

# Consumer Theory

## EC 201: Principles of Microeconomics

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# Prologue

# Housekeeping

**iClicker:** Register your remote if you haven't already.

- Click the i>clicker tab on the course Canvas page and follow the instructions.

**Friday discussions:** Connor will lead you through a consumer theory worksheet.

- Good attendance last week. Keep it up!

**Midterm 1:** Two weeks from today!

- Details next week.
- I will post practice problems by the end of the week.
- *Note:* I do not post solutions to the practice problems.

# Next Week

**Monday:** No lecture (MLK Day).

**Wednesday:** In-class activity!

- More participation points than usual.

# Today

## Consumer Theory II

Our exploration of consumer behavior continues!

1. Inflation
2. Individual Responsiveness
3. Determinants of Demand
4. Shipping the Good Apples Out
5. Practice

# Inflation

# Inflation

**Q:** Why do we see inflation?

- Big business milks helpless consumers for all it can?
- Unions forces companies to raise wages and then companies have to raise prices to survive?

**Q:** Why do those explanations fail?

- **A:** They are based on *ad hoc* changes in tastes.

# Inflation

## Law of demand

The marginal value of any good falls as the quantity of that good increases *relative* to other goods.

The law of demand also applies to money!

Money is a good with a price.

- The price of one US dollar = the amount of other goods a consumer would willingly give up to maintain control of that dollar.



# Inflation

## Example

If one unit of good  $x$  has a price of \$45, then the price of \$45 is one unit of good  $x$ .

- *i.e.*, the price of \$1 is one 45<sup>th</sup> of a unit of  $x$ .
- If the supply of good  $x$  increases such that the price of  $x$  falls to \$30, then the price of \$1 increases to one 30<sup>th</sup> of a unit of  $x$ .

**Q:** What happens when the quantity of money increases relative to the quantity of good  $x$ ?

- **A<sub>1</sub>:** The price of money falls in terms of good  $x$ .
- **A<sub>2</sub>:** The price of  $x$  rises in terms of money.

# Inflation

## Insight

When the government prints new money in greater amounts than the increase in the amount of other goods, the **marginal value of money decreases**.

- Equivalently, **the price of goods in terms of money increases**.

**This is a fundamental reason for inflation!**

# Individual Responsiveness

**Q:** If there are 10 billion packs of cigarettes sold in a year, how much revenue would a new tax of \$0.25 per pack generate?

- A.** Less than \$2.5 billion.
- B.** \$2.5 billion.
- C.** More than \$2.5 billion.

# Price Elasticity of Demand

## Definition

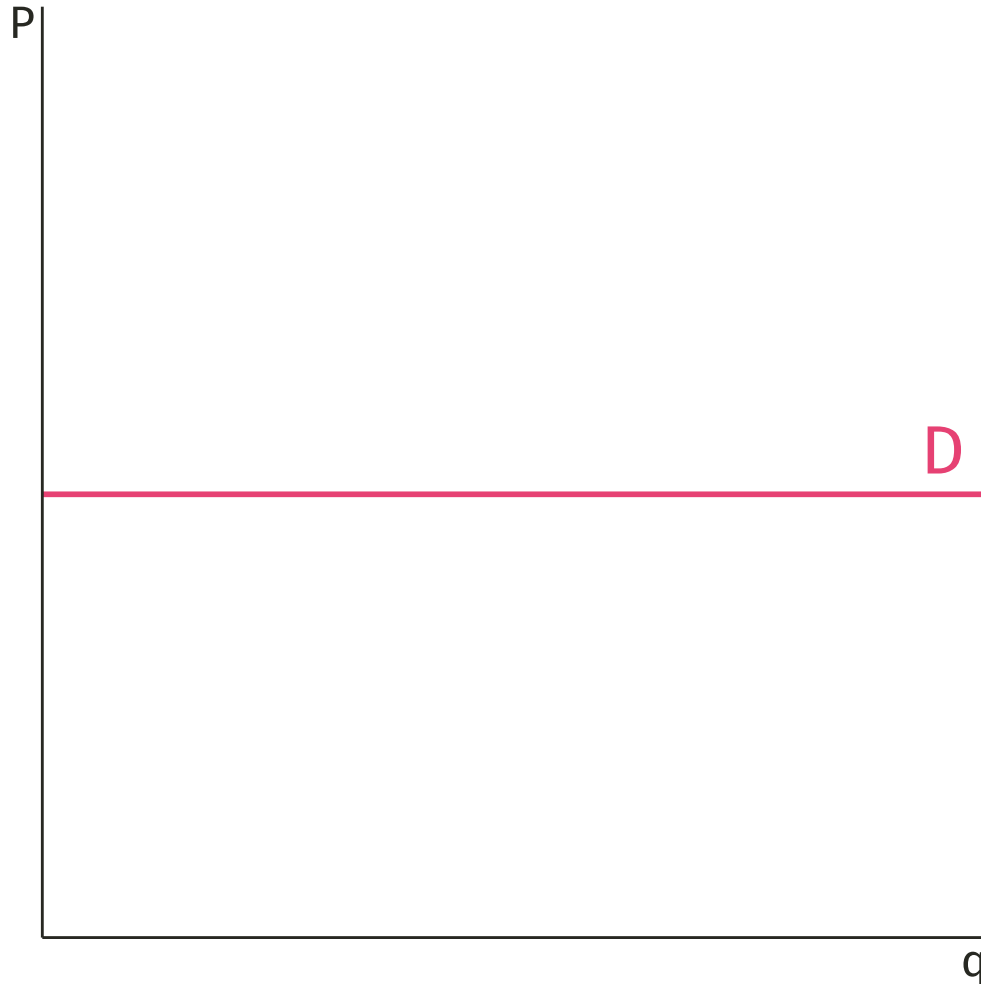
A measure of the responsiveness of quantity demanded to changes in price:

$$\epsilon_d = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \leq 0$$

**Interpretation:** "A one-percent increase the price leads to an  $\epsilon_d$  percent increase in quantity demanded."

- $\epsilon_d < -1 \implies$  demand is **elastic** or **sensitive** to changes in price.
- $-1 < \epsilon_d \leq 0 \implies$  demand is **inelastic** or **insensitive** to changes in price.

# Price Elasticity of Demand

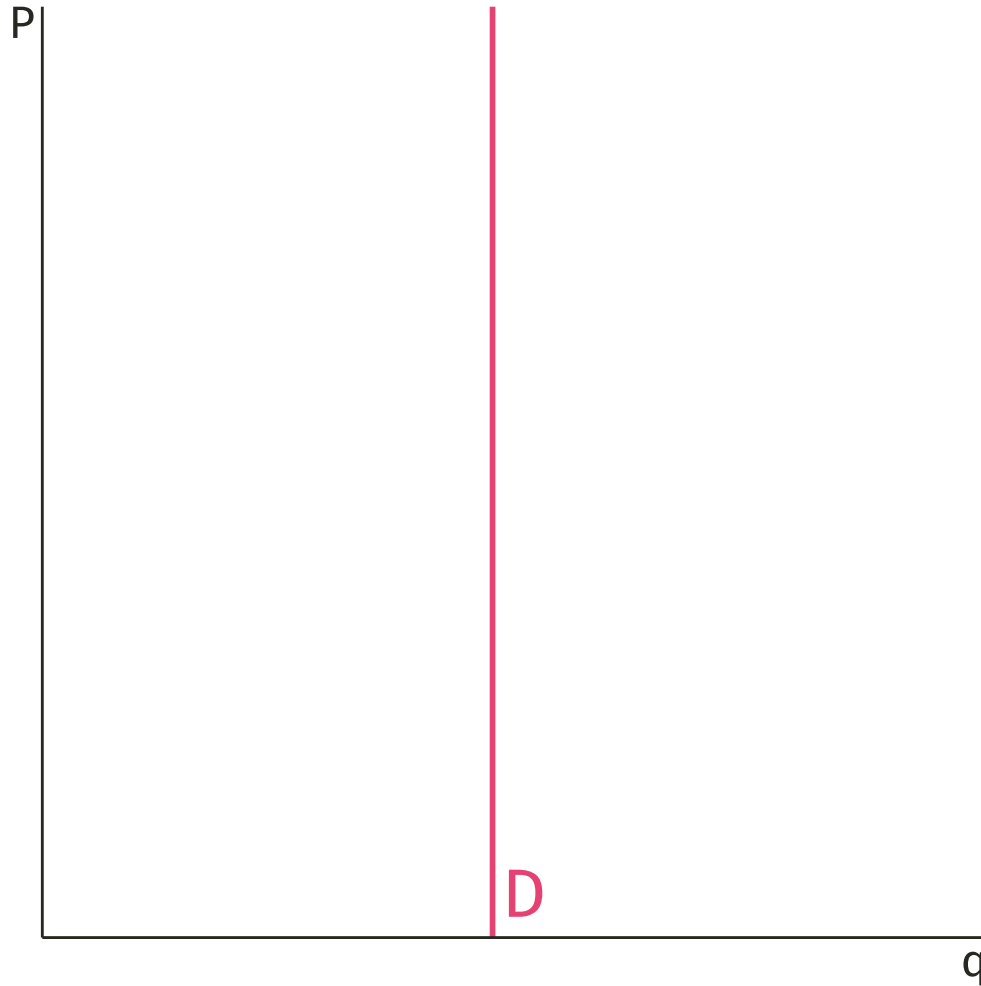


## Perfectly Elastic Demand

Quantity demanded falls to zero when the price increases and approaches infinity when the price decreases.

