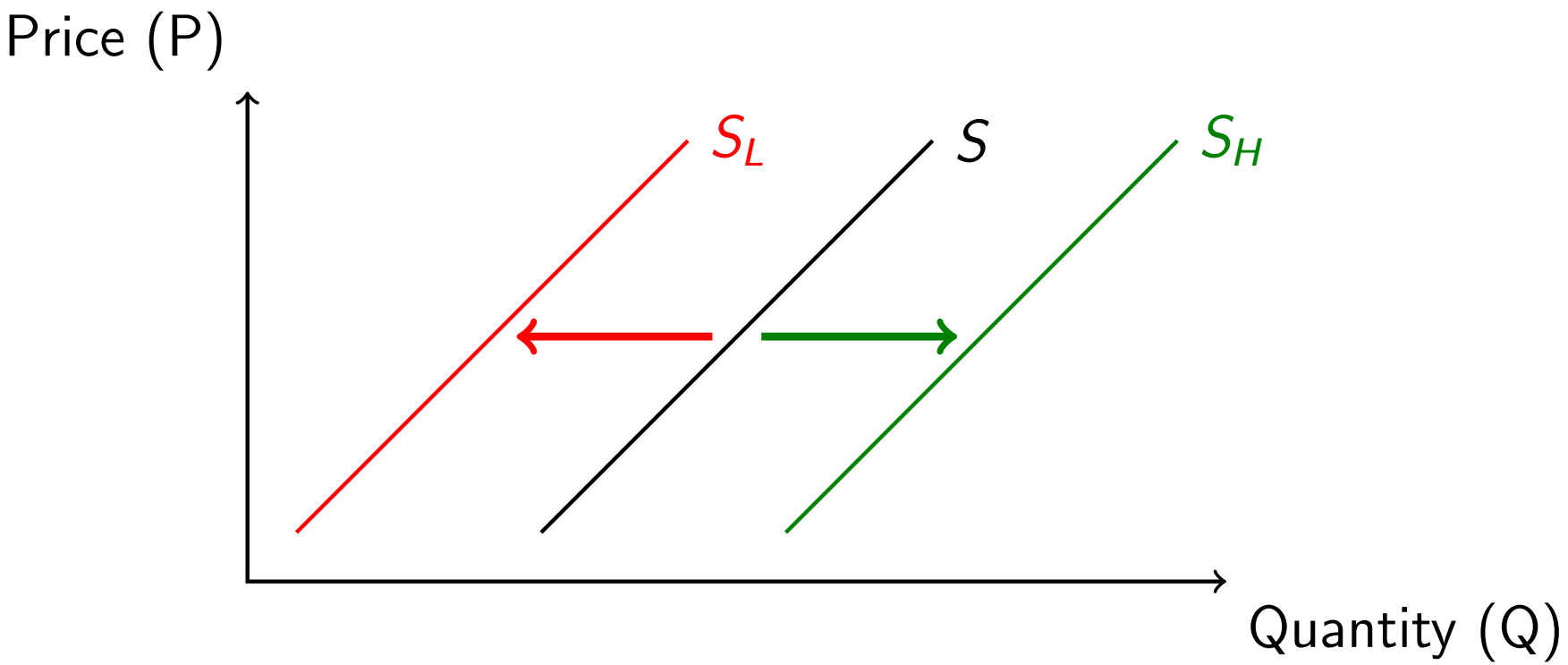


Number of Firms

Number of Firms Number of firms producing goods

Ex. New restaurant, Apple starts selling watches

Number of firms:



Number of Firms

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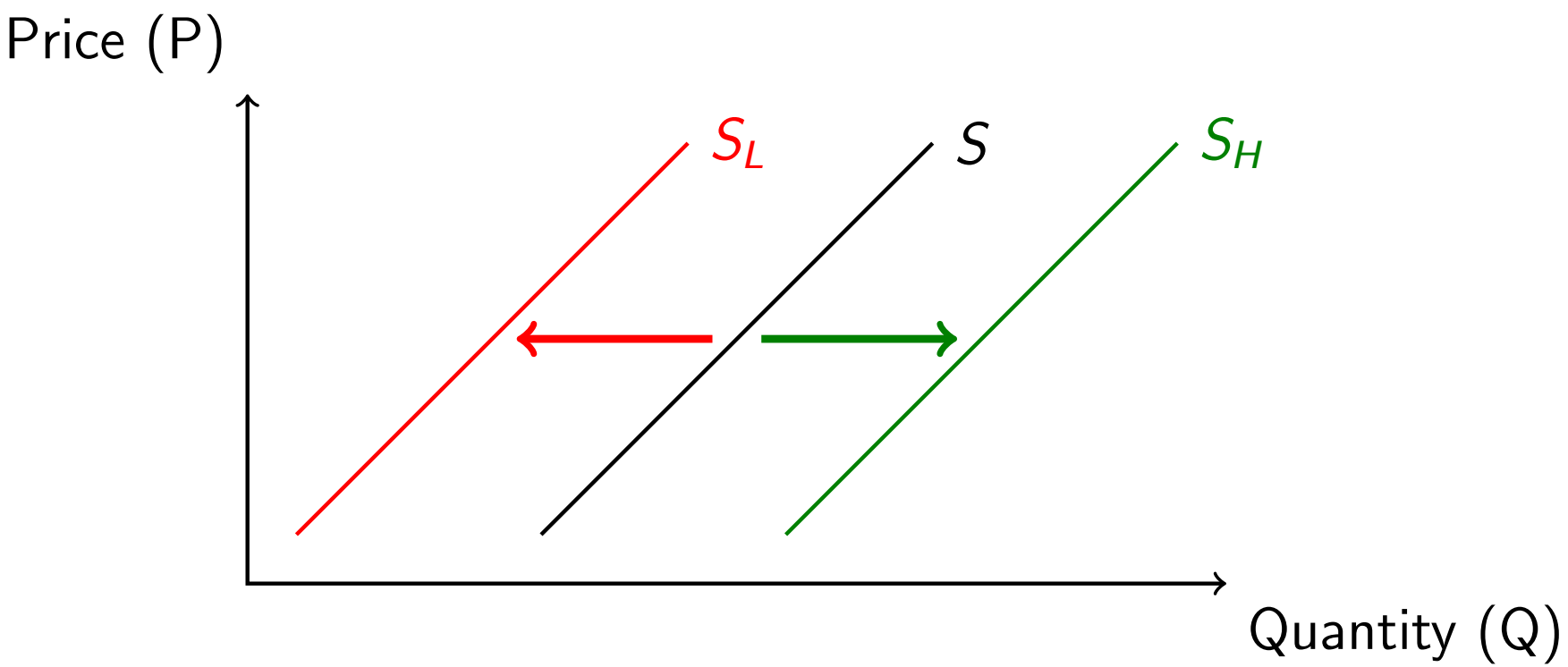
Number of firms: firms exit $\leftarrow$, firms enter $\rightarrow$



Expected Future Prices

Expected Future Prices Firms try to sell good when price highest

Ex. Delay selling house in recession, clearance on old model before new model comes out

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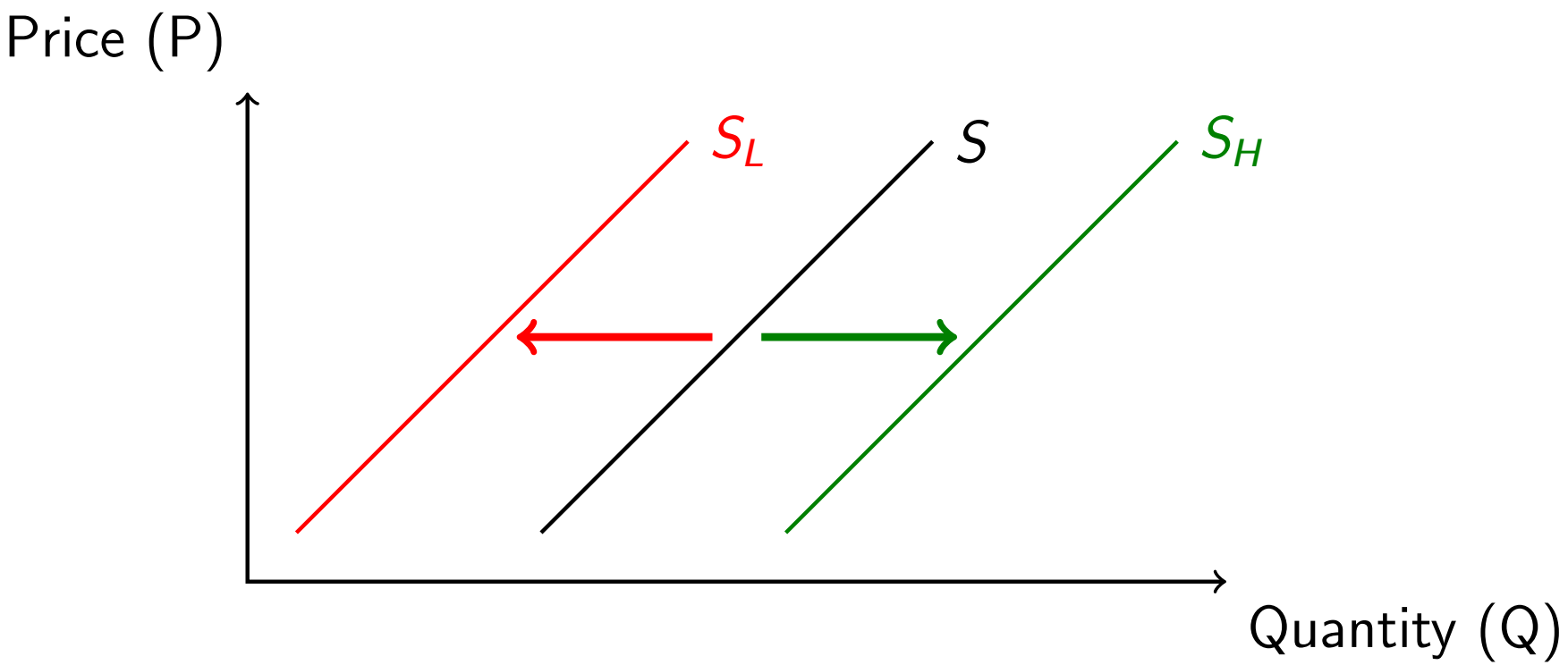

Expected Future Prices

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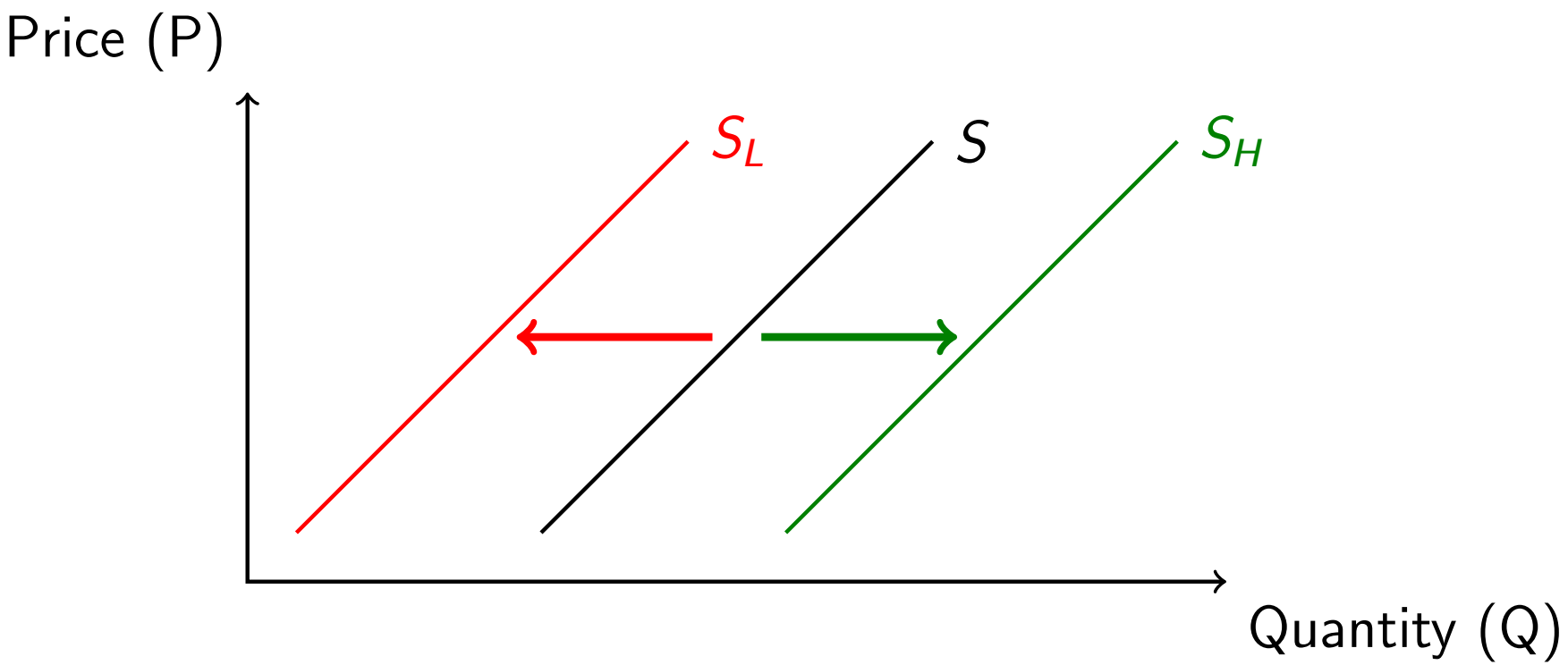
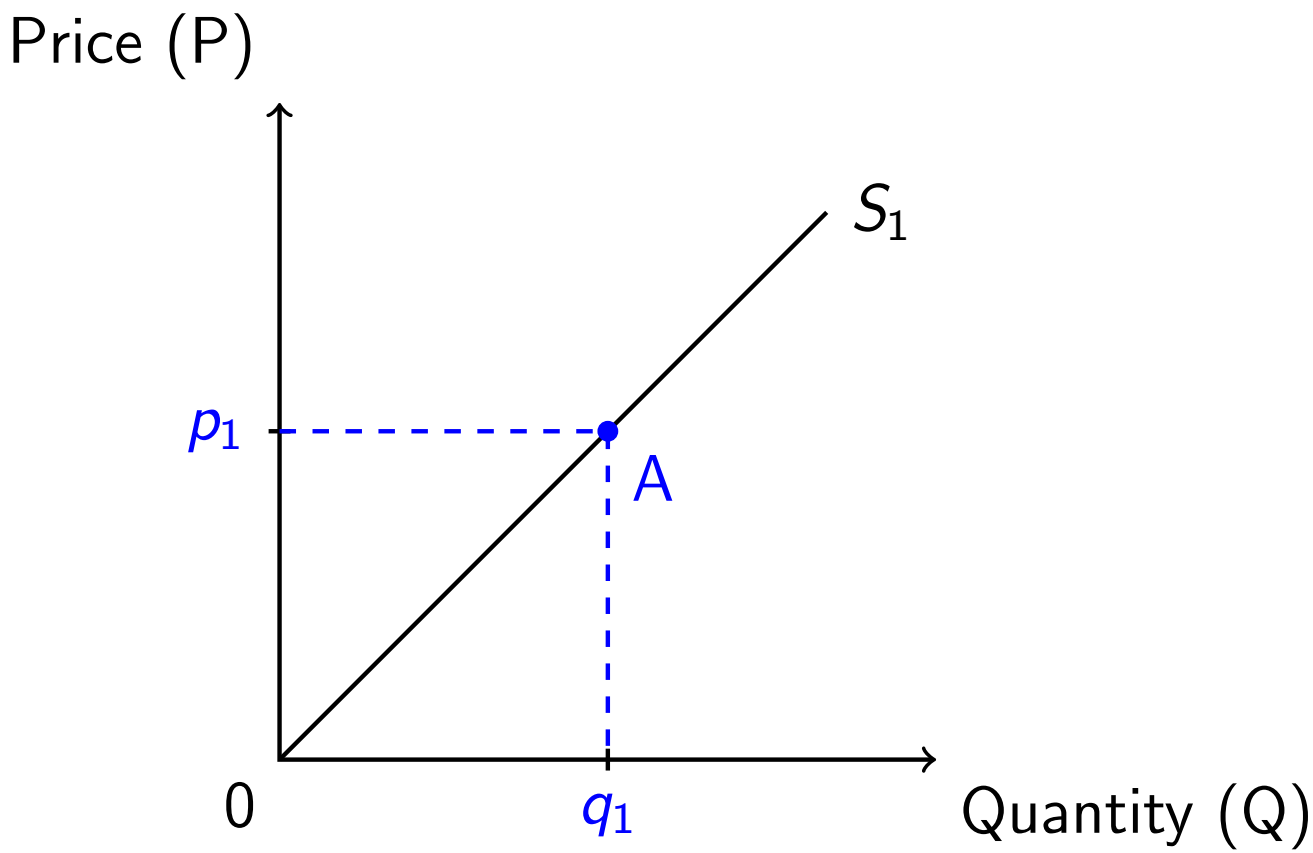
Ex. Delay selling house in recession, clearance on old model before new model comes out

