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 $1 is one 45$^{\text{th}}$ 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 $1 increases to one 30$^{\text{th}}$ of a unit of x.

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

- **A$_1$:** The price of money falls in terms of good x.

- **A$_2$:** 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.
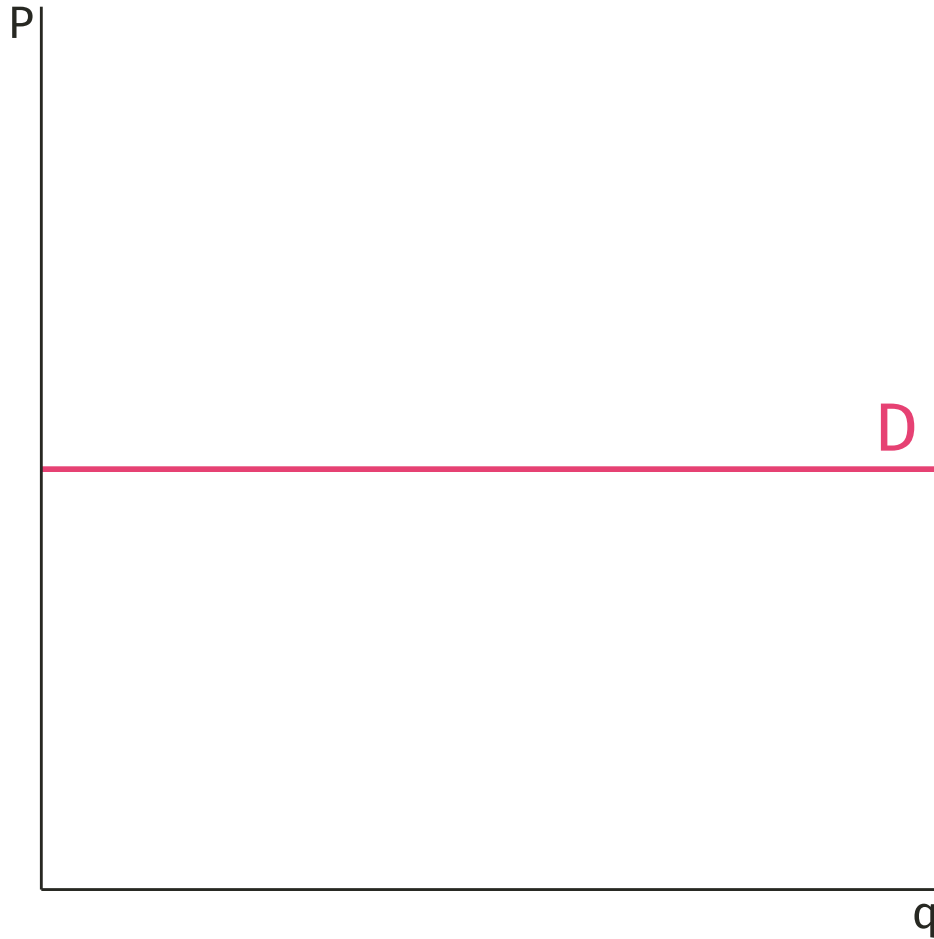
Price Elasticity of Demand