$$\epsilon_d \rightarrow -\infty$$

# Price Elasticity of Demand

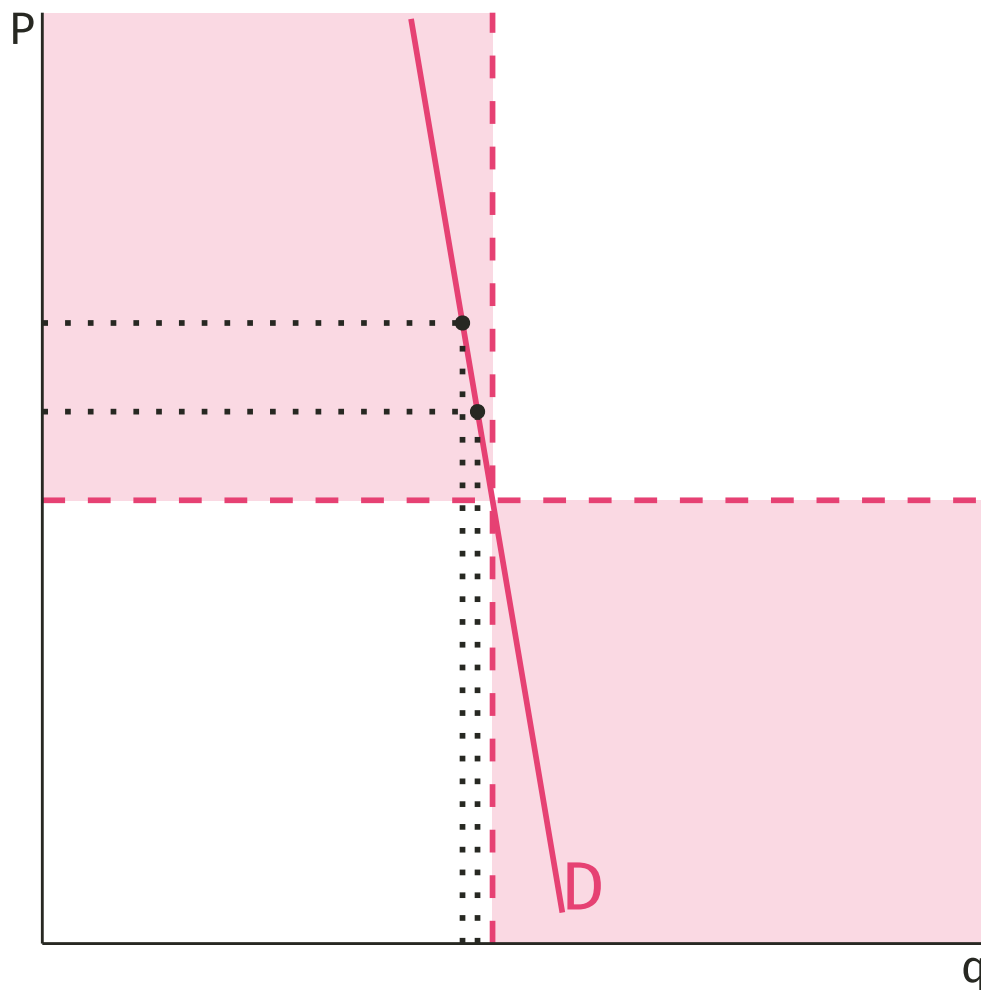


## Perfectly Inelastic Demand

Quantity demanded does not change when the price changes.

$$\epsilon_d = 0$$

# Price Elasticity of Demand



*All else being equal, flatter demand curves are more elastic than steeper demand curves.*

*As  $\epsilon_d$  increases toward zero, the same price increase leads to smaller decreases in the quantity demanded.*



# Individual Responsiveness

What influences the responsiveness of an individual's choice of quantity demanded to a change in price?

1. Availability of close substitutes.

- More alternatives  $\implies$  higher price sensitivity.

2. Fraction of income spent on the good.

- More spending relative to income  $\implies$  higher price sensitivity.

3. Time.

- More time to adjust  $\implies$  higher price sensitivity.