Expected future prices: higher prices $\leftarrow$, lower prices $\rightarrow$

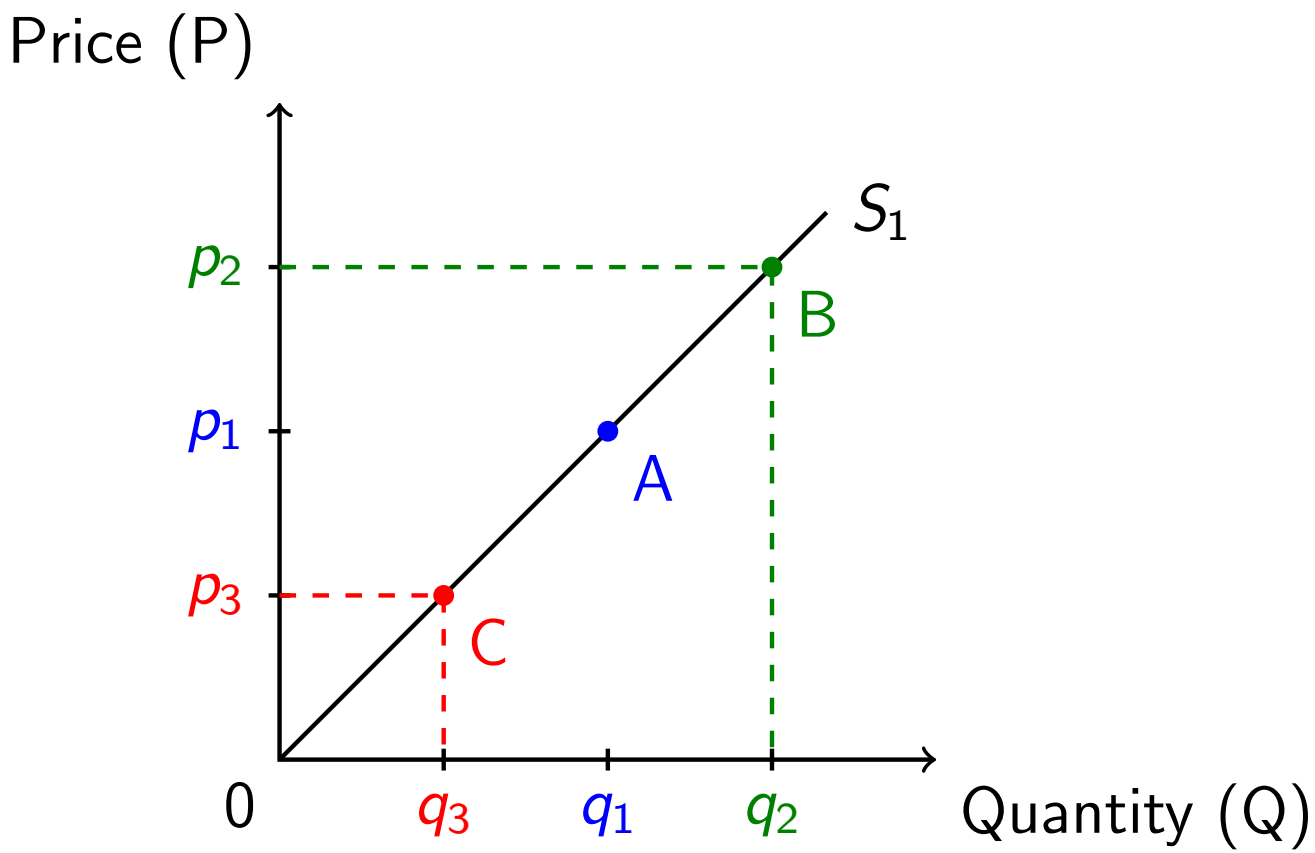


Quantity Supplied vs Supply



Quantity Supplied vs Supply

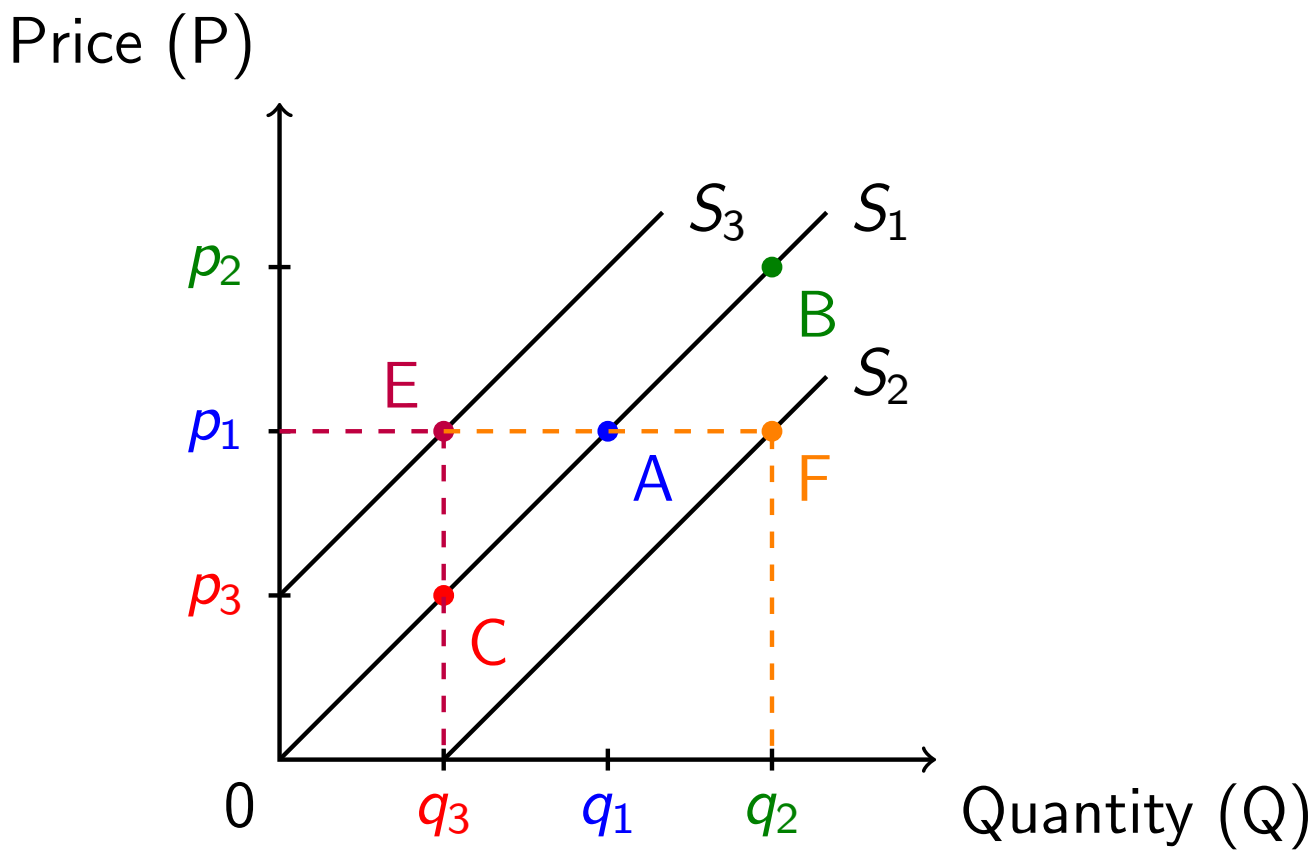
Change in quantity supplied: movement along supply curve



Quantity Supplied vs Supply

Change in quantity supplied: movement along supply curve

Change in supply: shift of supply curve



Example Scenarios

What happens to the supply curve for sweaters in Athens in the following scenarios?

Event	Shift Left	Shift Right
1. Urban Outfitters closes down		

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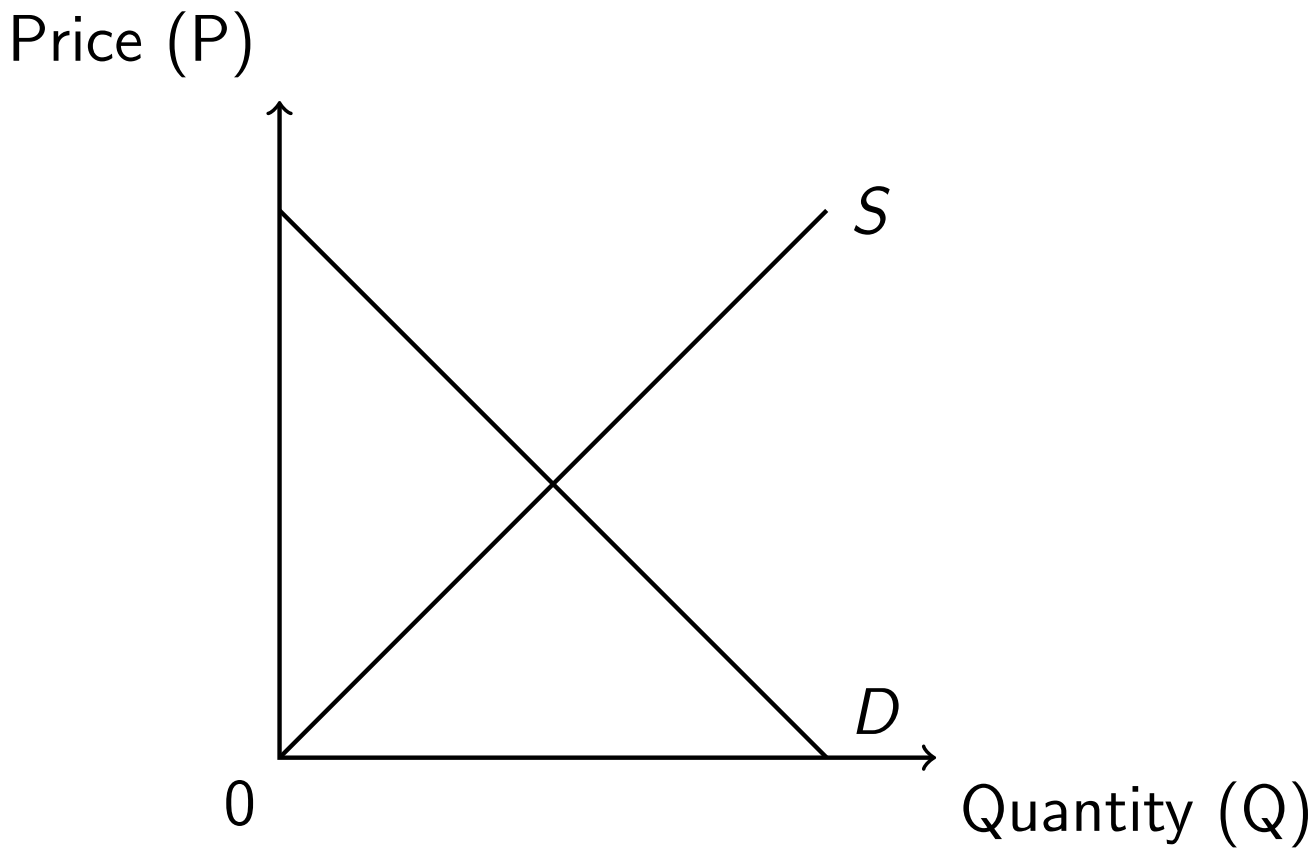
6. A new sewing machine is invented		✓
7. Athens gets colder in Winter		

Any Questions?

Supply and Demand

We now plot supply and demand on the same graph



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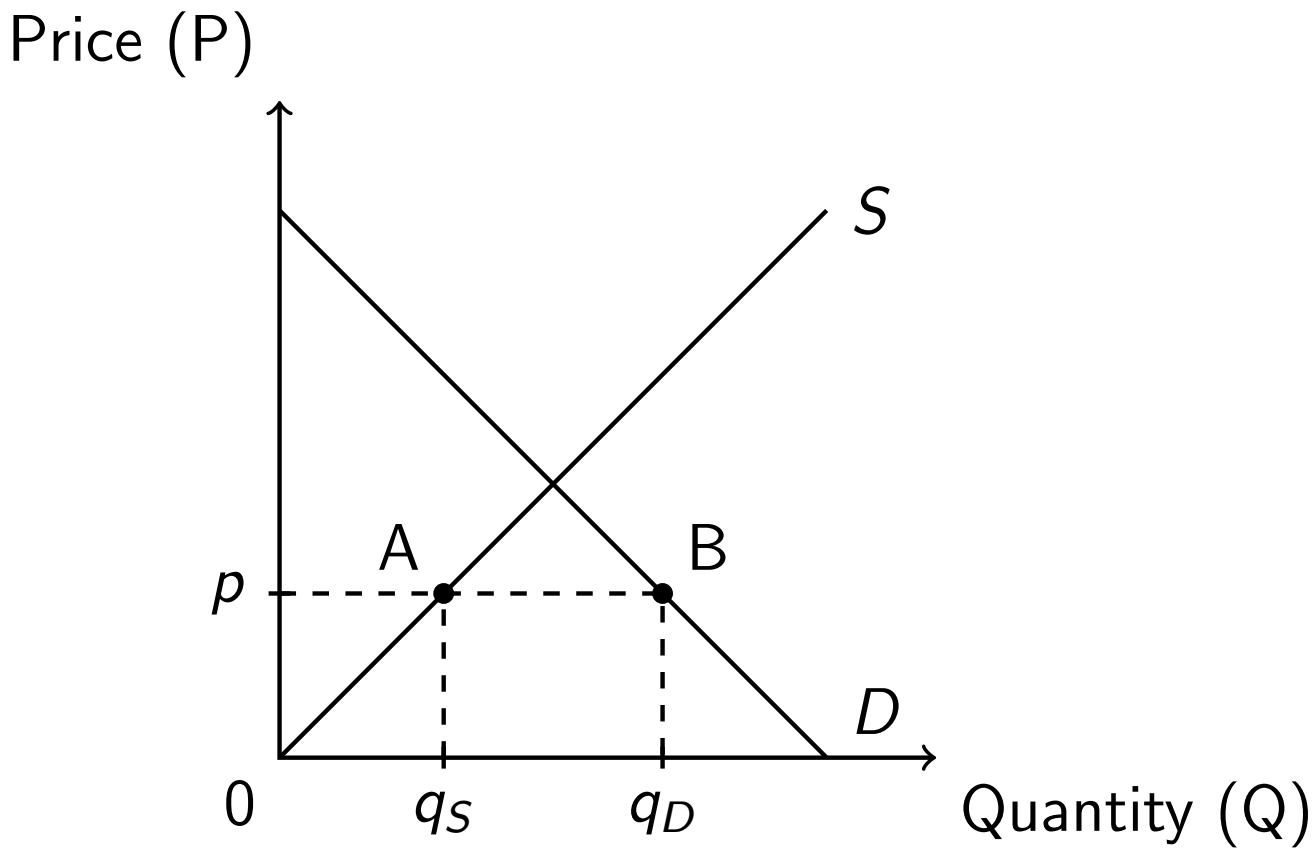
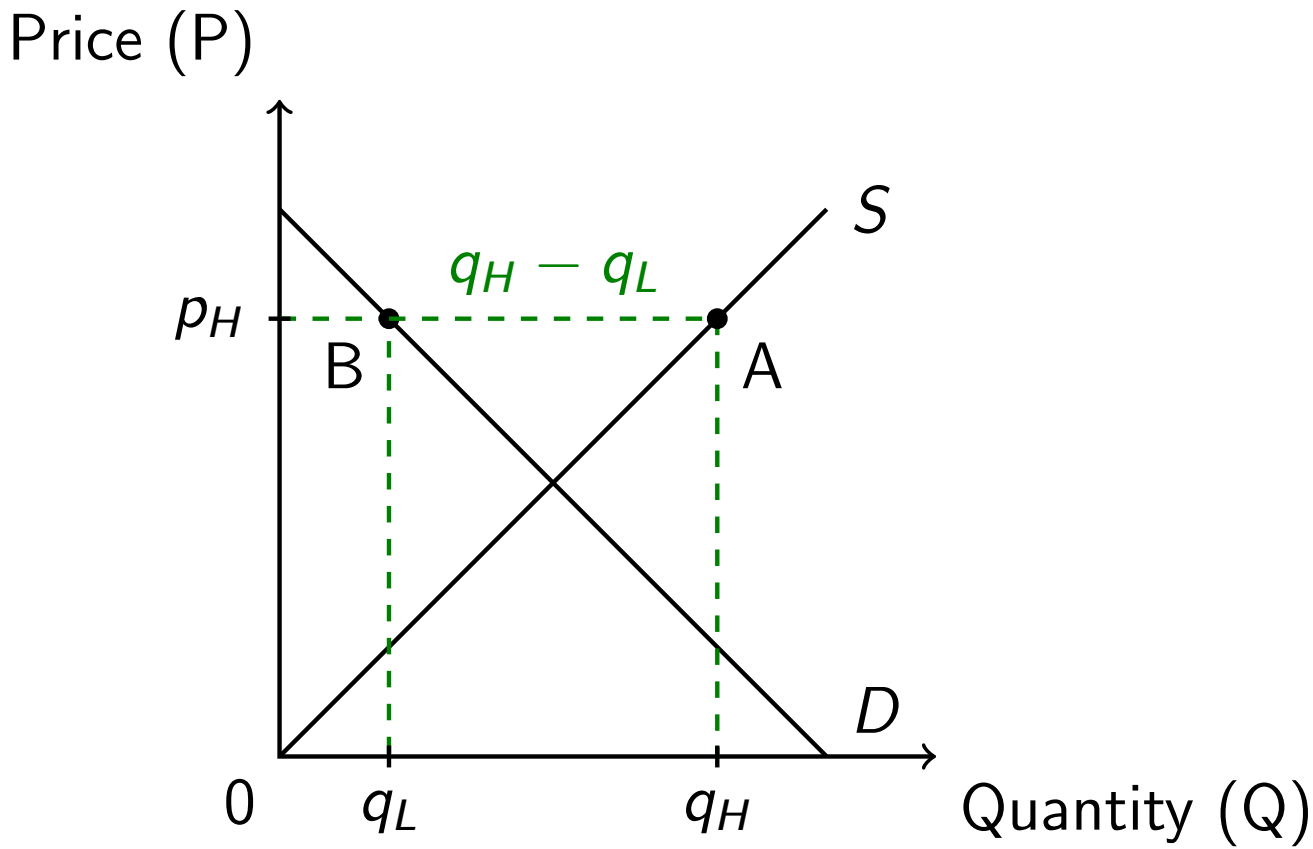
Given any price, we can find quantity supplied and quantity demanded