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 ϵ_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.
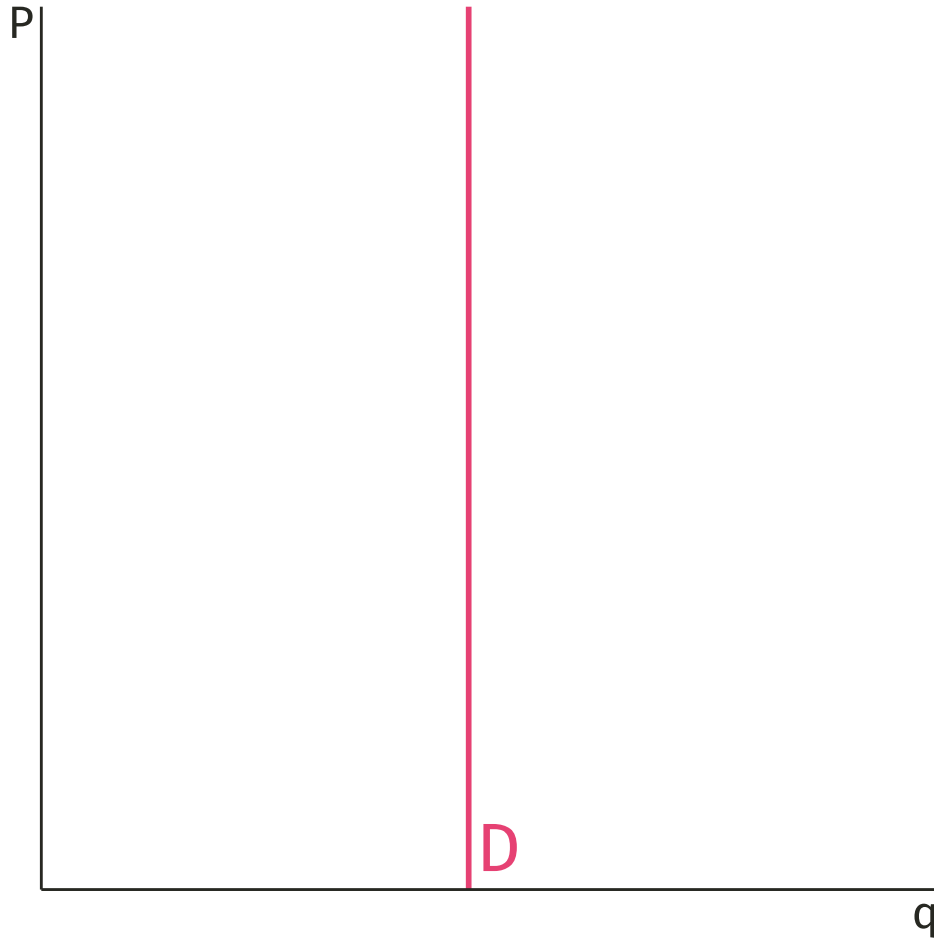
Price Elasticity of Demand