## Real-World Price Sensitivity

<b>Good/Service</b>	<b>Elasticity of Demand</b>	<b>Elastic or Inelastic?</b>
<i>Business travel</i>	-0.10	Inelastic
<i>Medical care</i>	-0.17	Inelastic
<i>Coffee</i>	-0.25	Inelastic
<i>Tobacco</i>	-0.45	Inelastic
<i>Movies</i>	-0.90	Inelastic
<i>Private school</i>	-1.10	Elastic
<i>Restaurant meals</i>	-1.60	Elastic
<i>Leisure travel</i>	-2.40	Elastic
<i>Fresh vegetables</i>	-3.70	Elastic
<i>Honda cars</i>	-4.00	Elastic

# Price Elasticity of Demand

## Precise Definition

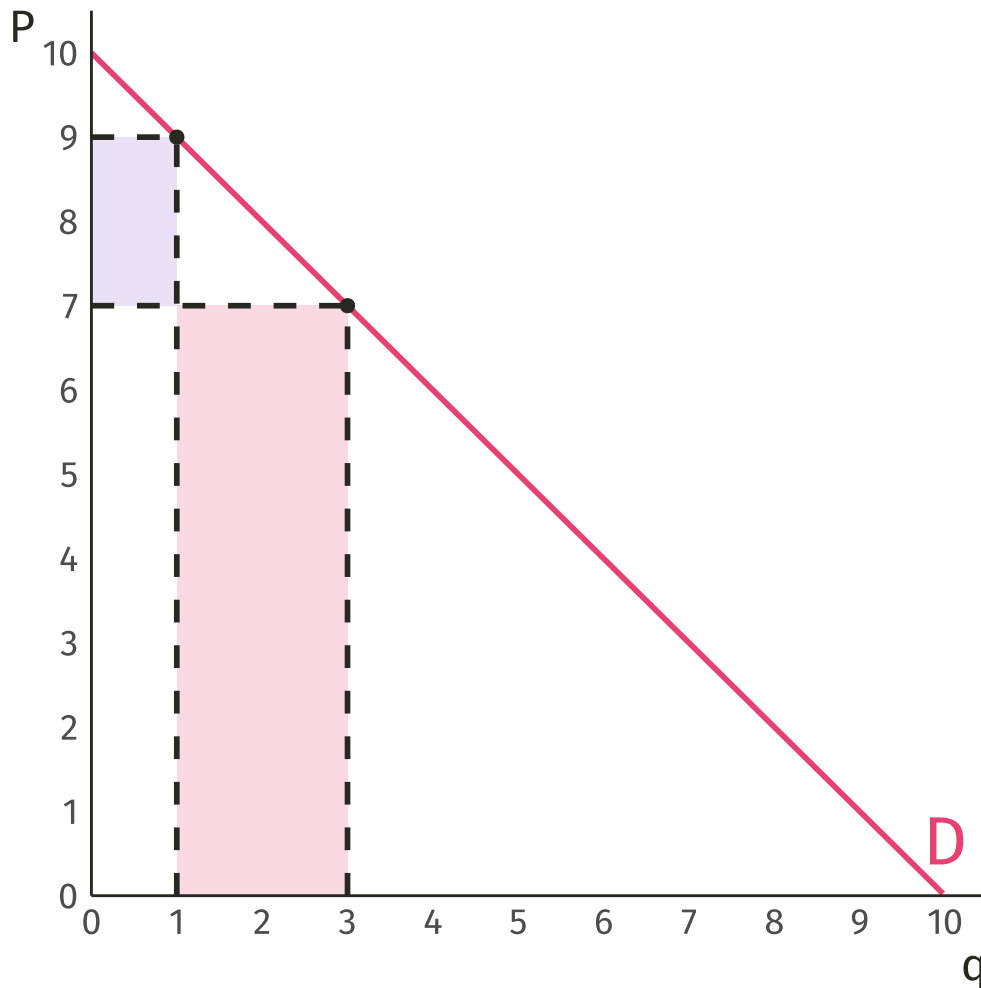
A measure of the responsiveness of quantity demanded to changes in price:

$$\epsilon_d = \frac{\partial Q_d}{\partial P} \frac{P}{Q} \leq 0$$

**Implication:** As quantity demanded increases along a linear demand curve,  $\epsilon_d$  increases toward zero.

- *i.e.*, demand becomes less elastic.
- **Q:** What does this imply about the effect of a price increase on revenue?