Supply and Demand

Surplus Quantity Supplied $>$ Quantity Demanded



Supply and Demand

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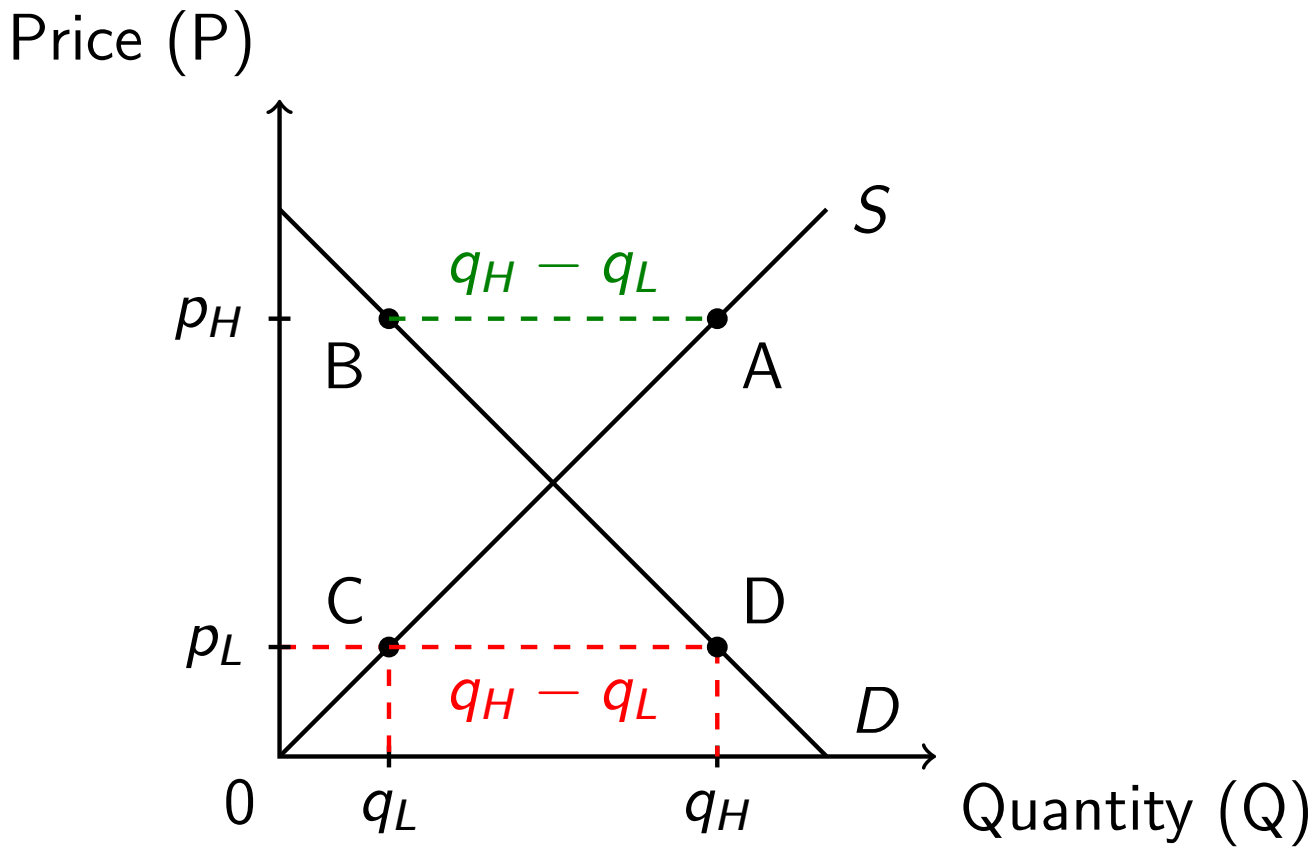
Shortage Quantity Supplied $<$ Quantity Demanded



Supply and Demand

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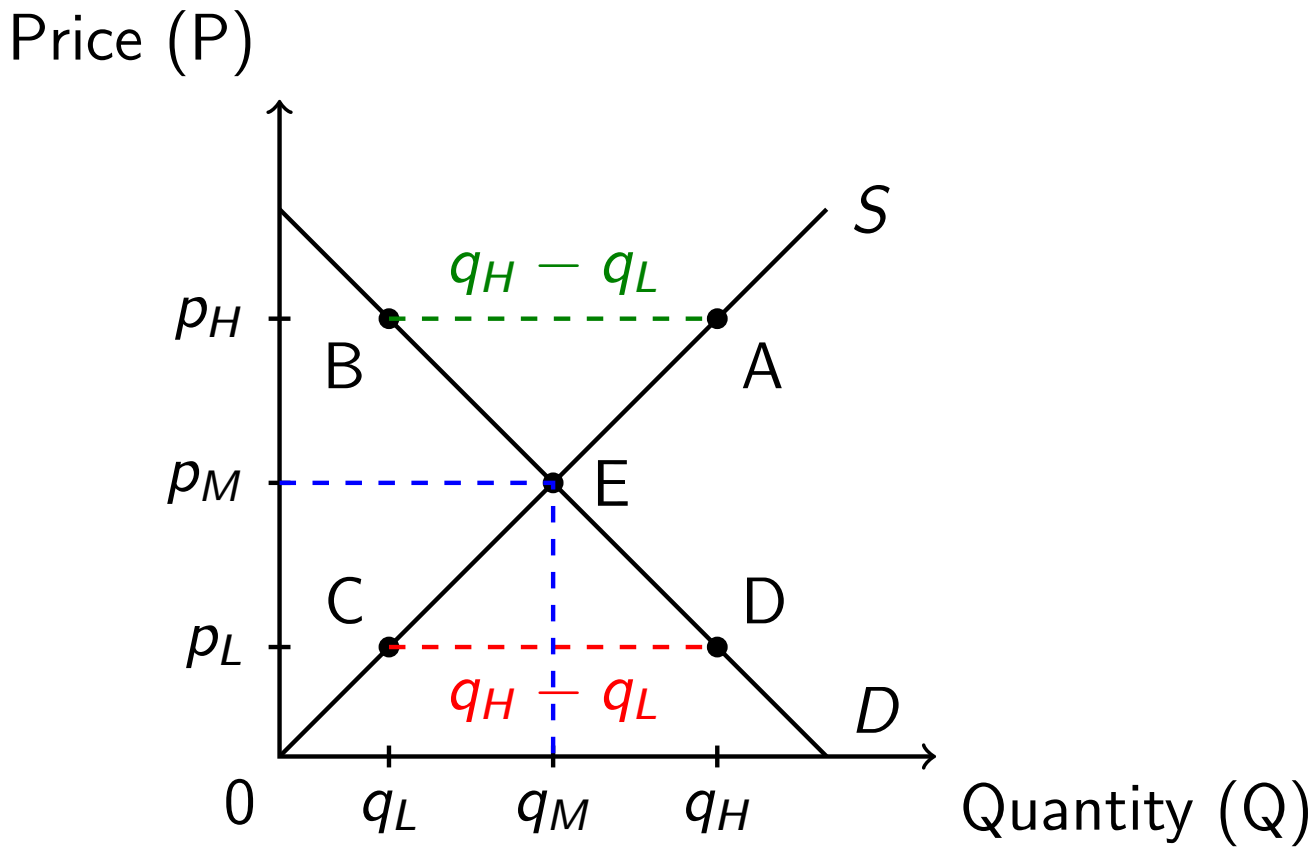
Market Equilibrium Quantity Supplied $=$ Quantity Demanded



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- **(Competitive) Market Equilibrium** Point where Quantity Supplied = Quantity Demanded, ie. the price such that the supply curve intersects the demand curve and Supply = Demand

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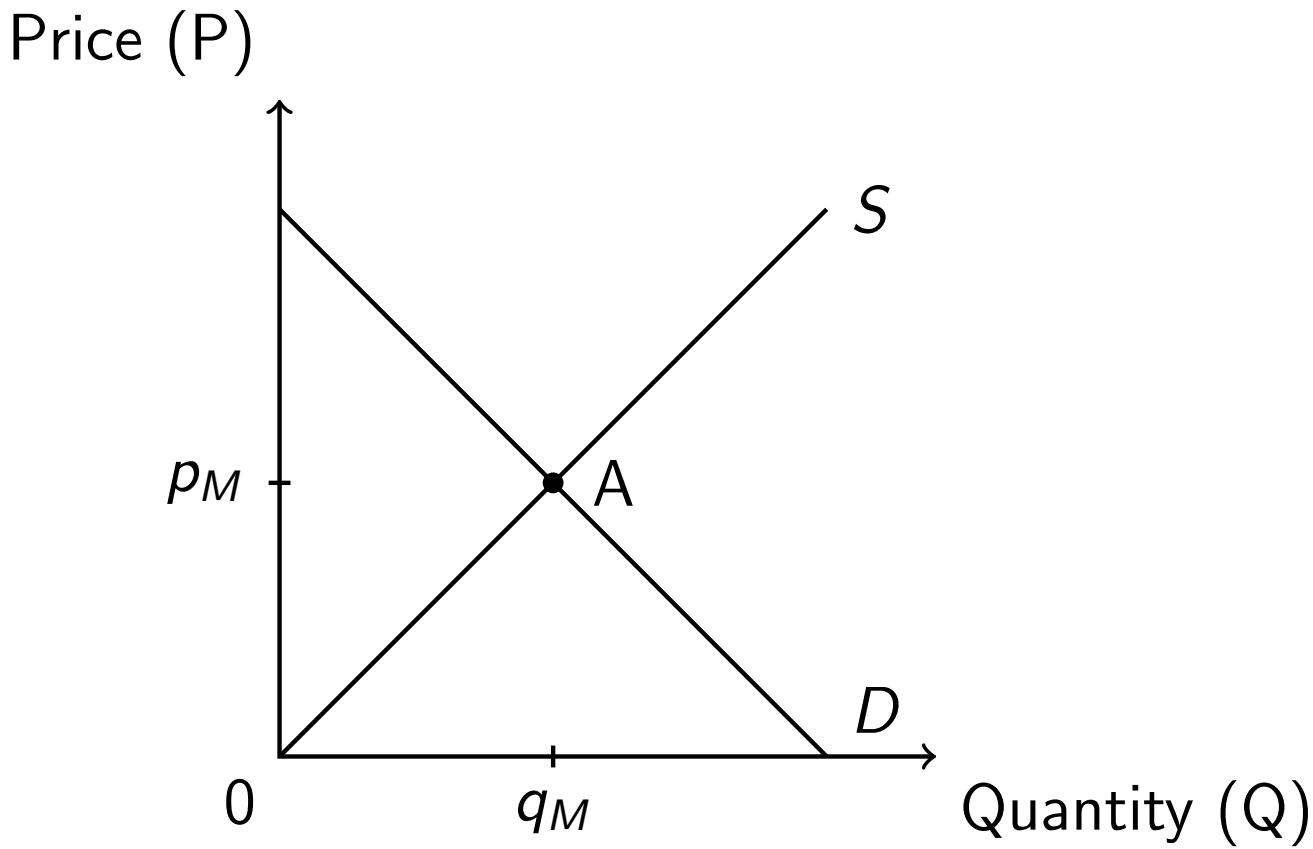
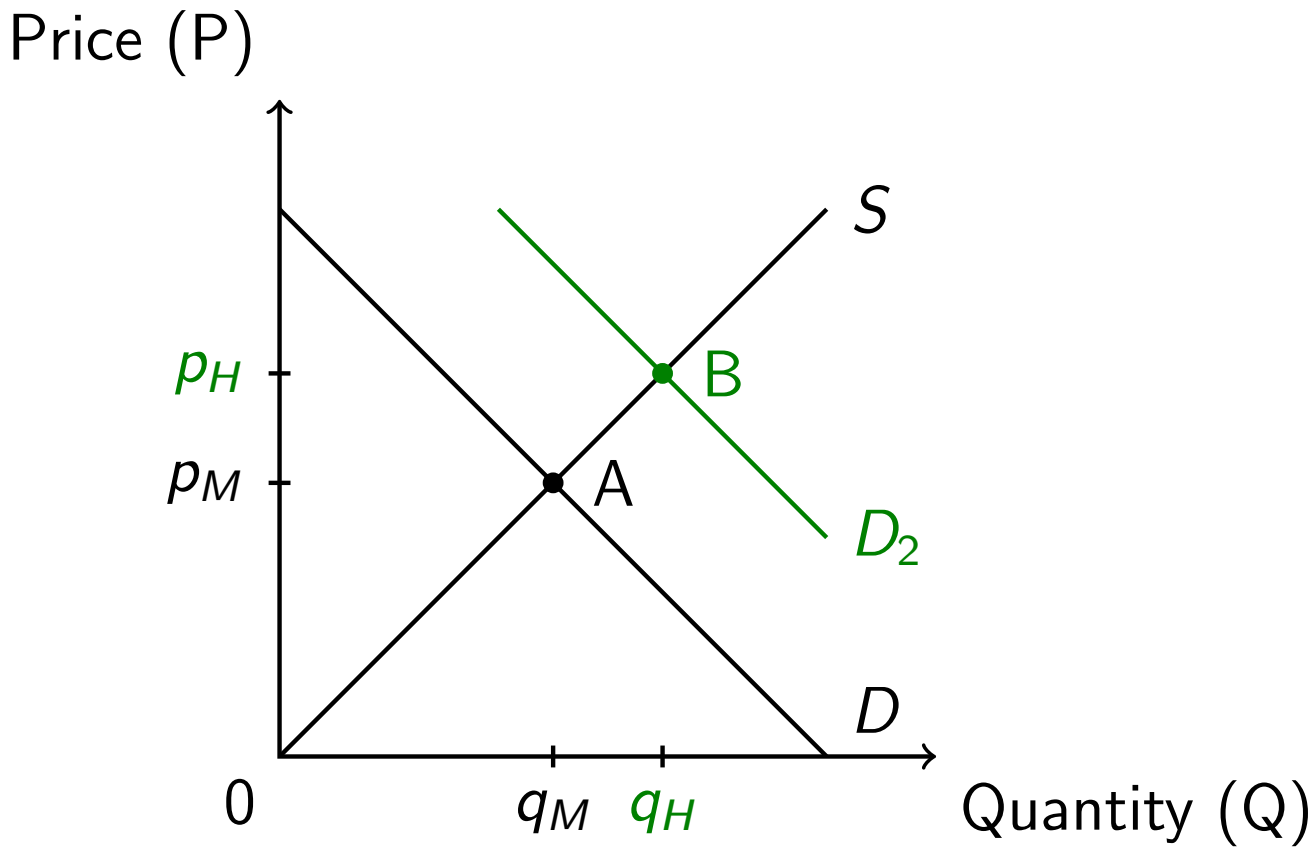
Demand Shifts



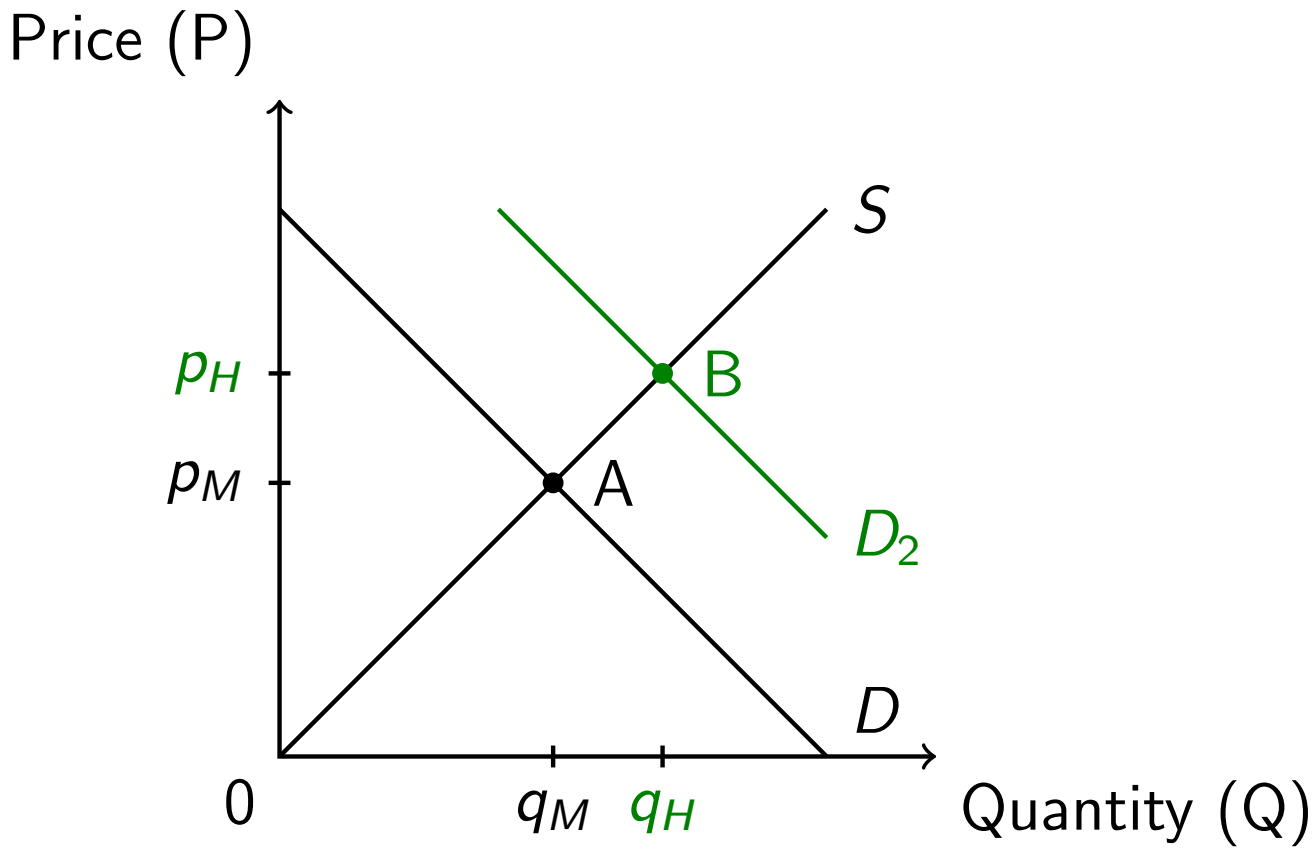
Demand Shifts

Demand shifts right:



Demand Shifts

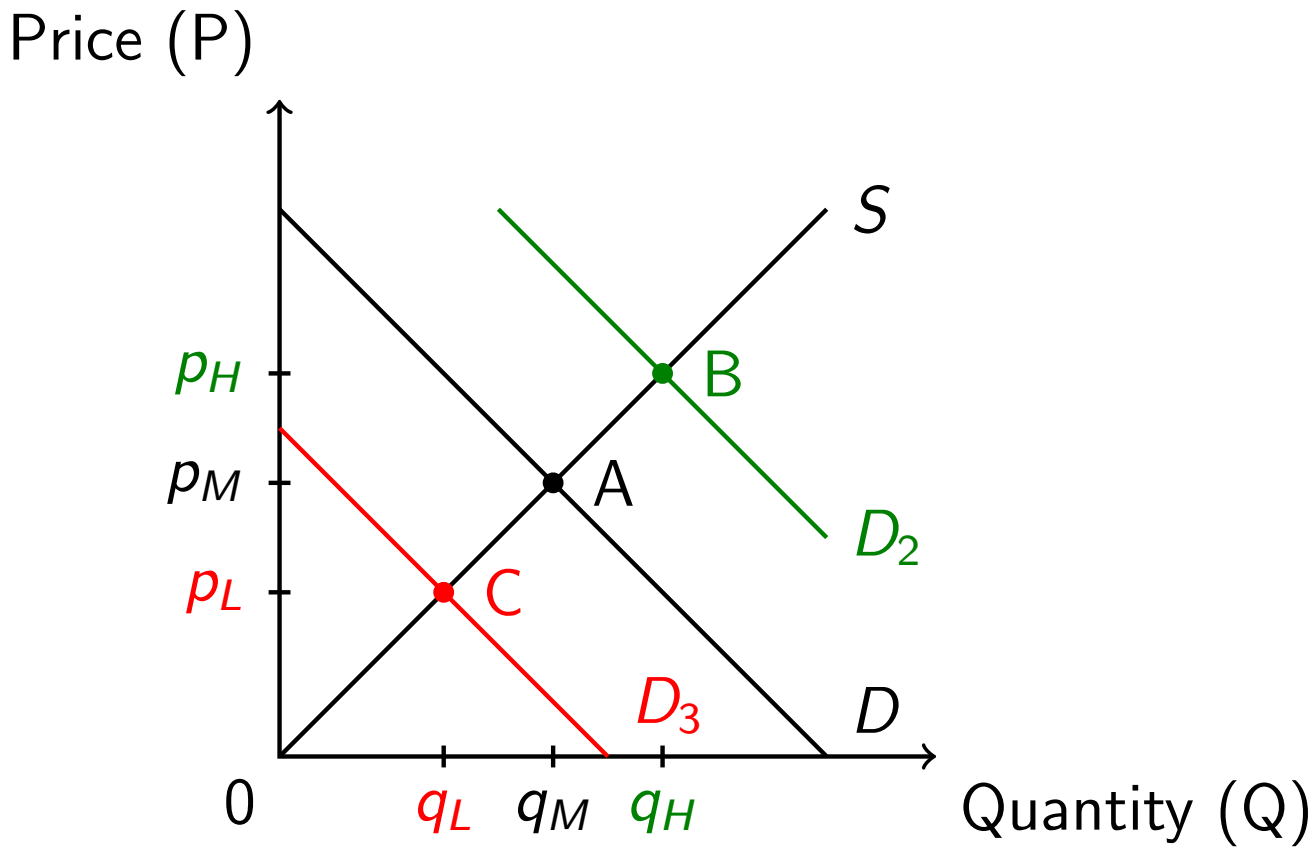
Demand shifts right: price increases, quantity increases



Demand Shifts

Demand shifts right: price increases, quantity increases

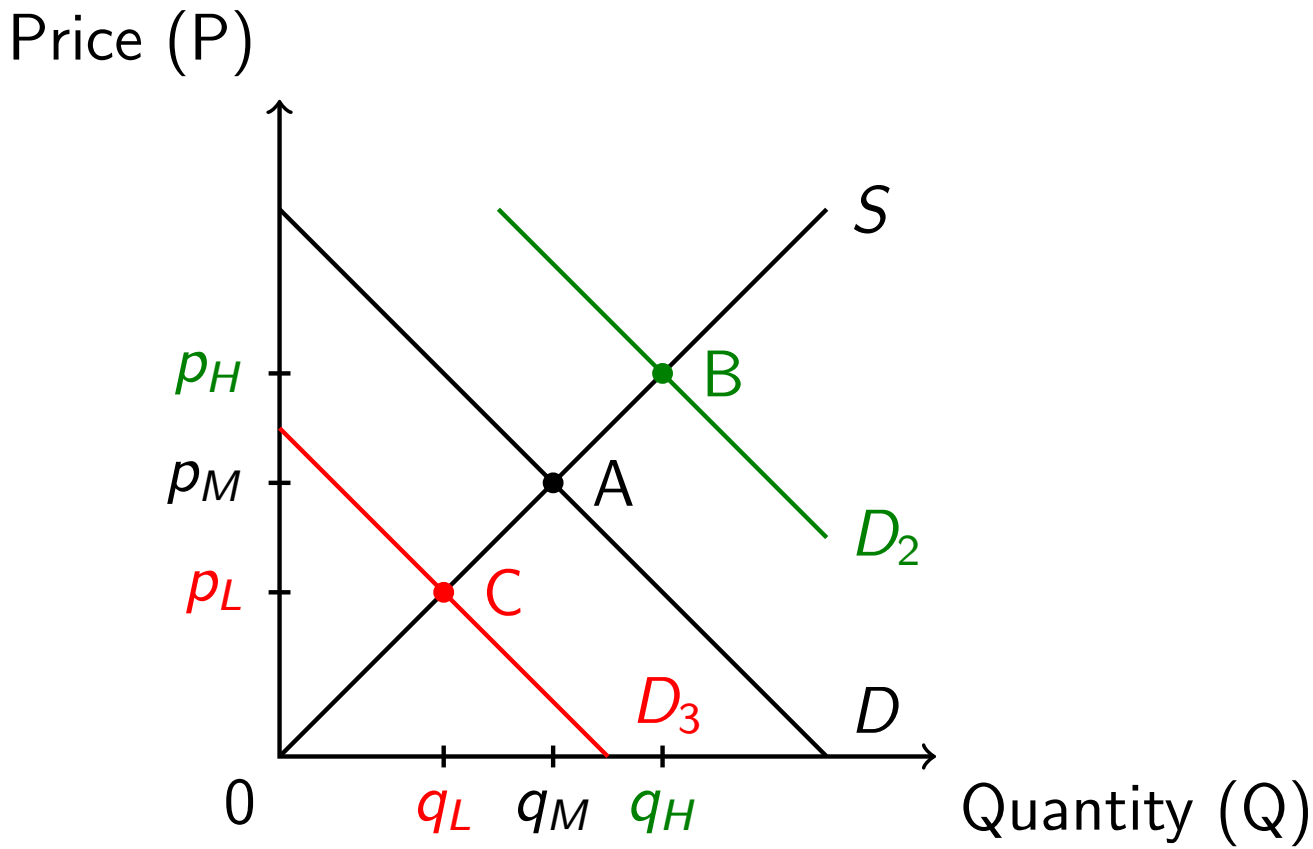
Demand shifts left:



Demand Shifts

Demand shifts right: price increases, quantity increases

Demand shifts left: price decreases, quantity decreases

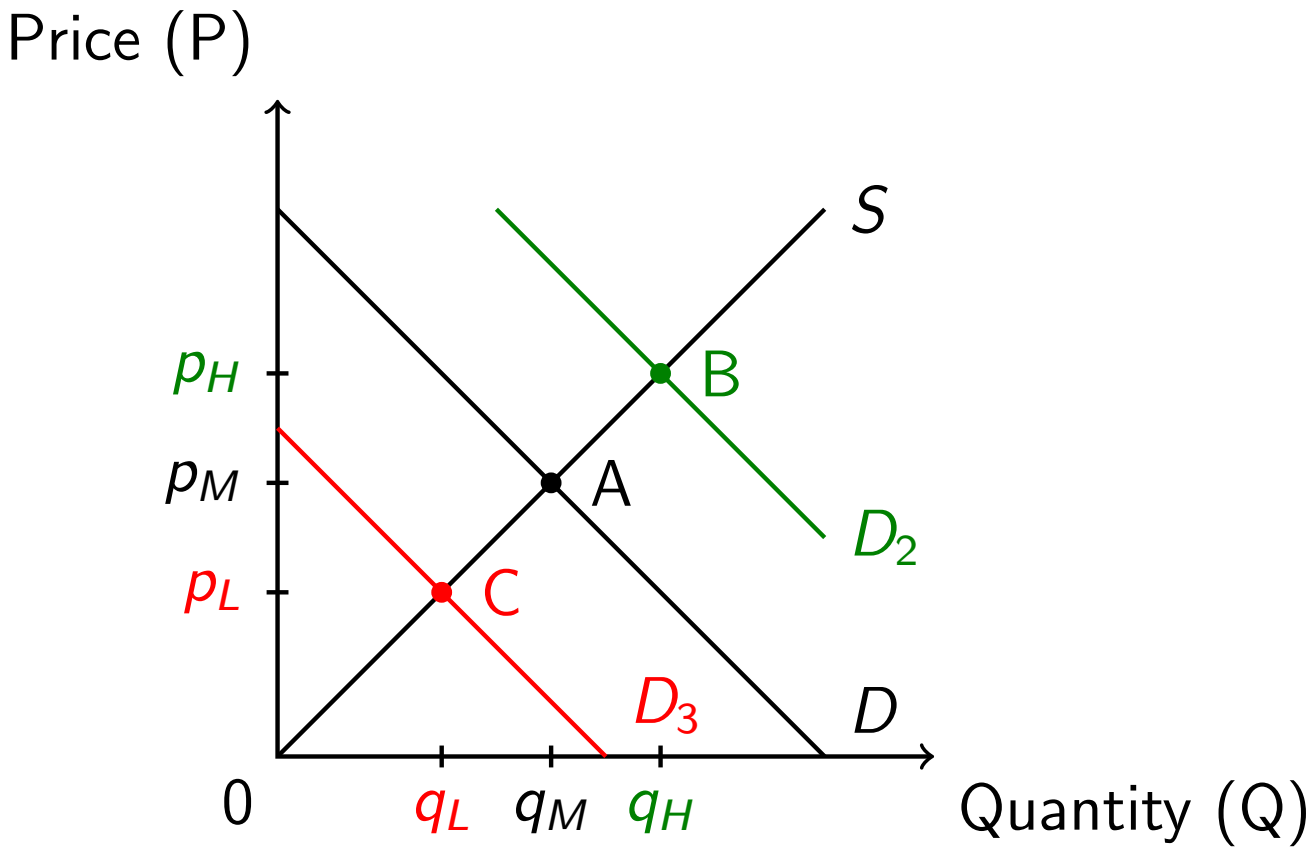


Demand Shifts

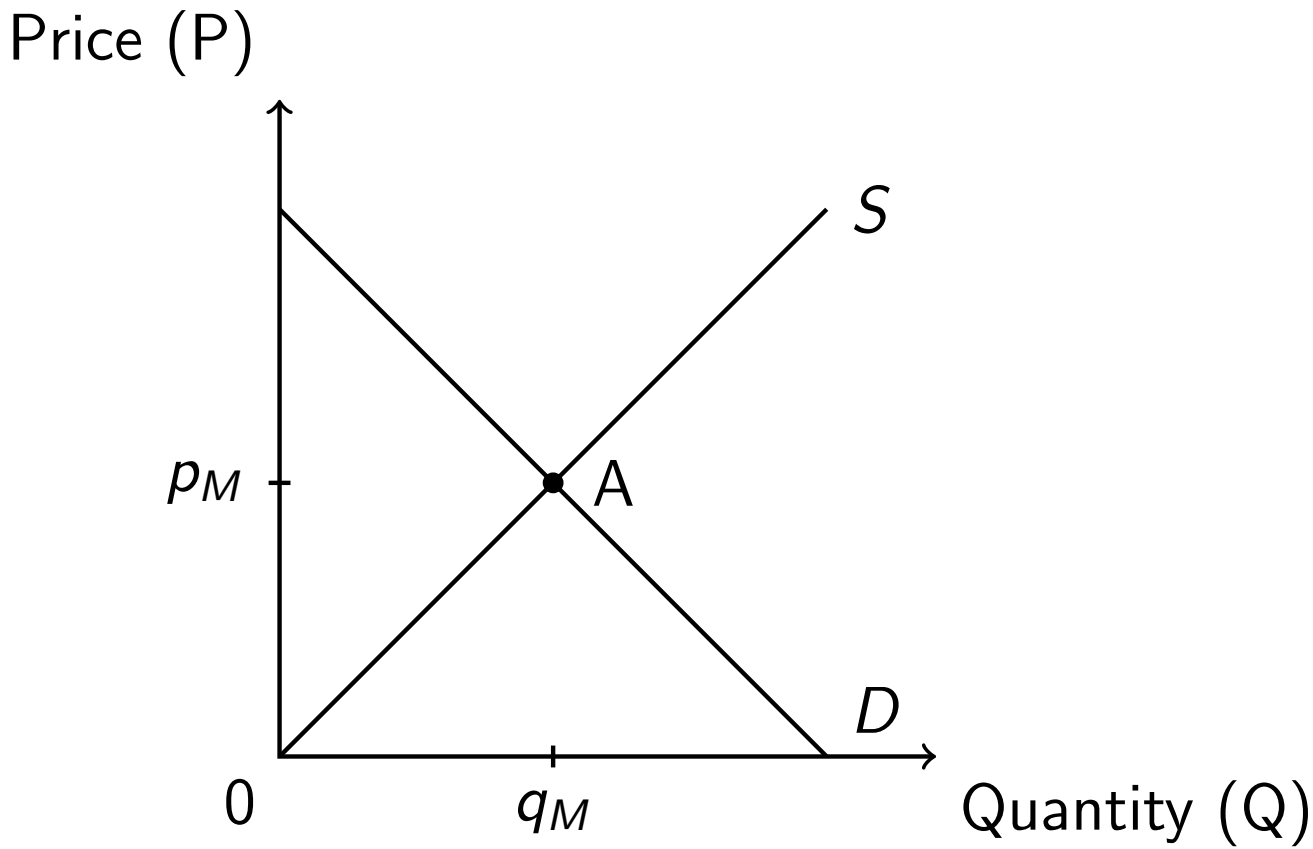
Demand shifts right: price increases, quantity increases

Demand shifts left: price decreases, quantity decreases

When we shift the demand curve, we move *along* the supply curve

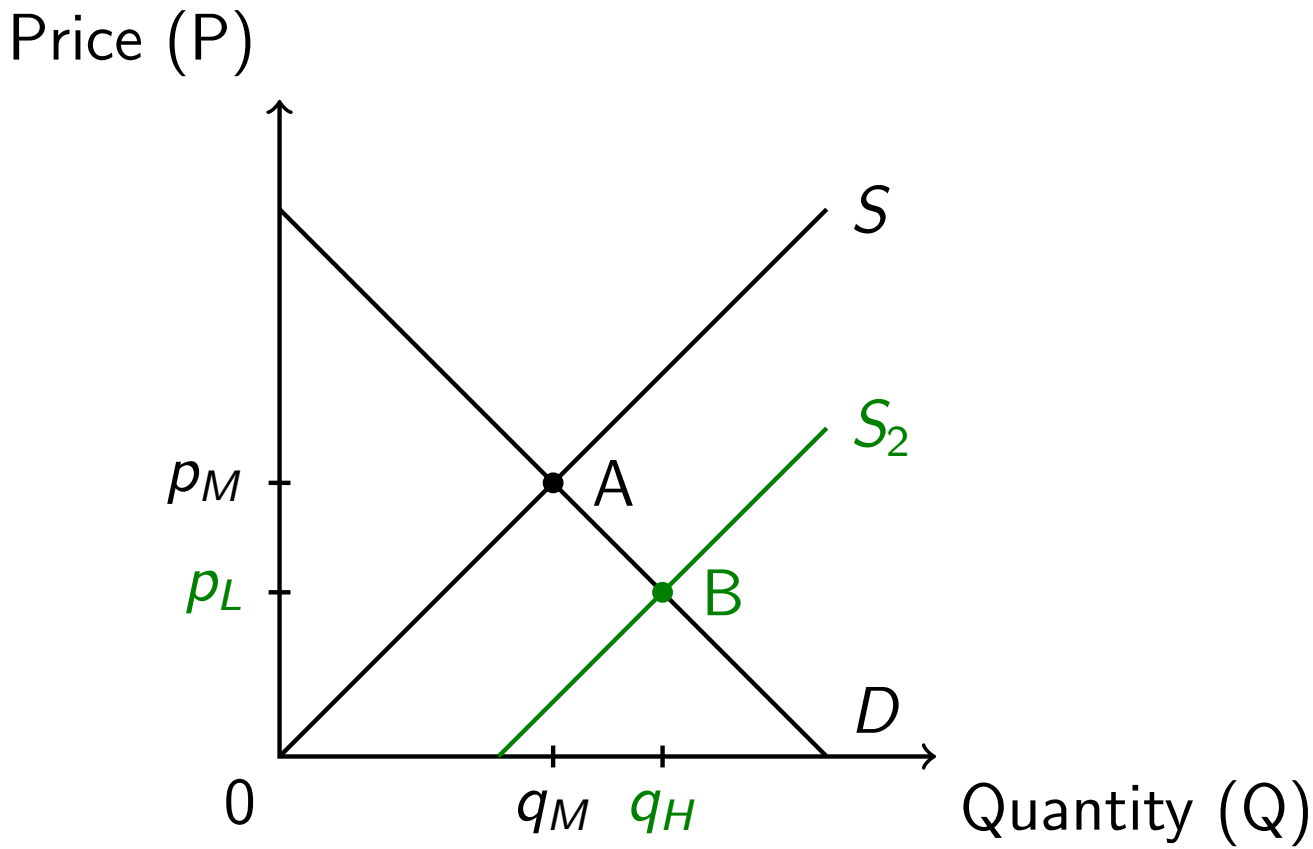


Supply Shifts



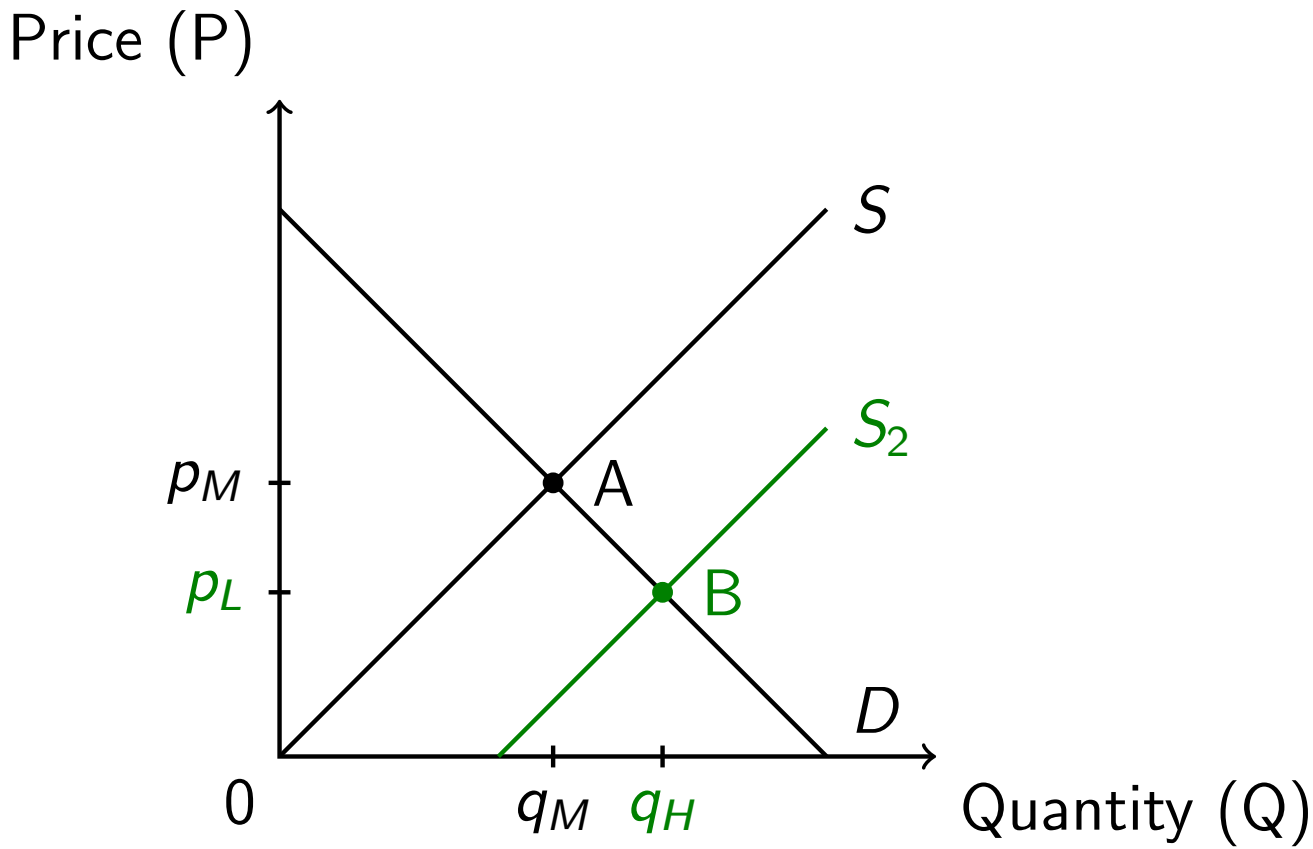
Supply Shifts

Supply shifts right:



Supply Shifts

Supply shifts right: price decreases, quantity increases



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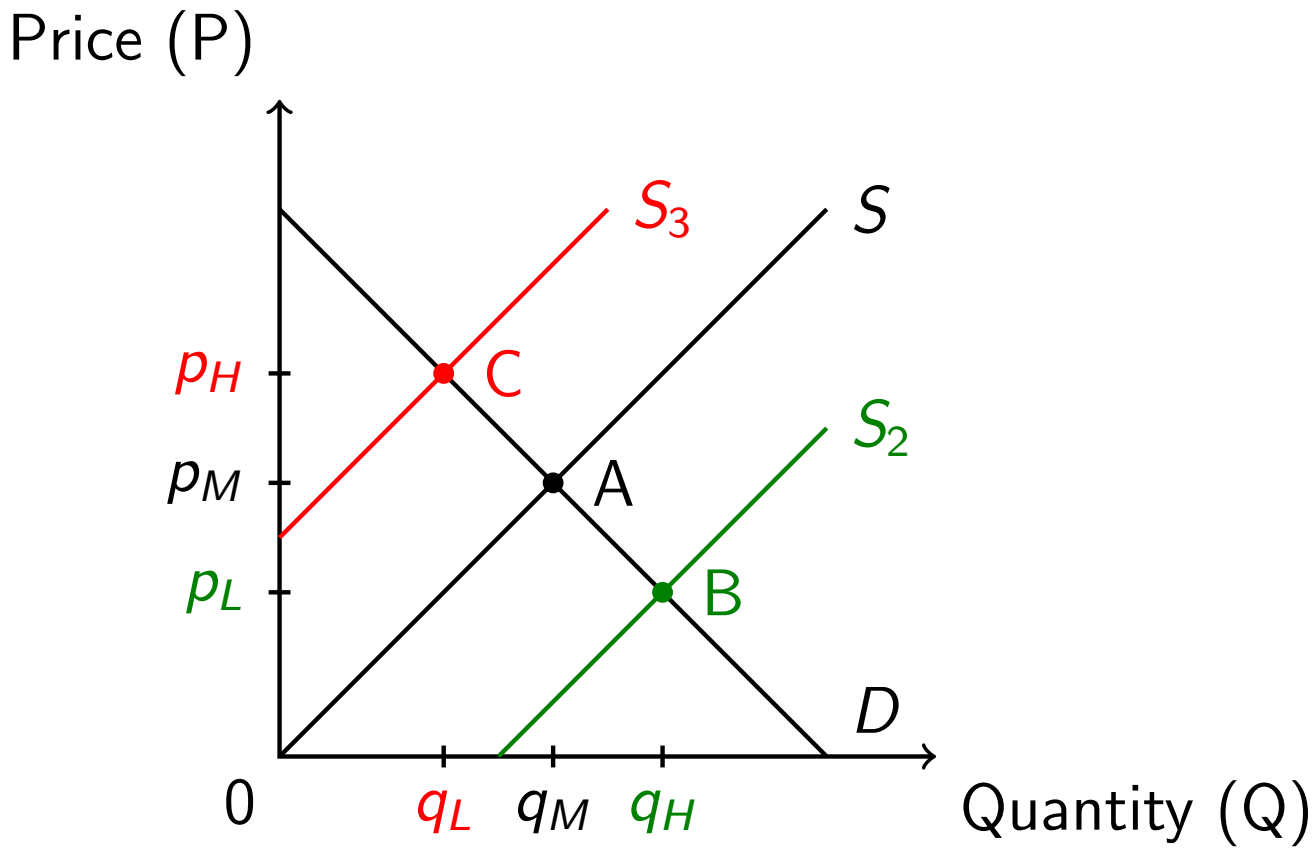
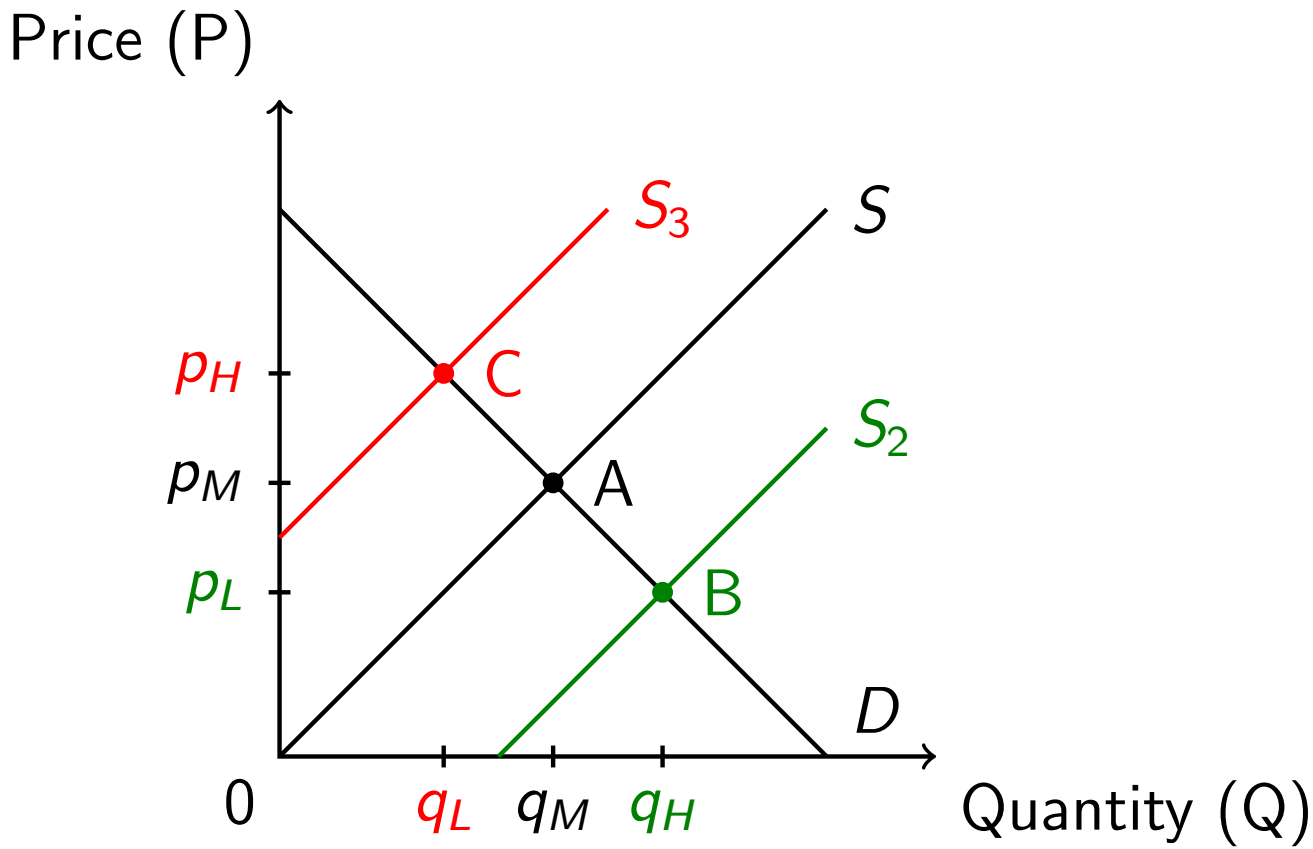


Supply Shifts

Supply shifts right: price decreases, quantity increases

Supply shifts left: price increases, quantity decreases



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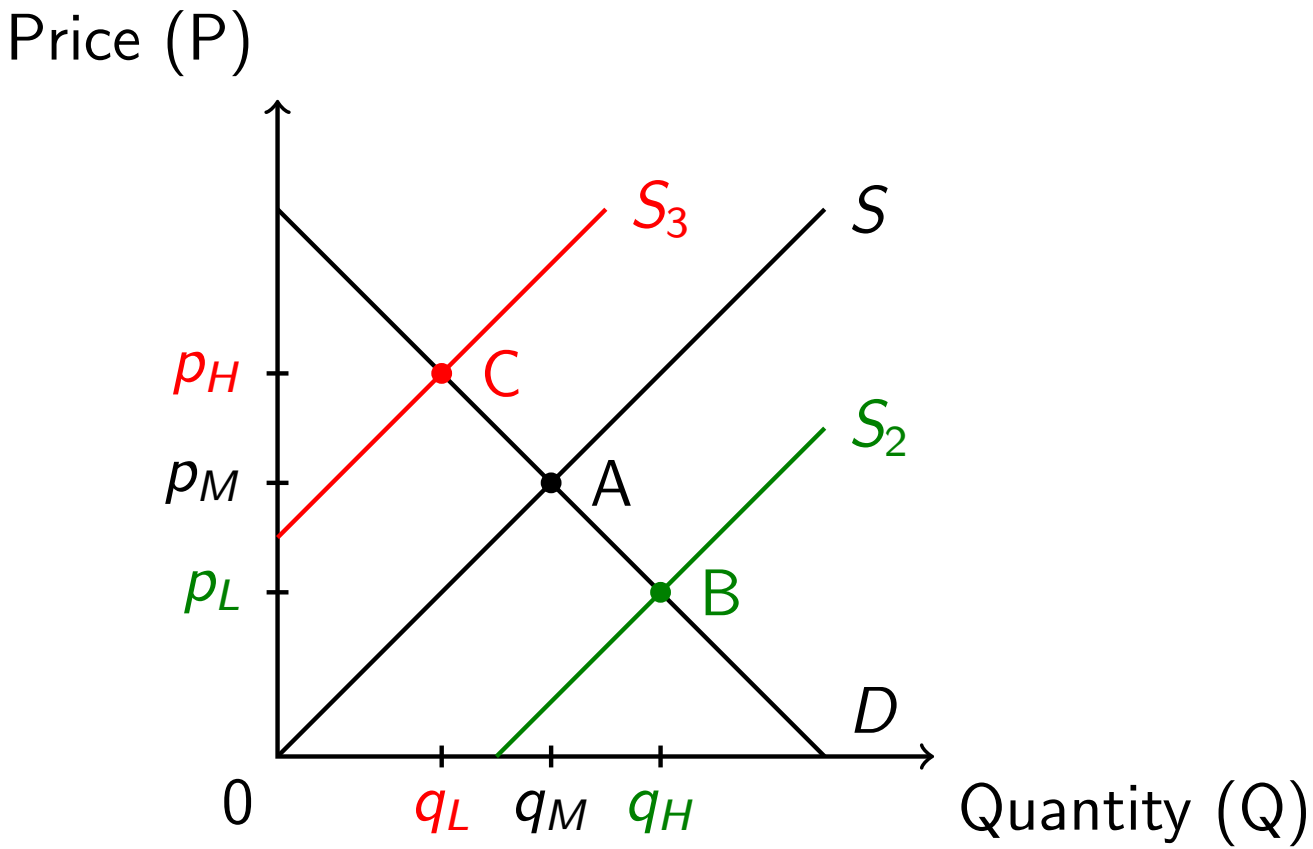
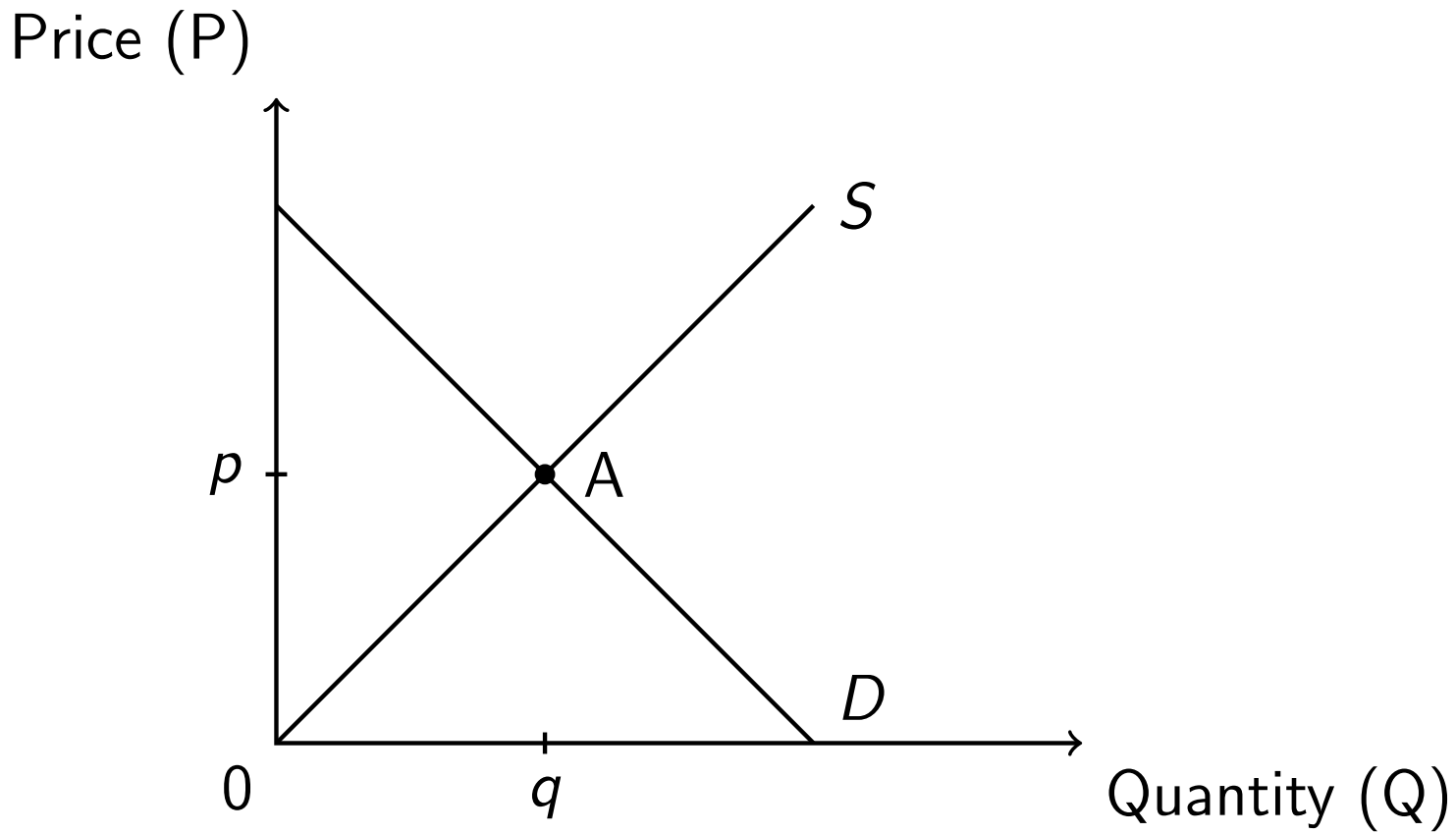
When we shift the supply curve, we move *along* the demand curve

