



# The Science of Macroeconomics

Modified by  
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Presentation Slides

# Macroeconomics

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# IN THIS CHAPTER, YOU WILL LEARN:



About the issues  
macroeconomists study

About the tools  
macroeconomists use

Some important concepts in  
macroeconomic analysis

# Important issues in macroeconomics Part 1

**Macroeconomics**—the study of the economy as a whole—addresses many topical issues, such as:

What causes recessions? What is “government stimulus,” and why might it help?

How can problems in the housing market spread to the rest of the economy?

What is the government budget deficit? How does it affect workers, consumers, businesses, and taxpayers?

## Important issues in macroeconomics Part 2

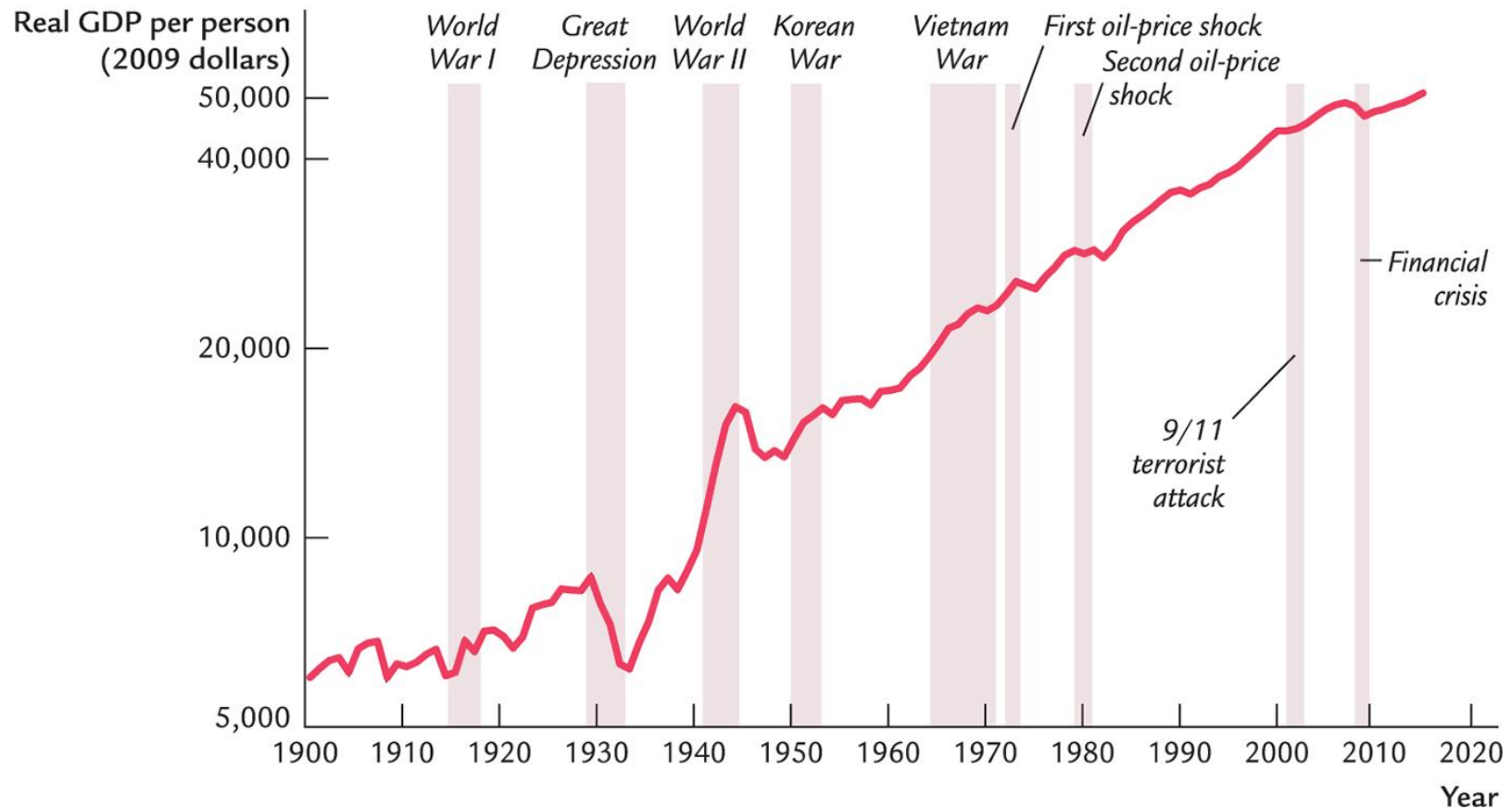
**Macroeconomics**—the study of the economy as a whole—addresses many topical issues, such as:

Why does the cost of living keep rising?