# Responsiveness and Revenue

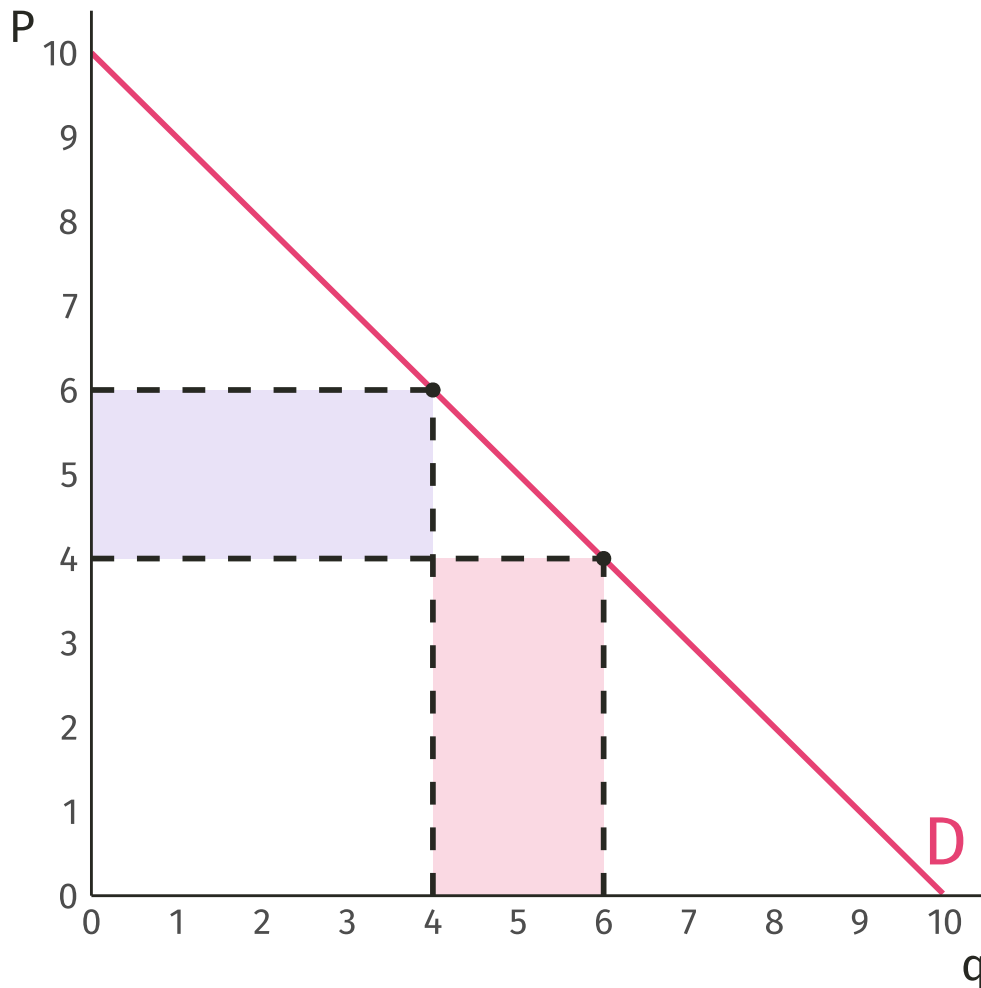


## Elastic Region

Price increase  $\implies$   
**revenue** decreases.

The decrease in  
quantity demanded  
(**revenue lost**)  
outweighs the increase  
in price (**revenue  
gained**).