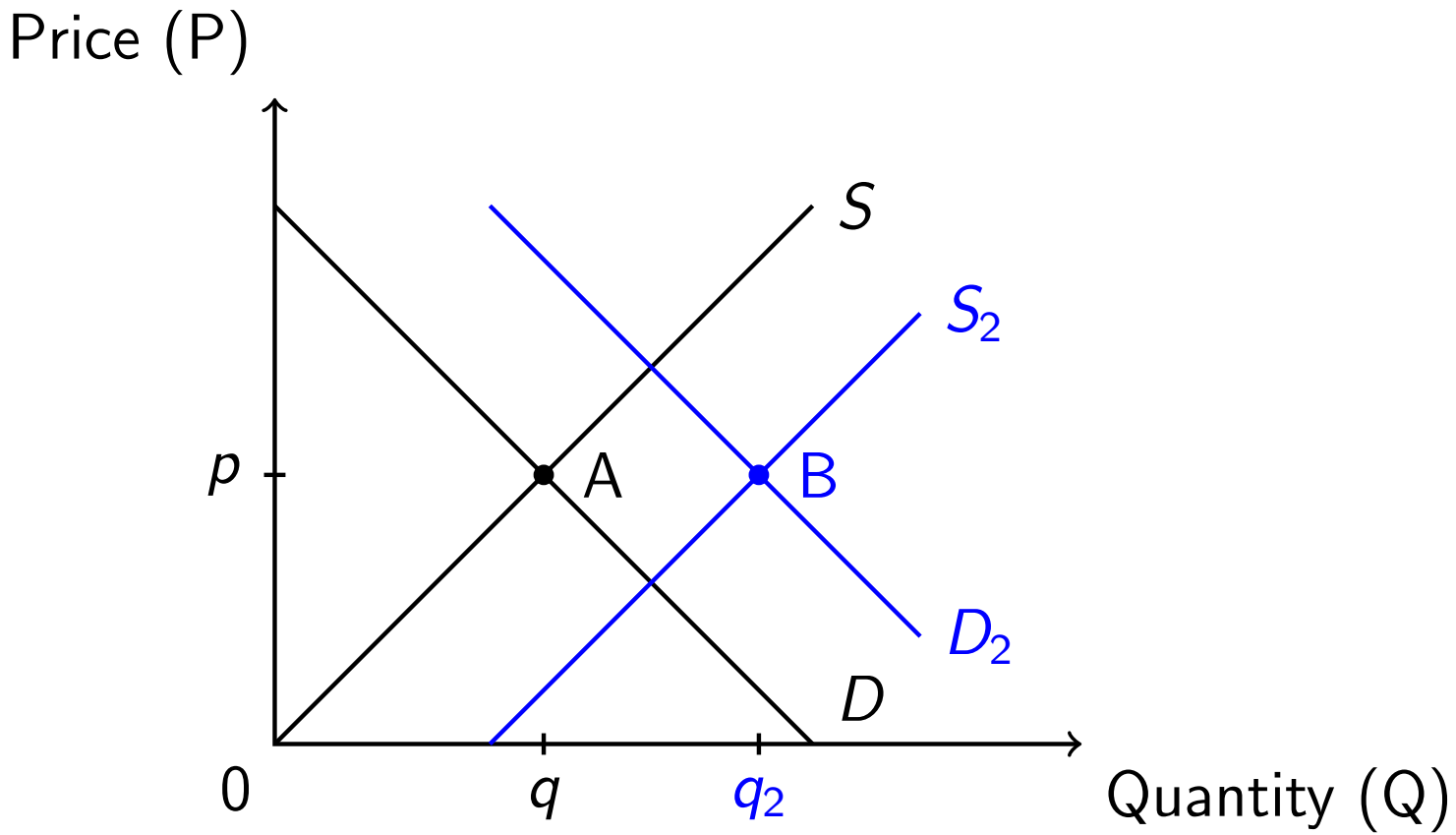


Shifting Supply and Demand



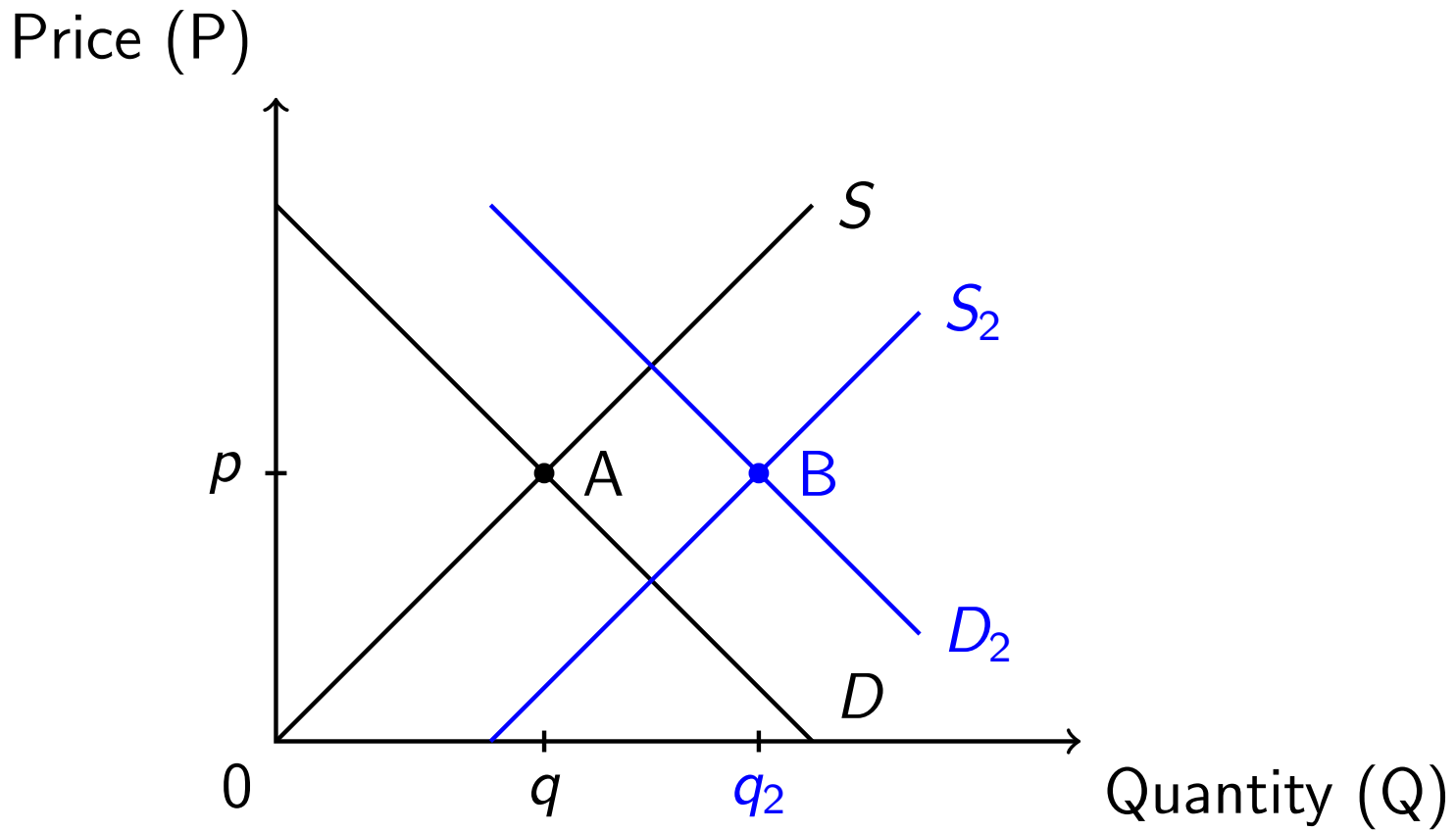
Shifting Supply and Demand

Both supply and demand shift right:



Shifting Supply and Demand

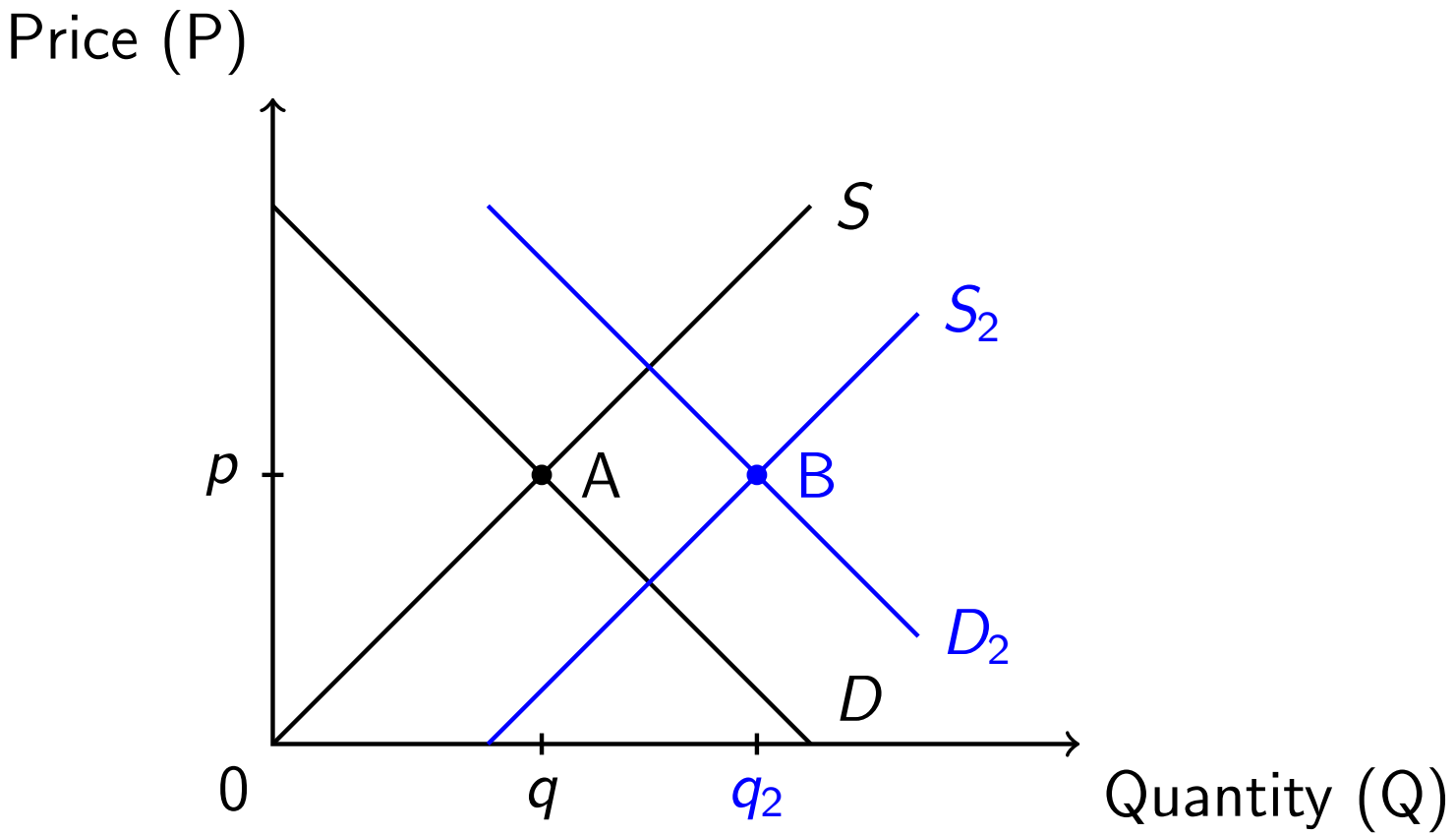
Both supply and demand shift right: quantity increases



Shifting Supply and Demand

Both supply and demand shift right: quantity increases

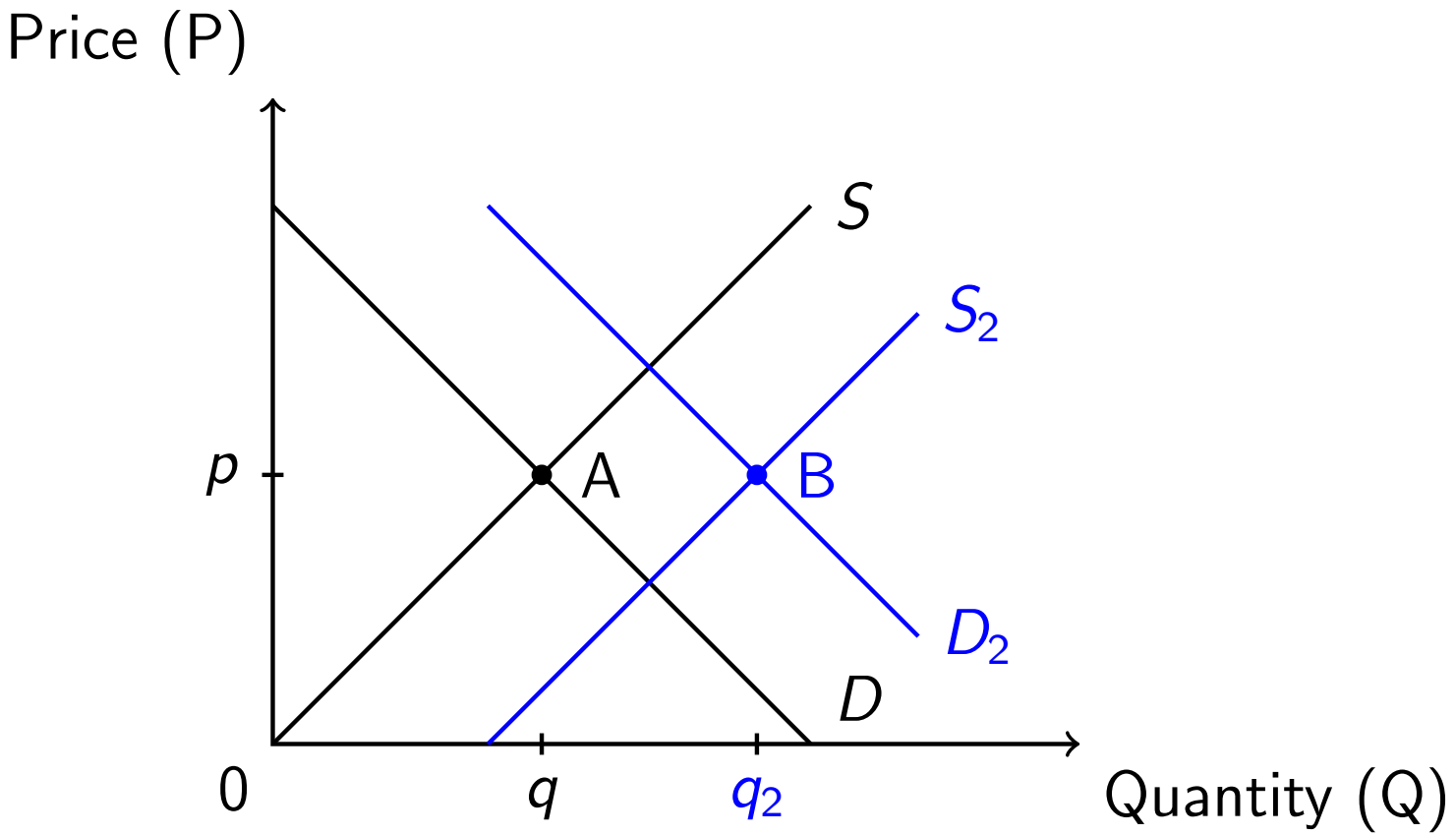
Price:



Shifting Supply and Demand

Both supply and demand shift right: quantity increases

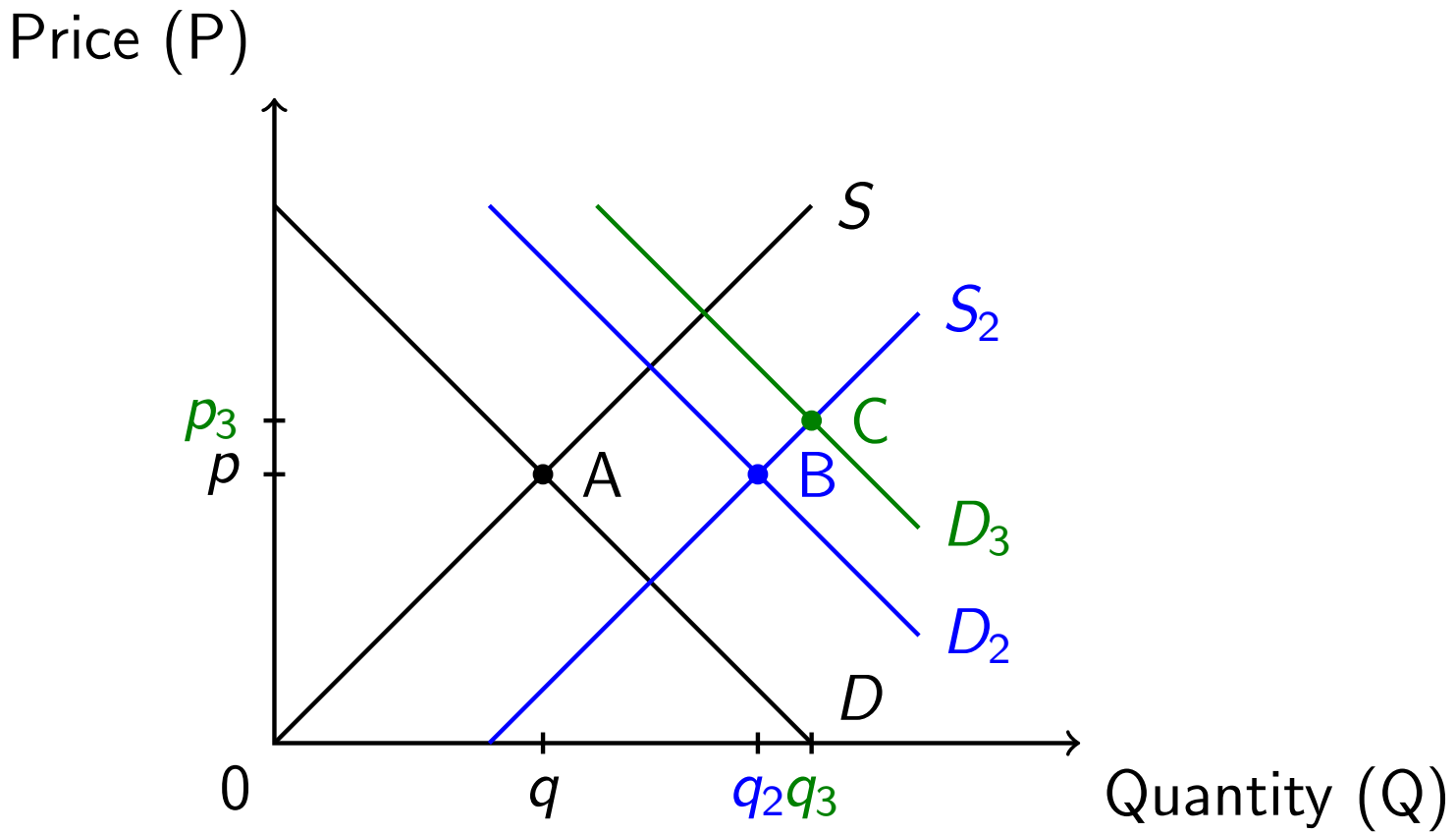
Price: stays the same,



Shifting Supply and Demand

Both supply and demand shift right: quantity increases

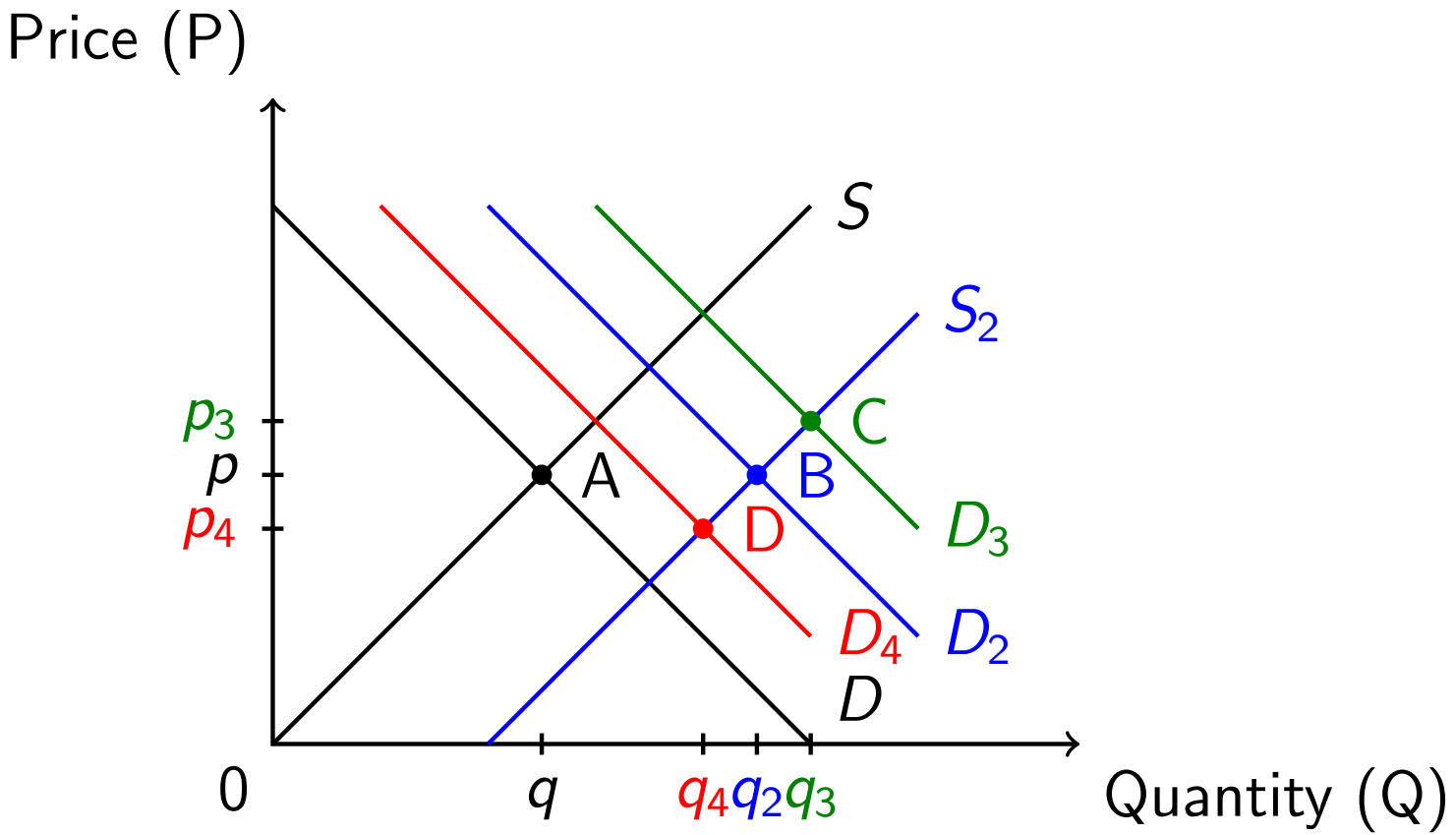
Price: stays the same, increases,



Shifting Supply and Demand

Both supply and demand shift right: quantity increases

Price: stays the same, increases, decreases

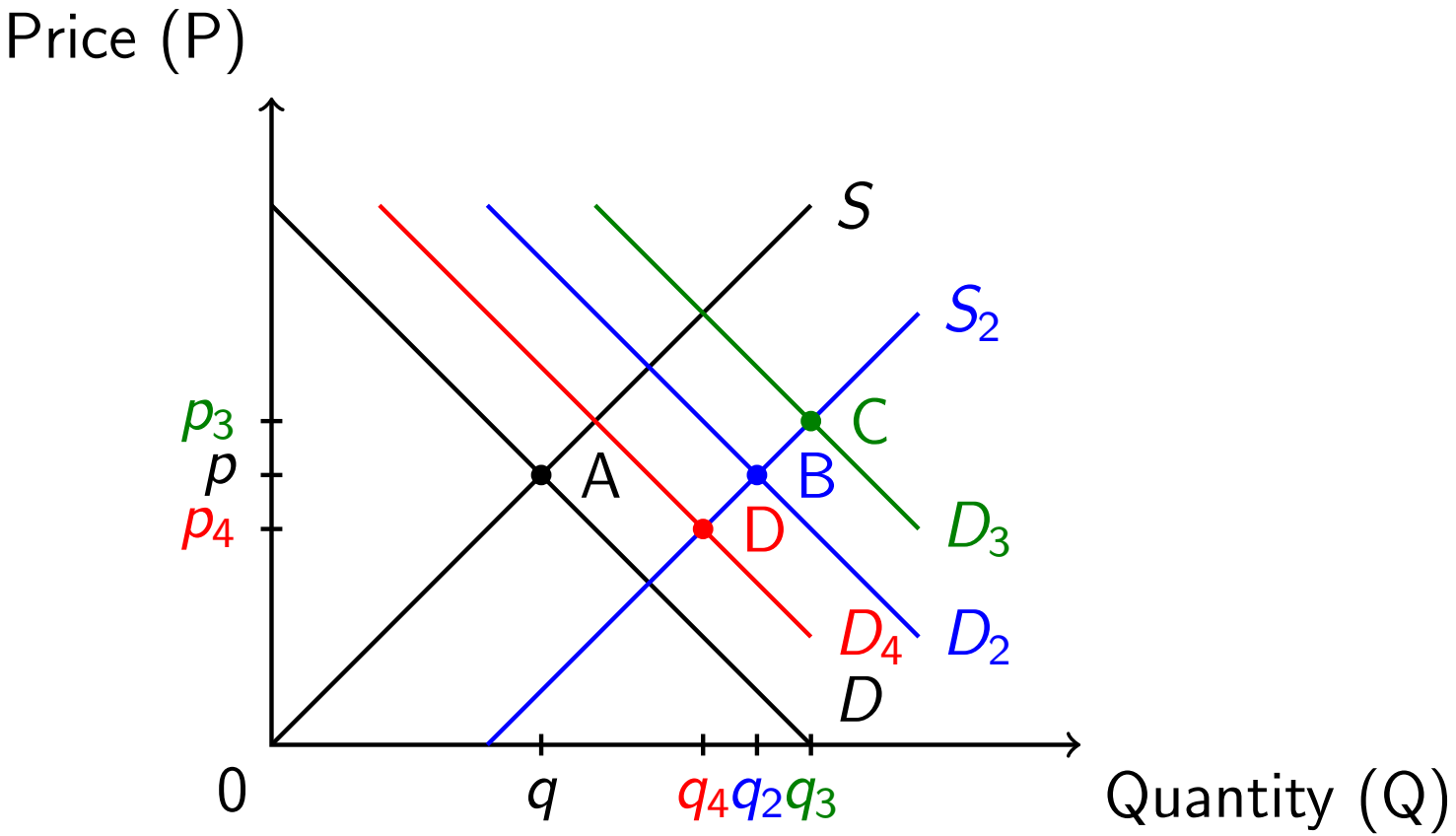


Shifting Supply and Demand

Both supply and demand shift right: quantity increases

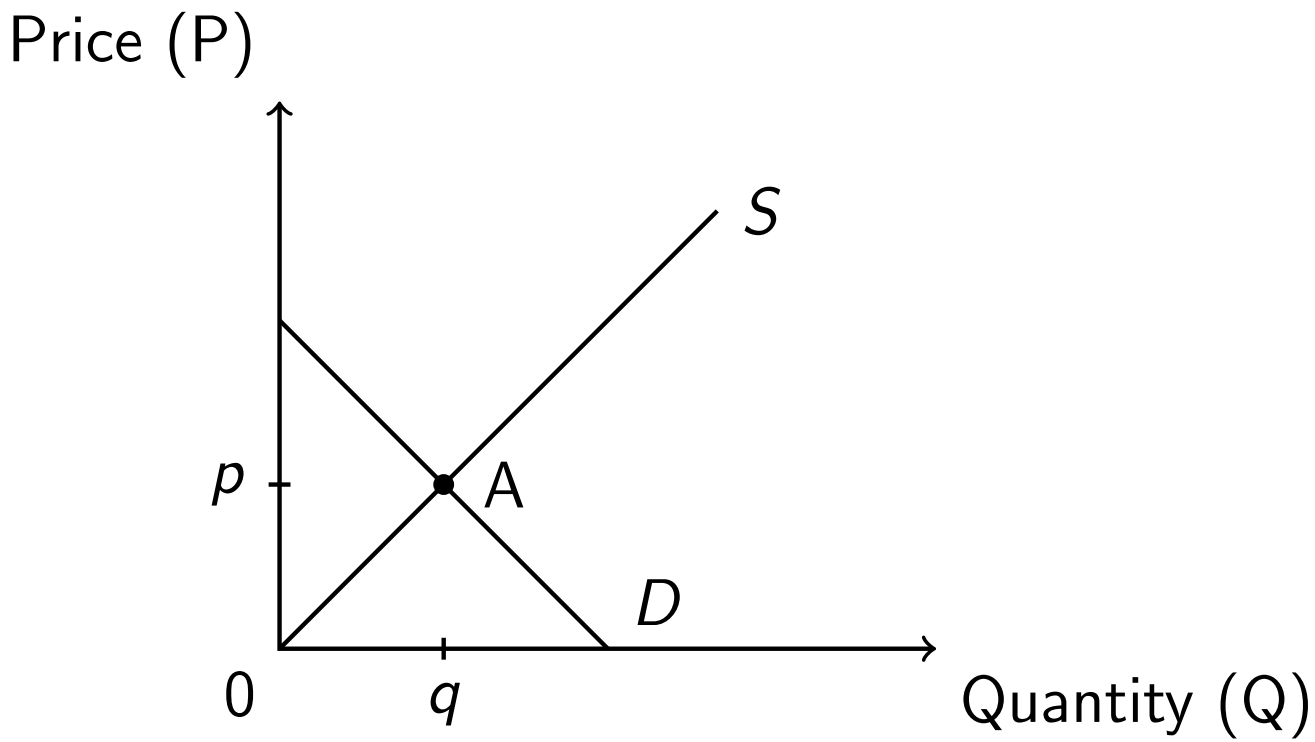
Price: stays the same, increases, decreases

Depends on if supply or demand shifts more, usually cannot say



Example Problem

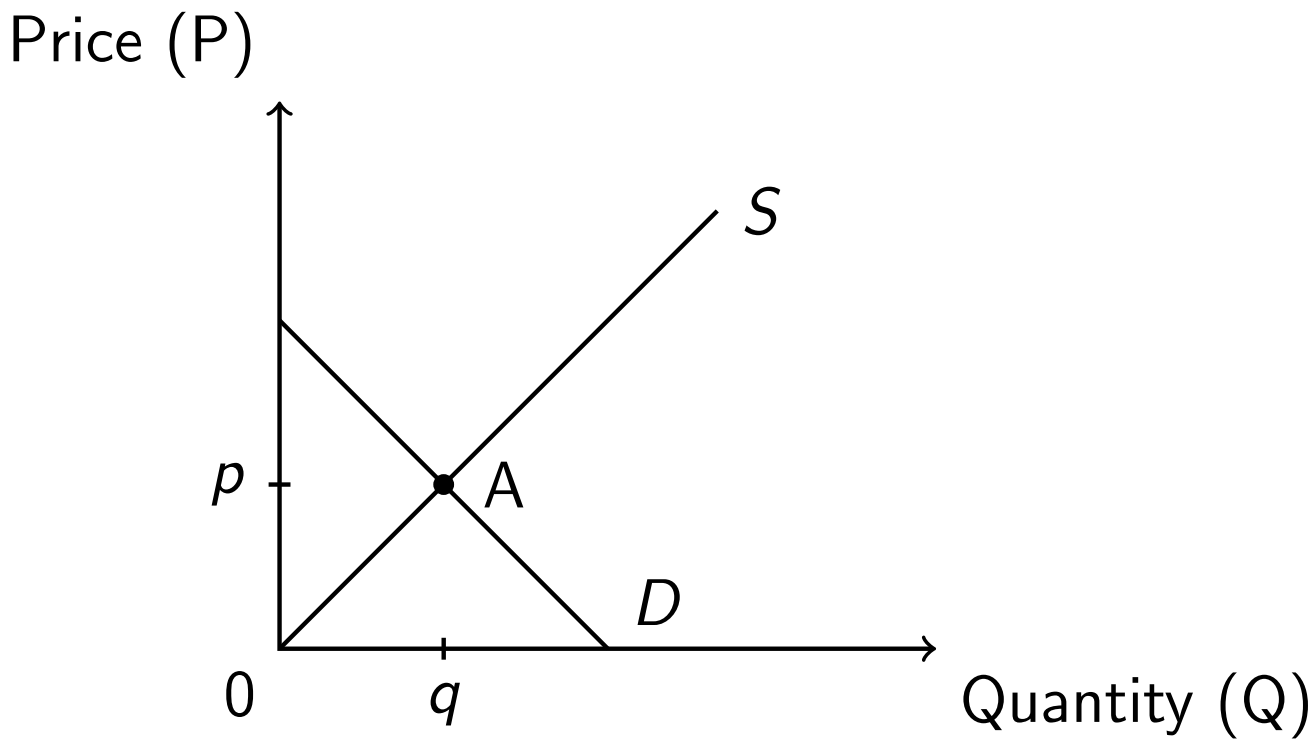
The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.



Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

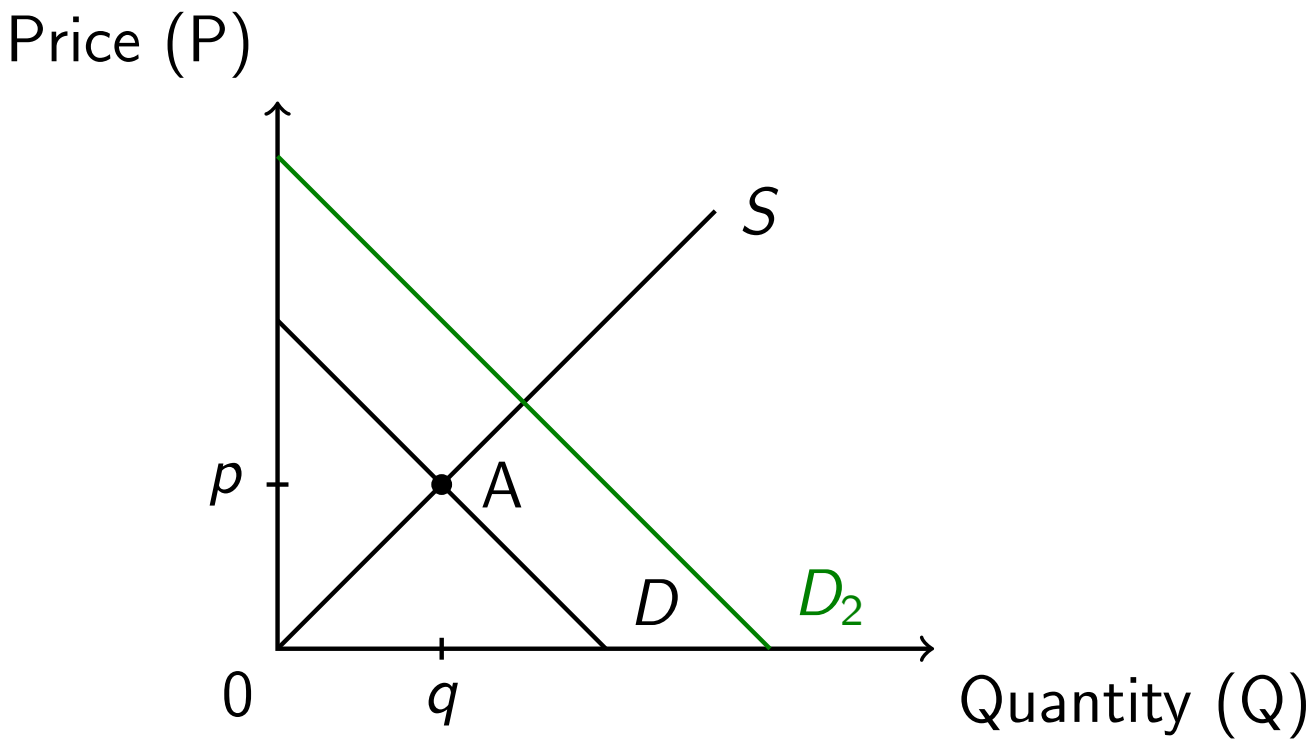
Demand:



Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

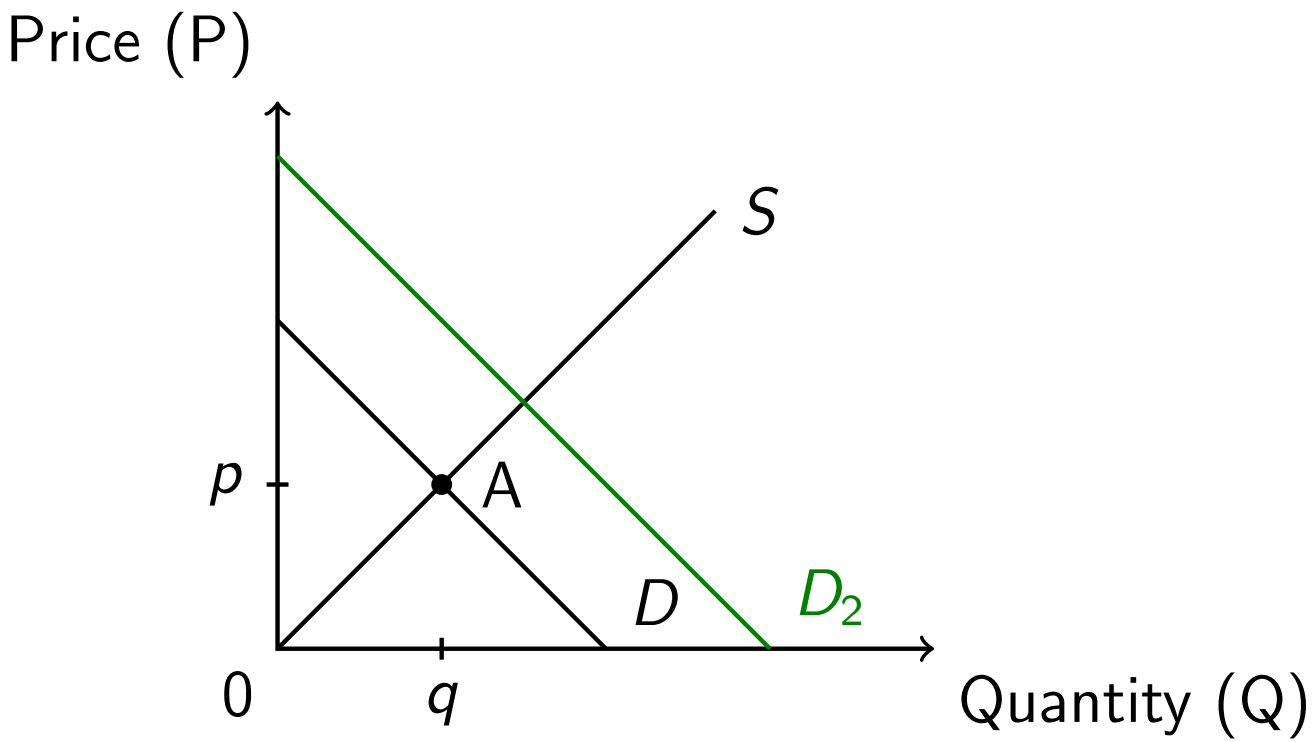
Demand: shifts right;



Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

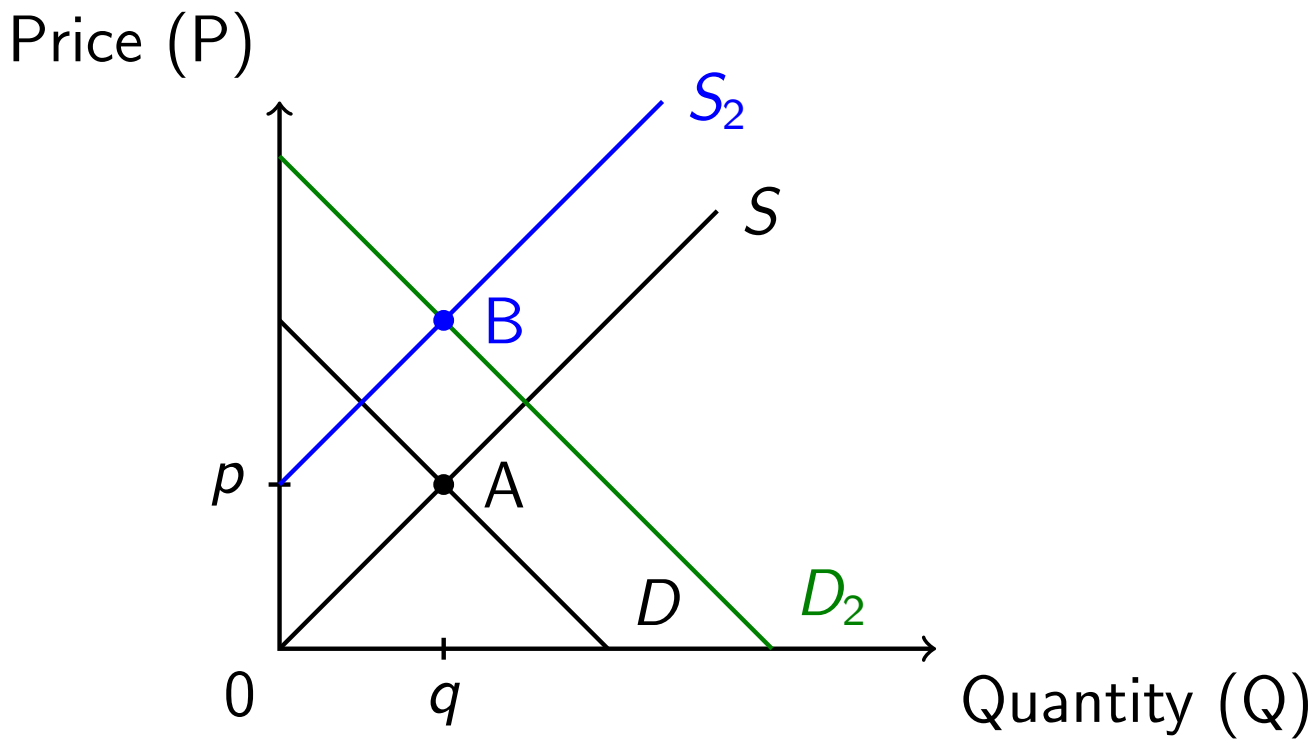
Demand: shifts right; Supply:



Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

Demand: shifts right; Supply: shifts left

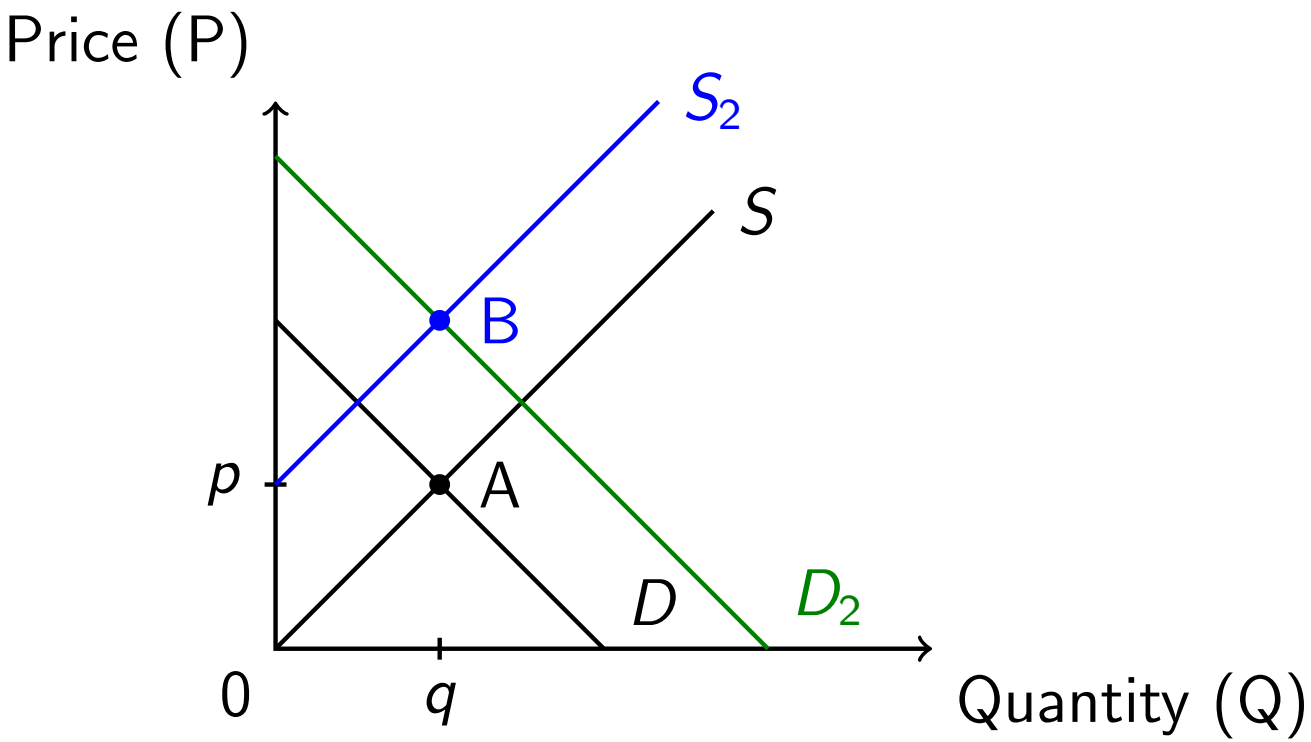


Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

Demand: shifts right; Supply: shifts left

Price:

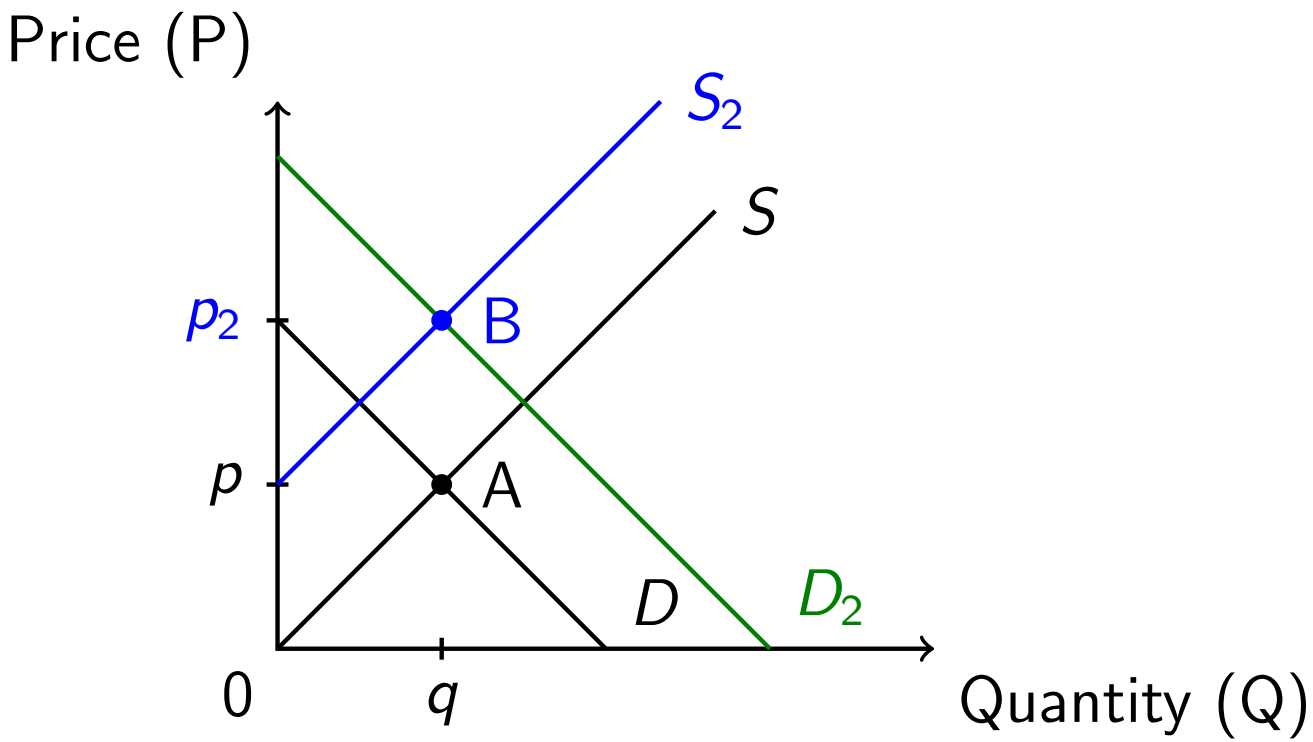


Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

Demand: shifts right; Supply: shifts left

Price: increases;

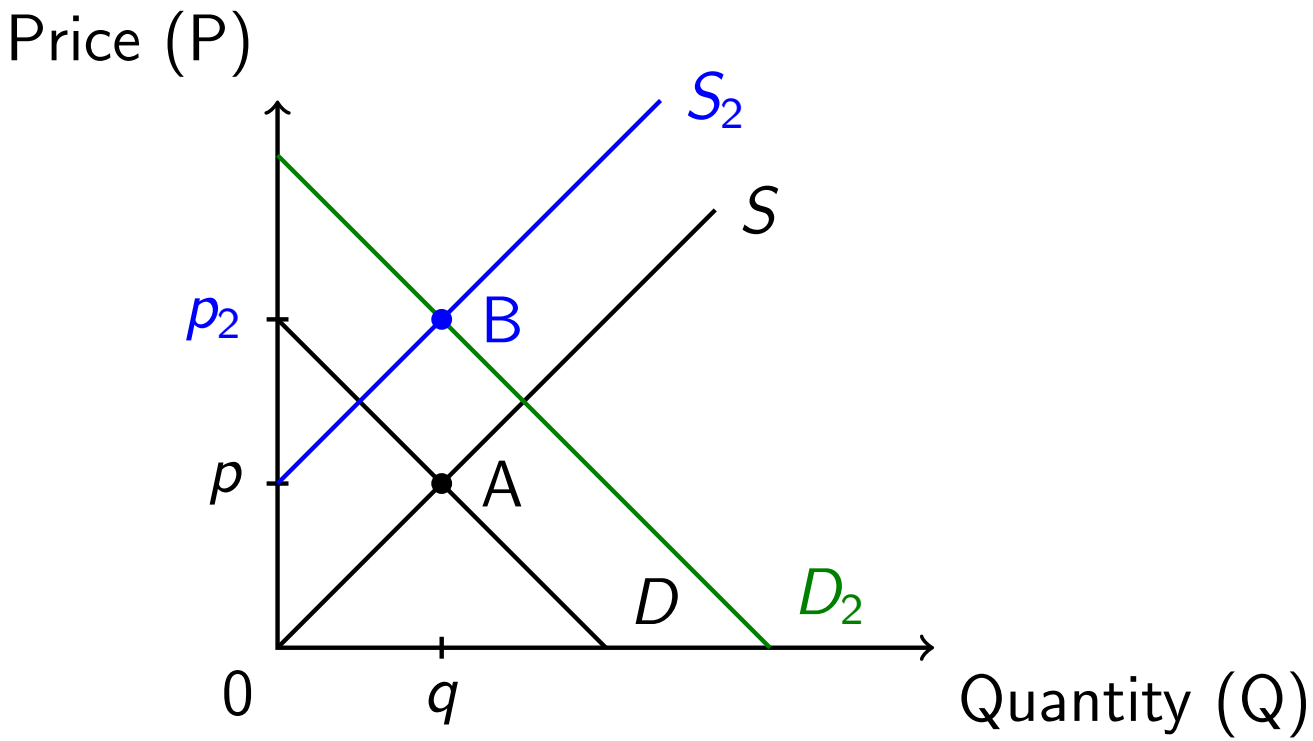


Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

Demand: shifts right; Supply: shifts left

Price: increases; Quantity:

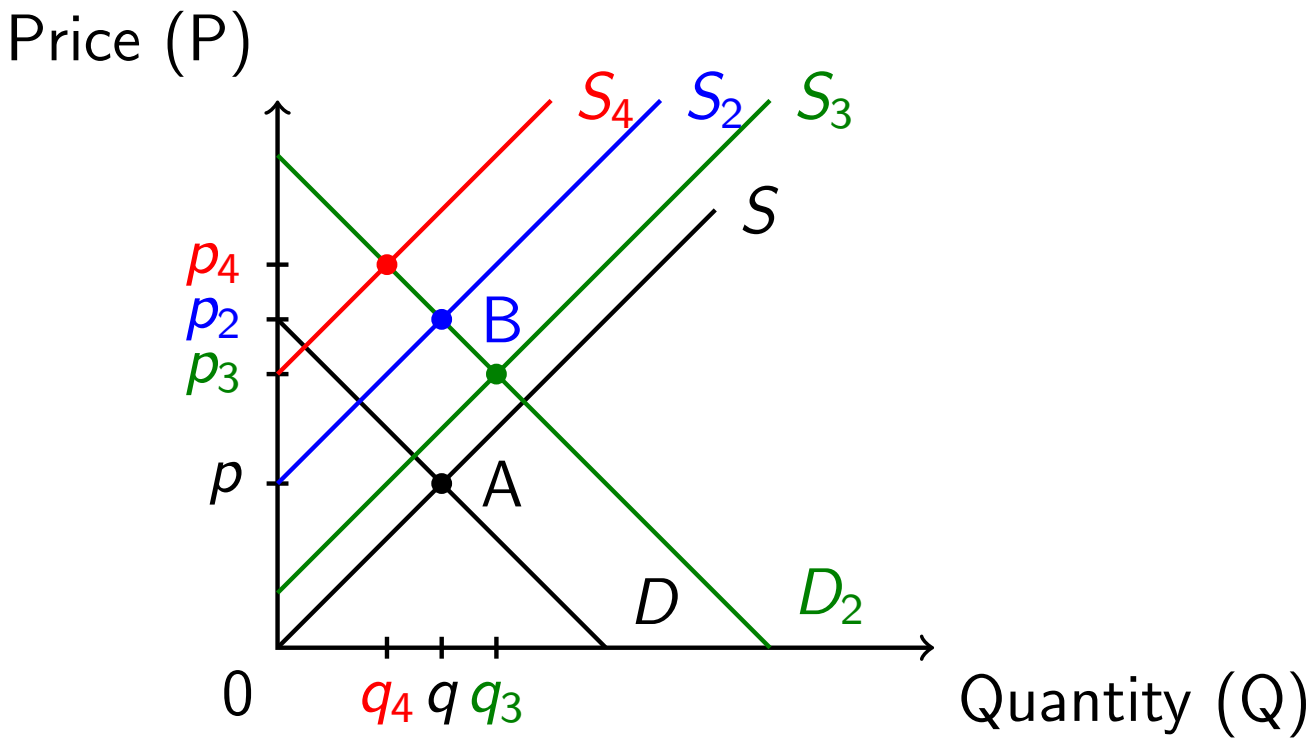


Example Problem

The market for apples starts out in equilibrium. Then pie crusts become cheaper and fertilizer becomes more expensive.

Demand: shifts right; Supply: shifts left

Price: increases; Quantity: don't know



Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left			
	Constant		$q -$ $p-$	
	Right			

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left		$q\downarrow$ $p\downarrow$	
	Constant		$q-$ $p-$	
	Right			

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left		$q\downarrow$ $p\downarrow$	
	Constant		$q-$ $p-$	
	Right		$q\uparrow$ $p\uparrow$	

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left		$q \downarrow \; p \downarrow$	
	Constant	$q \downarrow \; p \uparrow$	$q - \; p -$	
	Right		$q \uparrow \; p \uparrow$	

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left		$q\downarrow \; p\downarrow$	
	Constant	$q\downarrow \; p\uparrow$	$q- \; p-$	$q\uparrow \; p\downarrow$
	Right		$q\uparrow \; p\uparrow$	

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left	$q \downarrow$ p?	$q \downarrow$ $p \downarrow$	
	Constant	$q \downarrow$ $p \uparrow$	$q -$ $p -$	$q \uparrow$ $p \downarrow$
	Right		$q \uparrow$ $p \uparrow$	

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left	$q\downarrow$ p?	$q\downarrow$ $p\downarrow$	q? $p\downarrow$
	Constant	$q\downarrow$ $p\uparrow$	$q-$ $p-$	$q\uparrow$ $p\downarrow$
	Right		$q\uparrow$ $p\uparrow$	

Supply and Demand Shifts

What effect do supply and demand shifts have on price p and quantity q?

		Supply		
		Left	Constant	Right
Demand	Left	$q\downarrow\ p?$	$q\downarrow\ p\downarrow$	$q?\ p\downarrow$
	Constant	$q\downarrow\ p\uparrow$	$q-\ p-$	$q\uparrow\ p\downarrow$
	Right	$q?\ p\uparrow$	$q\uparrow\ p\uparrow$	$q\uparrow\ p?$

Any Questions?