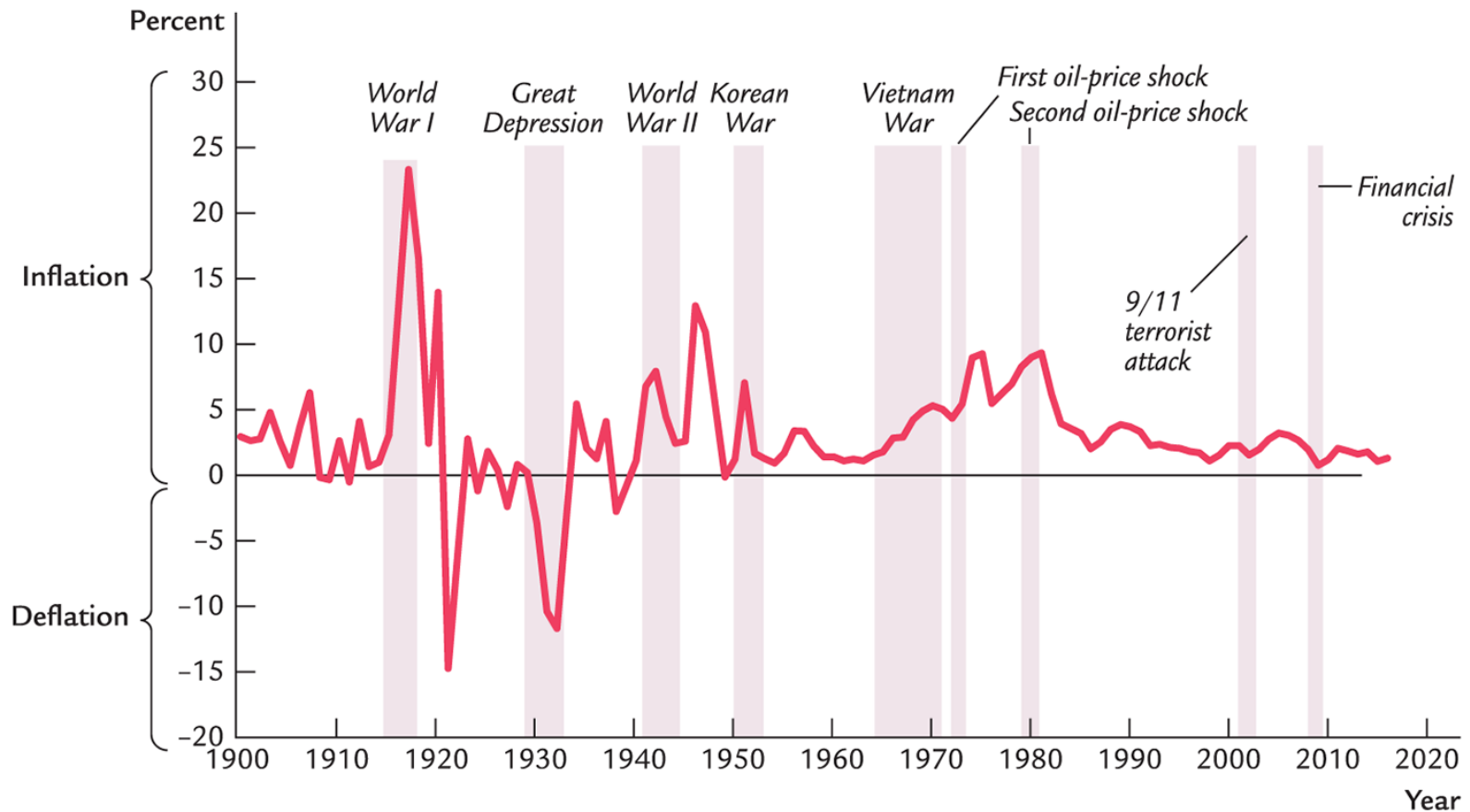
Why are so many countries poor? What policies might help them grow out of poverty?

What is the trade deficit? How does it affect a country's well-being?