Perfectly Elastic Demand

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

$$\epsilon_d \to -\infty$$

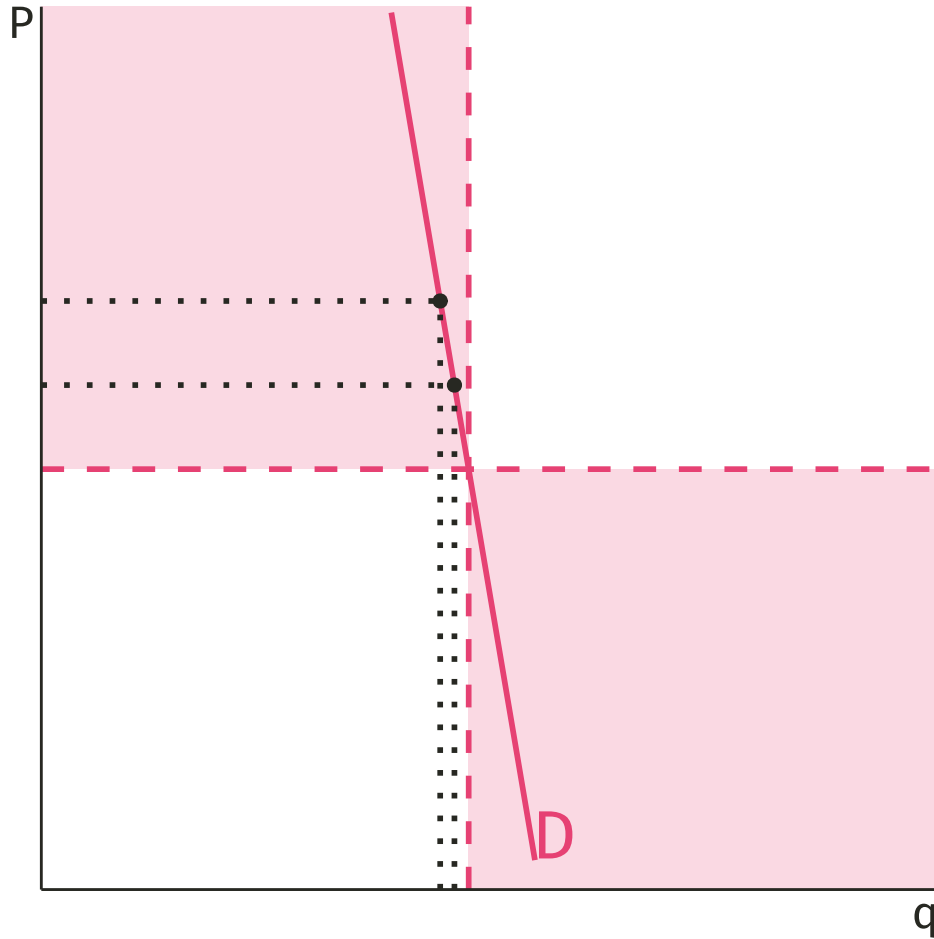# Price Elasticity of Demand

P

D

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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 ϵ_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.

1. Fraction of income spent on the good.

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

1. Time.

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

Real-World Price Sensitivity

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

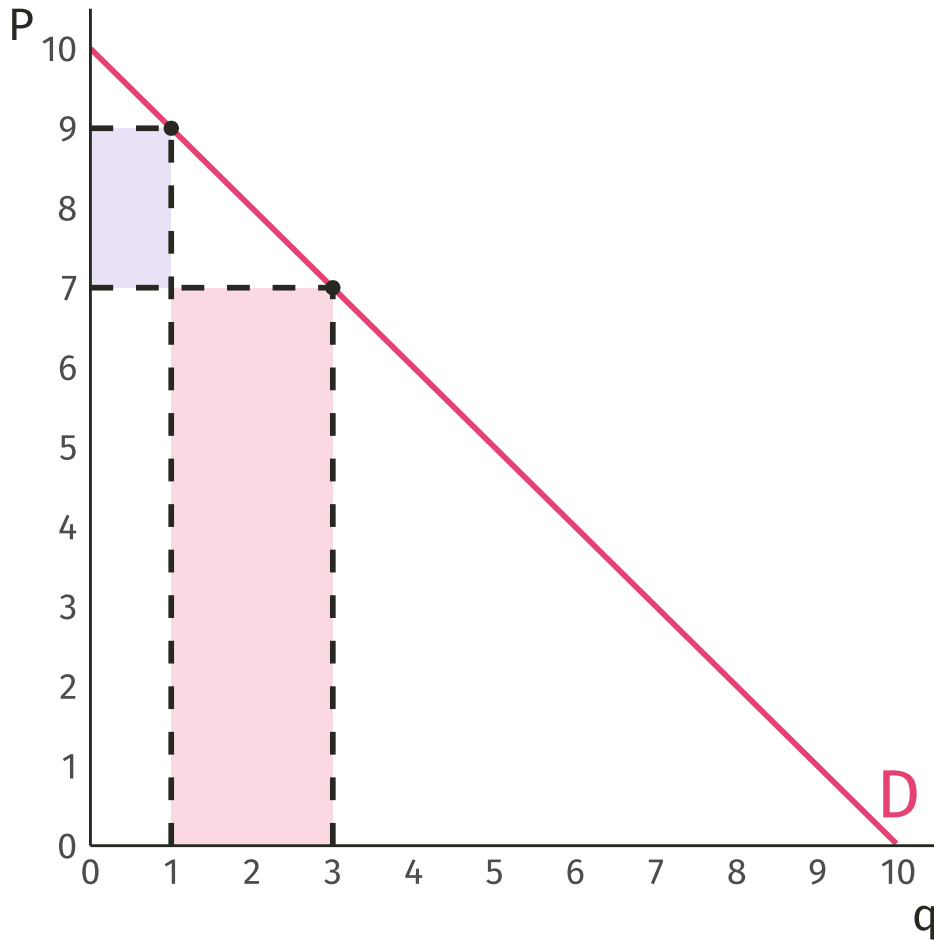# Price Elasticity of Demand

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, ϵ_d increases toward zero.

- *i.e.,* demand becomes less elastic.