# Responsiveness and Revenue

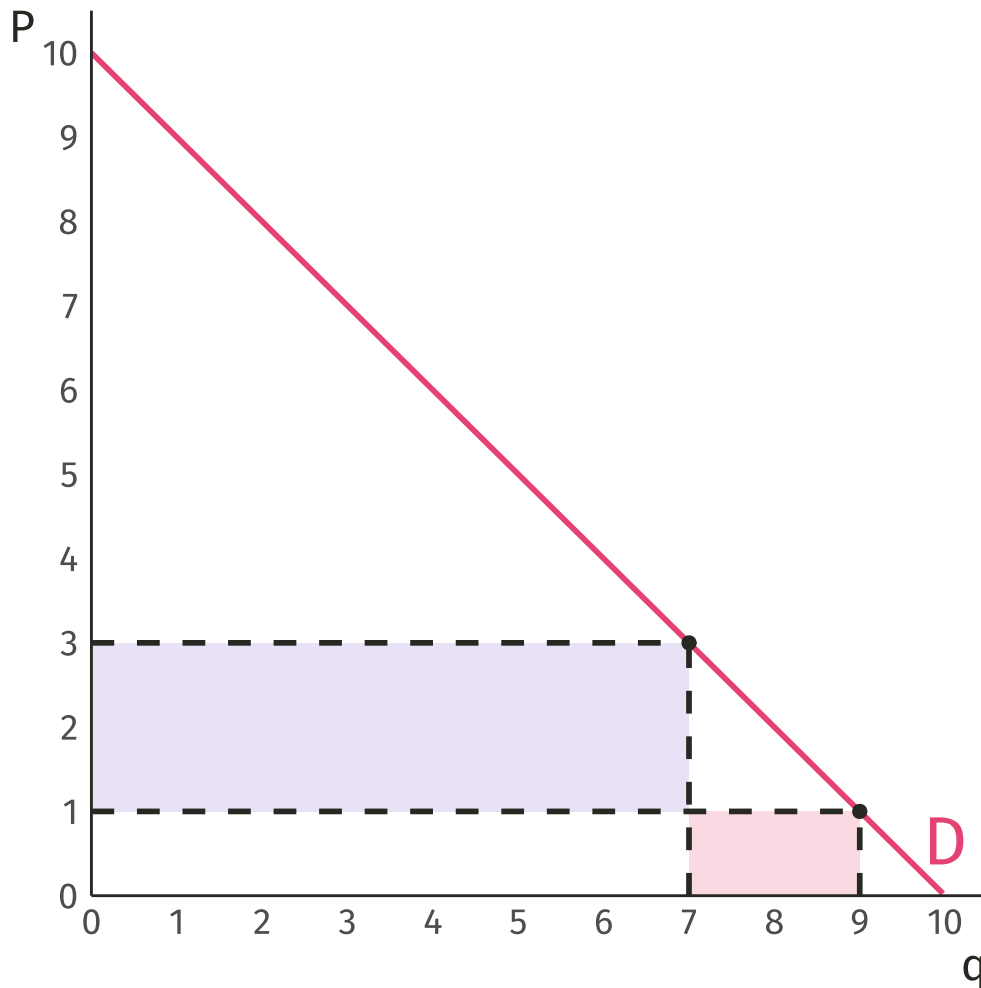


## Unit-Elastic Region

Price increase  $\implies$   
**revenue** does not  
change.

Revenue lost = revenue  
gained.

# Responsiveness and Revenue



## Inelastic Region

Price increase  $\implies$   
**revenue** increases.

The increase in price  
(**revenue gained**)  
outweighs the  
decrease in quantity  
demanded (**revenue  
lost**).

# Policy Effectiveness

**Q:** How might a narcotics bust affect drug-related crime?



**A:** Narcotics supply decreases

→ price of narcotics increases

→ gang revenue increases (inelastic demand)

→ drug-related crime?

# Determinants of Demand



# Determinants of Demand

**Q:** What determines a consumer's demand for a particular product?

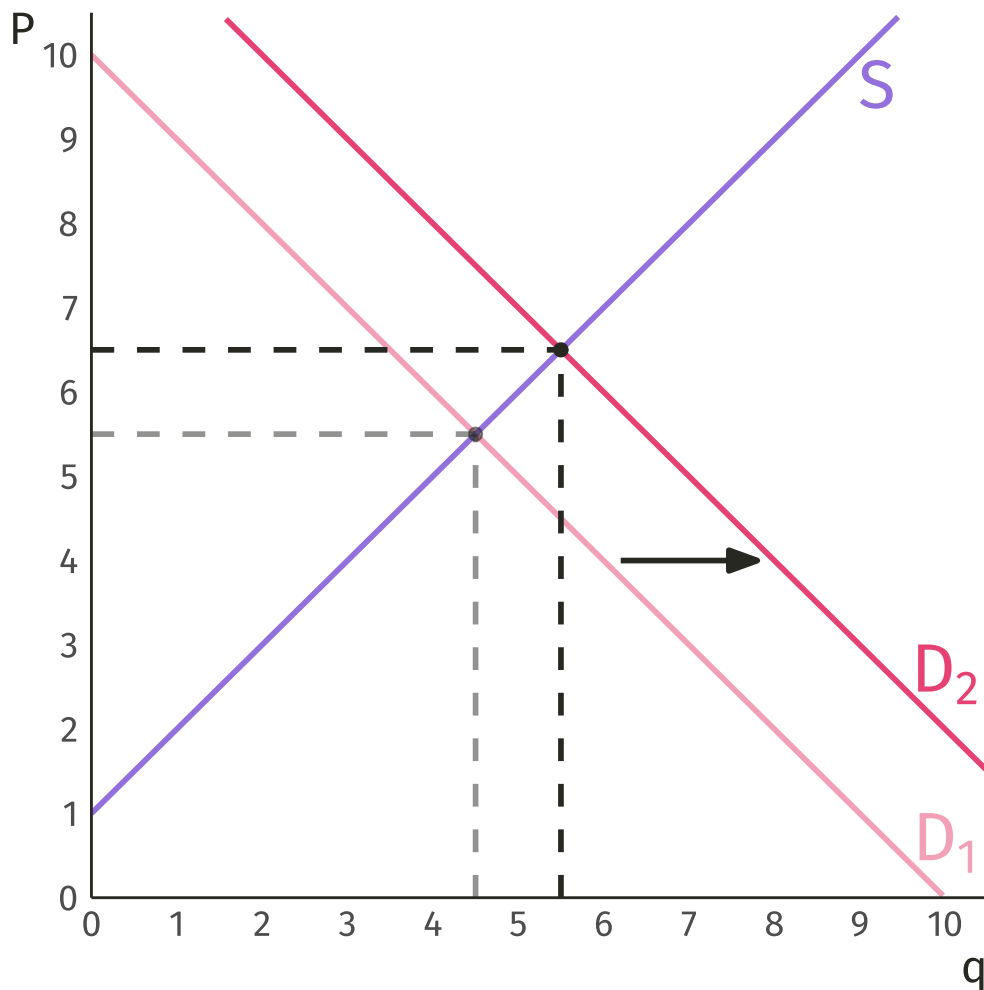
- Income or wealth.
- Prices of related goods.
- Expectations about future prices or future income.
- Tastes.
- Age, health, quality, advertising, cost of maintaining the good, legality of the good, *etc.*