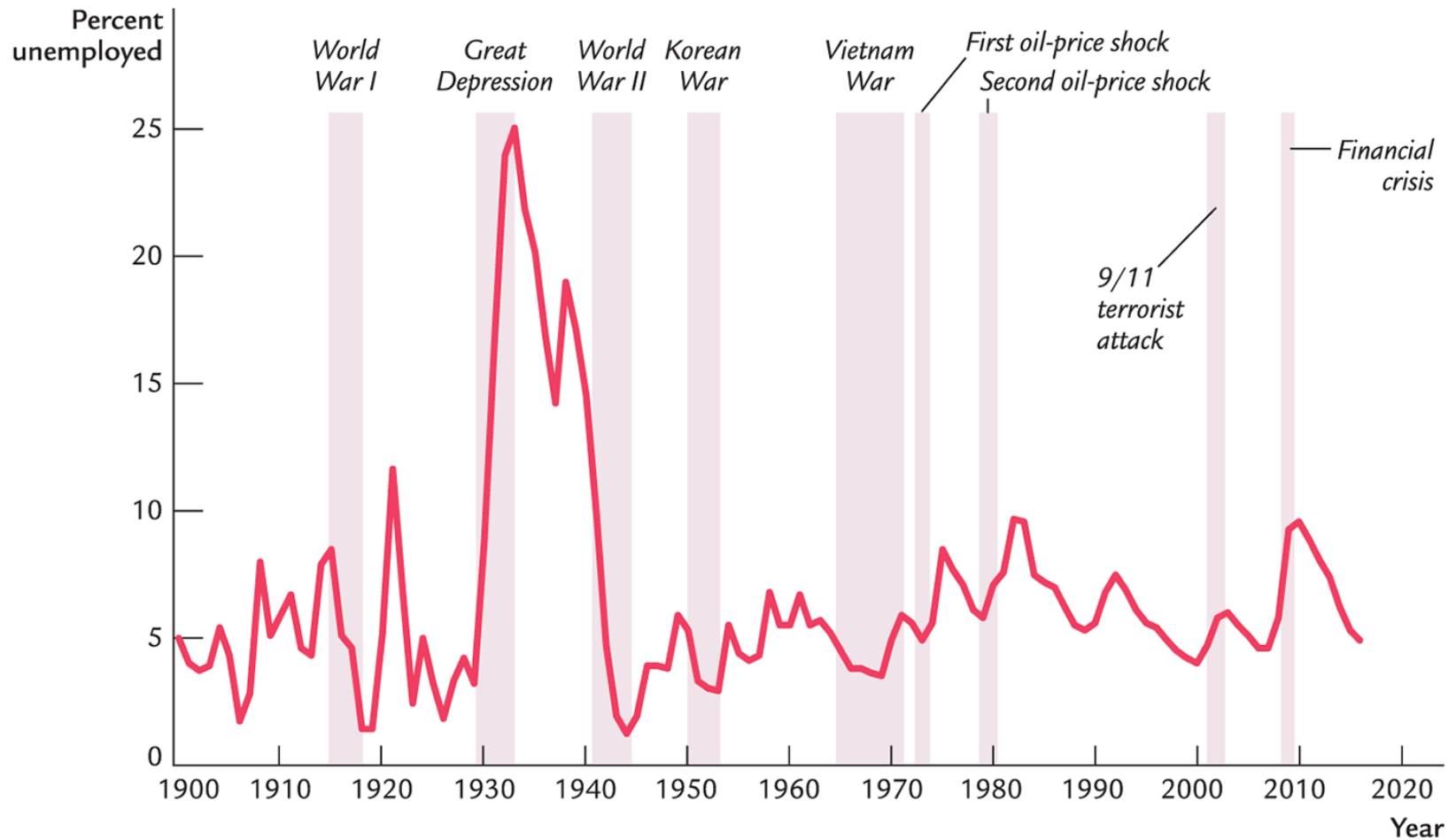
# U.S. real GDP per capita (2009 dollars) (1 of 2)



# U.S. real GDP per capita (2009 dollars) (2 of 2)



# U.S. unemployment rate (% of labor force)



# Economic models

## **Models represent:**

simplified versions of more complex realities  
with irrelevant details stripped away

## **Models are used to:**

show relationships between variables  
explain the economy's behavior  
devise policies to improve economic performance



## Example of a model: Supply and demand for new cars

Shows how various events affect the price and quantity of cars

Assumes the market is competitive: each buyer and seller is too small to affect the market price

### Variables

$Q^d$  = quantity of cars that buyers demand

$Q^s$  = quantity of cars that producers supply

$P$  = price of new cars

$Y$  = aggregate income

$P_s$  = price of steel (an input)

# The demand for cars

Demand equation:  $Q^d = D(P, Y)$

Shows that the quantity of cars consumers demand is related to the price of cars and aggregate income

## Digression: Functional notation

### General functional notation

shows only that the variables are related.

$$Q^d = D(P, Y)$$

A list of the  
variables  
that affect  $Q^d$

A **specific functional form** shows the precise quantitative relationship.