- **Q:** What does this imply about the effect of a price increase on revenue?
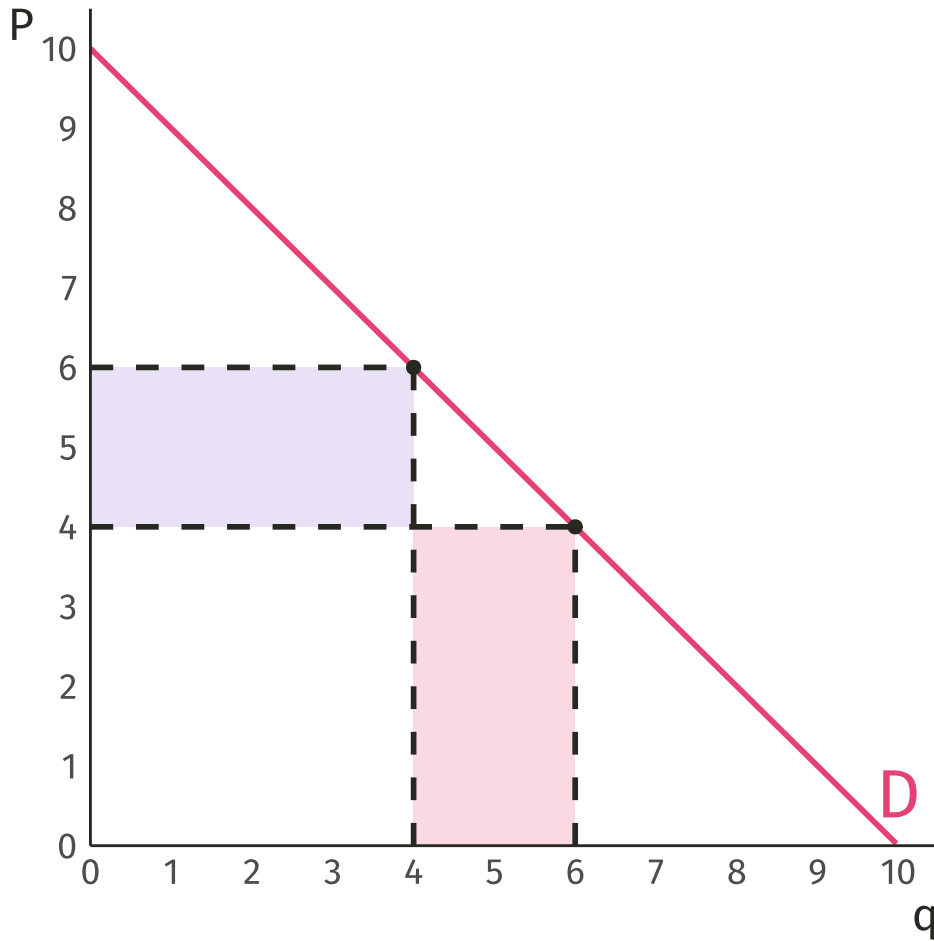
Responsiveness and Revenue