# Determinants of Demand

Income and the prices of other goods have **ambiguous** effects on the demand for a good.

- The demand response to income depends on whether the good is **normal** or **inferior**.
- The demand response to the price of an other good depends on whether the goods are **substitutes** or **complements**.

# Changes in Demand



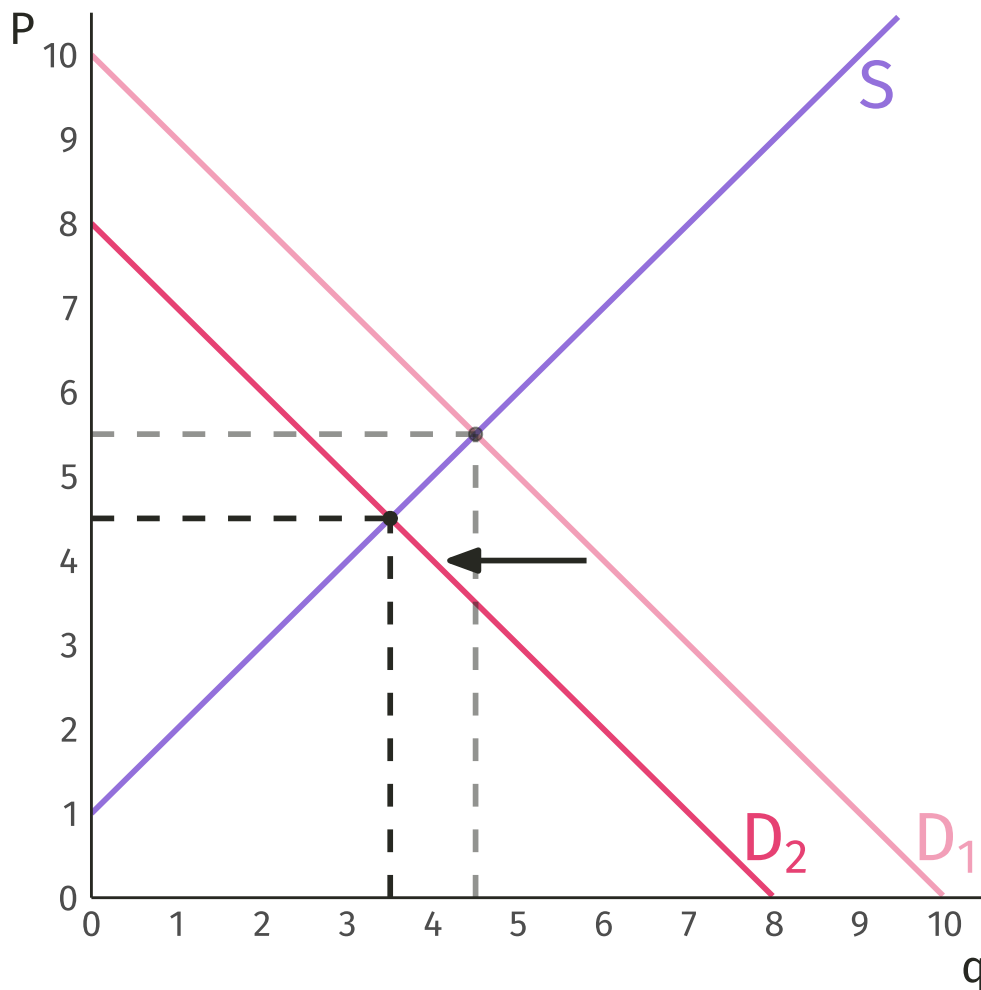
## Demand Increase

At every price, the individual is now willing and able to purchase more units than before.

Equilibrium quantity increases.

Equilibrium price increases.

# Changes in Demand



## Demand Decrease

At every price, the individual is now willing and able to purchase fewer units than before.

Equilibrium quantity decreases.

Equilibrium price decreases.

# Normal Good

## Definition

A good for which demand increases as income increases, *all else being equal*.

## Examples

- Organic food
- Fine dining
- Air travel
- Political donations
- Consumer electronics
- Children?

# Inferior Good

## Definition

A good for which demand decreases as income increases, *all else being equal*.