Elastic Region

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

The decrease in quantity demanded (revenue lost) outweighs the increase in price (revenue gained).
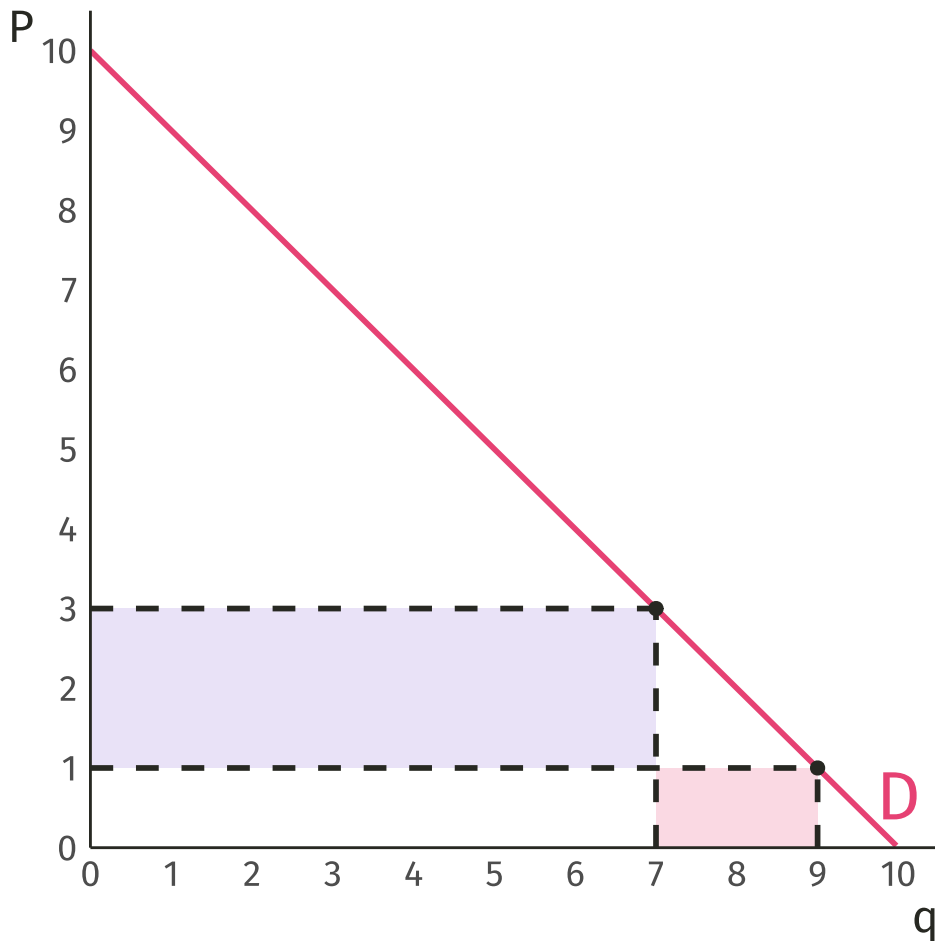
Responsiveness and Revenue

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**.
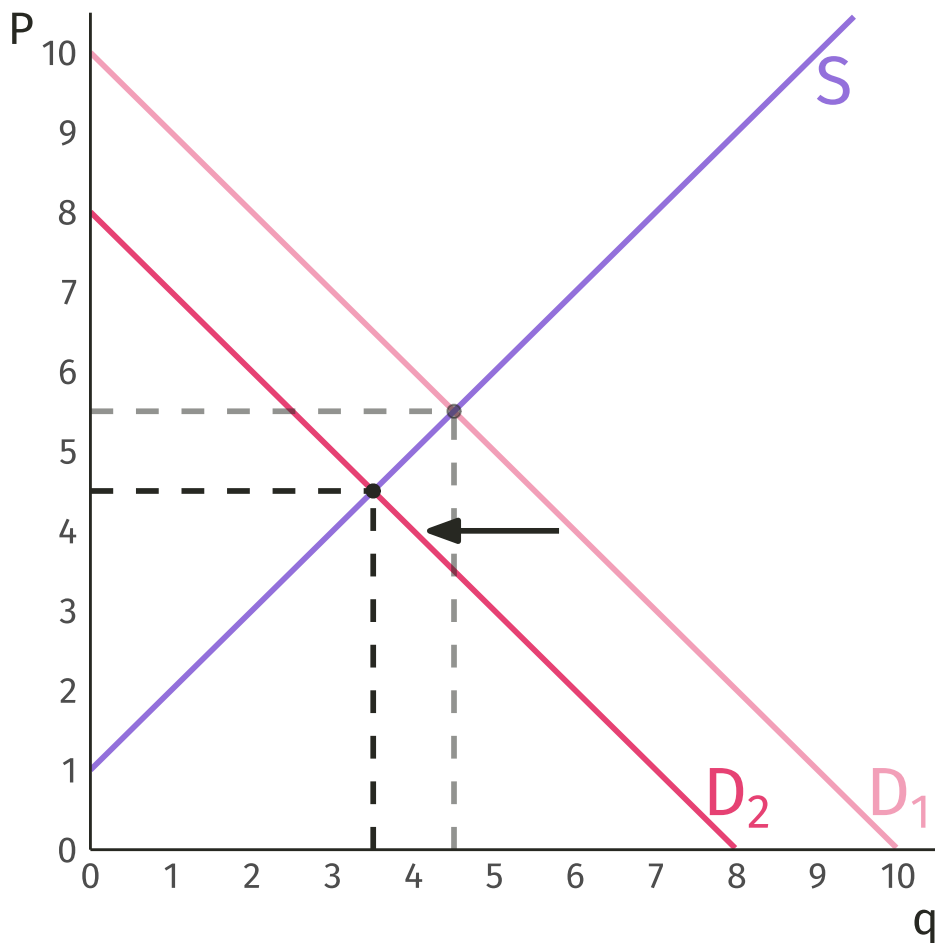
Changes in Demand
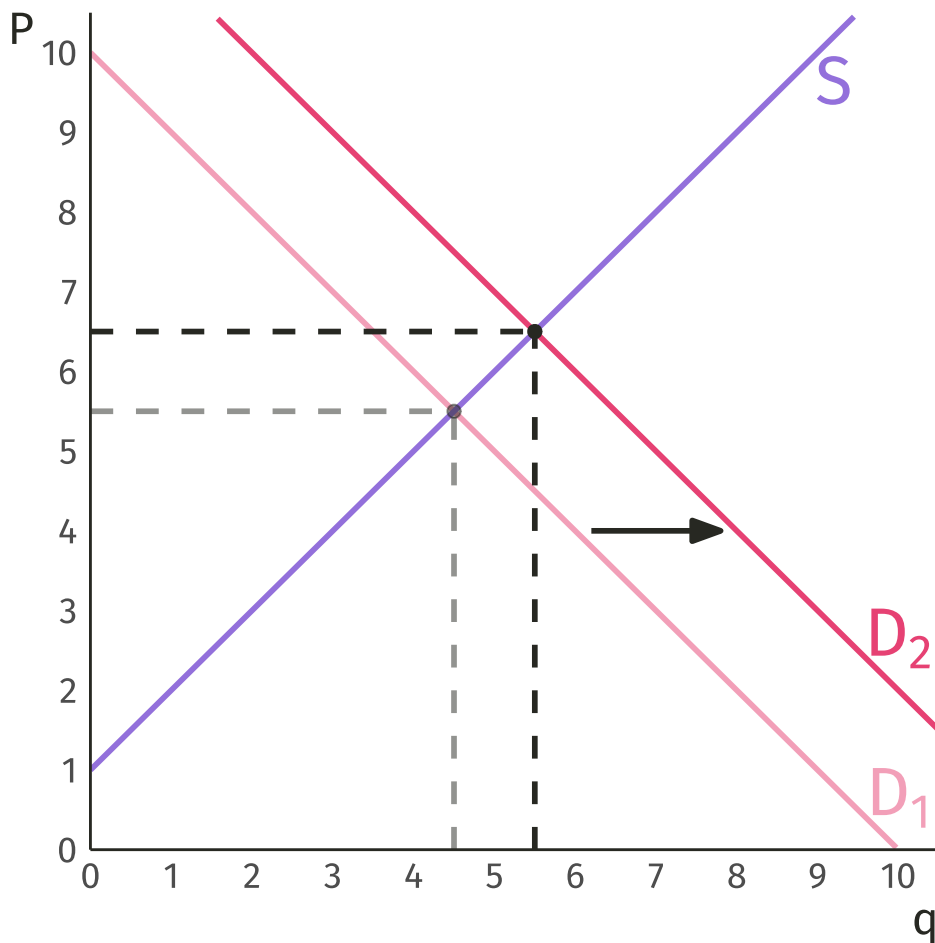
Demand Increase

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 ⟷ traditional taxis
- Levi jeans ⟷ Wrangler jeans
- MacBook Pro ⟷ Microsoft Surface Pro
- Honda CRV ⟷ Toyota RAV4
- Pepsi ⟷ Coca-Cola
- Small coffee ⟷ 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 ⟷ jelly
- Flexible work ⟷ school
- Gasoline ⟷ giant, gas-guzzling SUVs
- Paper ⟷ pencils
- Wine ⟷ cheese
- Coffee ⟷ 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, *etc.*

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?**[†]

- 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.

[†]: 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.