## Examples

- Top Ramen
- Fast food
- Canned vegetables
- Second-hand furniture
- Public transportation
- Payday loans

# Substitutes

## Definition

Two goods for which the demand of one good increases as the price of the other good increases, *all else being equal*.

## Examples

- Uber  $\longleftrightarrow$  traditional taxis
- Levi jeans  $\longleftrightarrow$  Wrangler jeans
- MacBook Pro  $\longleftrightarrow$  Microsoft Surface Pro
- Honda CRV  $\longleftrightarrow$  Toyota RAV4
- Pepsi  $\longleftrightarrow$  Coca-Cola
- Small coffee  $\longleftrightarrow$  Large coffee

# Complements

## Definition

Two goods for which the demand of one good decreases as the price of the other good increases, *all else being equal*.

## Examples

- Peanut butter  $\longleftrightarrow$  jelly
- Flexible work  $\longleftrightarrow$  school
- Gasoline  $\longleftrightarrow$  giant, gas-guzzling SUVs
- Paper  $\longleftrightarrow$  pencils
- Wine  $\longleftrightarrow$  cheese
- Coffee  $\longleftrightarrow$  milk



# Shipping the Good Apples Out

# Shipping the Good Apples Out

**Q:** Why do grocery stores in apple-importing areas have a higher proportion of **high-quality apples** (🍏) to **low-quality apples** (🍎) than stores in apple-growing areas?

**Q:** If we add a fixed transportation cost,  $t$ , to the existing prices of two goods, what happens to their *relative* prices?

	$t = 0$	$t = 1$	$t = 2$	$t = 3$
Price of 🍏	4	5	6	7
Price of 🍎	2	3	4	5
Ratio of prices	2:1	1.7:1	1.5:1	1.4:1

# Shipping the Good Apples Out

**Q:** Why do grocery stores in apple-importing areas have a higher proportion of **high-quality apples** (🍏) to **low-quality apples** (🍎) than stores in apple-growing areas?

**A:** If 🍏 are *relatively* cheaper in Phoenix, then *relative* demand for 🍏 in Phoenix should be greater.

- An apple grower in Yakima will want to ship 🍏 to Phoenix and stock local fruit stands with 🍎.

We observe similar patterns in other markets, too.

- Christmas trees
- Wine
- Beef
- Avocados

**Q:** Why is a couple more likely to go out for dinner and a concert than run errands when they pay a babysitter to watch their children?

**A:** The added fixed cost of babysitting lowers the price of more-expensive activities *relative* to less-expensive activities.

**Q:** In the early 1990s, Singapore imposed extensive automobile taxes to combat road congestion. The new taxes had the effect of driving up the price of low-cost cars proportionately more than the price of expensive cars. **What do you predict about new car sales?**

**A:** Mercedes-Benz models became the best-selling new cars in Singapore.

**Q:** Suppose that a choice seat at a college football game costs \$40 while a standard seat costs \$20. There are local fans and traveling fans. **Who sits where?**

**A:** *All else equal, the traveling fan is more likely to purchase a choice seat.*

- To a local fan, choice seat is twice as expensive.
- To the fan who spends \$80 to travel 300 miles to the game, choice seat is only 20% more expensive overall (\$120 vs. \$100).
- If relative price of choice-seat package is lower for traveling fan, then relative demand should be higher.

*There is documented evidence that fans who travel the farthest buy the best seats.*

**Q:** If the Ducks' offense averages 5 yards per running play and 4 yards per passing play, then the team will tend to run more often than pass. **Should the offense run more or pass more when it rains?**<sup>†</sup>

- Suppose that rainfall decreases average yardage for both running and passing plays by 2 yards.

**A:** The offense should run even more when it rains.

- Although running still has the same 1-yard advantage (3 vs. 2 yards per play), the *relative* advantage increases in the rain.
- Running is 25 percent more productive in dry conditions, but 50 percent more productive in wet conditions.

<sup>†</sup>: Obviously not an issue in Autzen Stadium.

# Practice



**Q:** What changes would you expect in the market for cigarettes when a state raises the minimum age for tobacco purchases from 18 to 21?

**A.** The equilibrium quantity of cigarettes should increase and their price should also increase.

**B.** The equilibrium quantity of cigarettes should increase and their price should decrease.

**C.** The equilibrium quantity of cigarettes should decrease and their price should also decrease.

**D.** The equilibrium quantity of cigarettes should decrease and their price should increase.

**Q:** What will happen to the market equilibrium of Netflix subscriptions when the price of a Hulu subscription increases?

- A.** The price will go up and the quantity will fall.
- B.** The price will go up and the quantity will rise.
- C.** The price will go down and the quantity will fall.
- D.** The price will go down and the quantity will rise.