Example:

$$D(P, Y) = 60 - 10P + 2Y$$

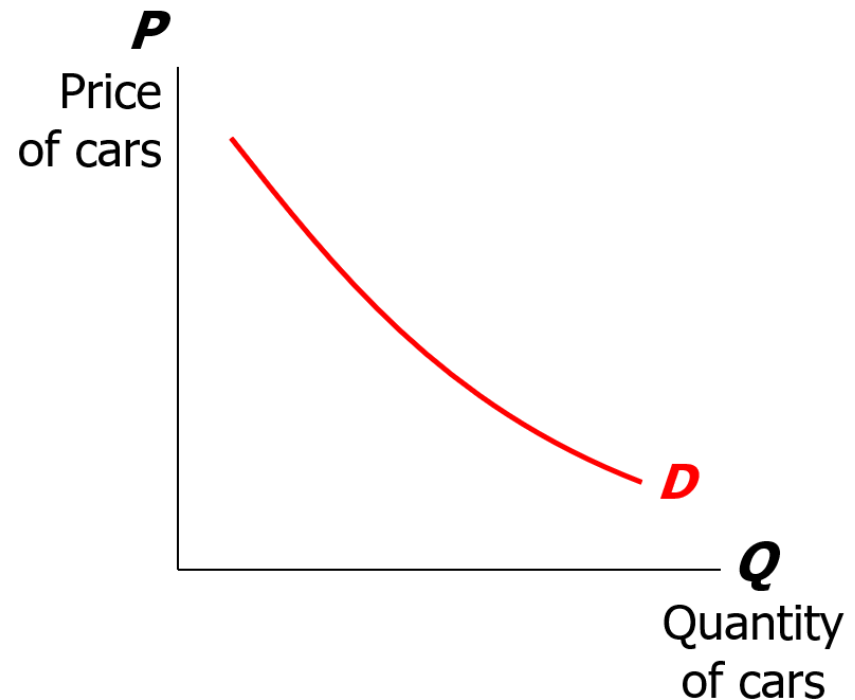
# The market for cars: Demand

Demand equation:

$$Q^d = D(P, Y)$$

-    +

The **demand curve** shows the relationship between quantity demanded and price, other things equal.



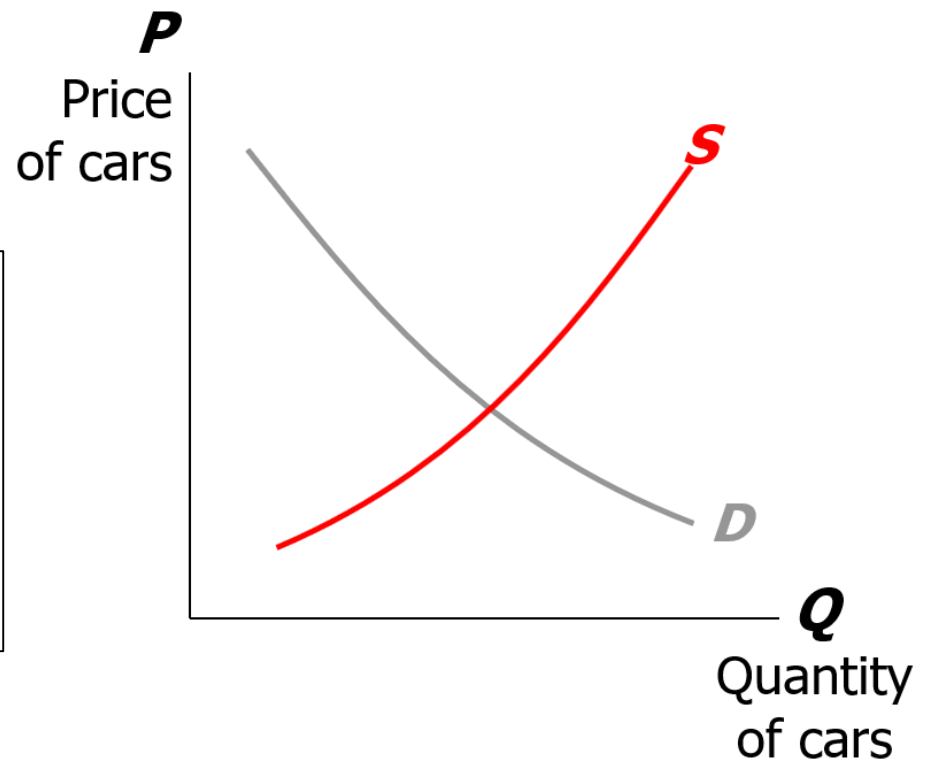
# The market for cars: Supply

Supply equation:

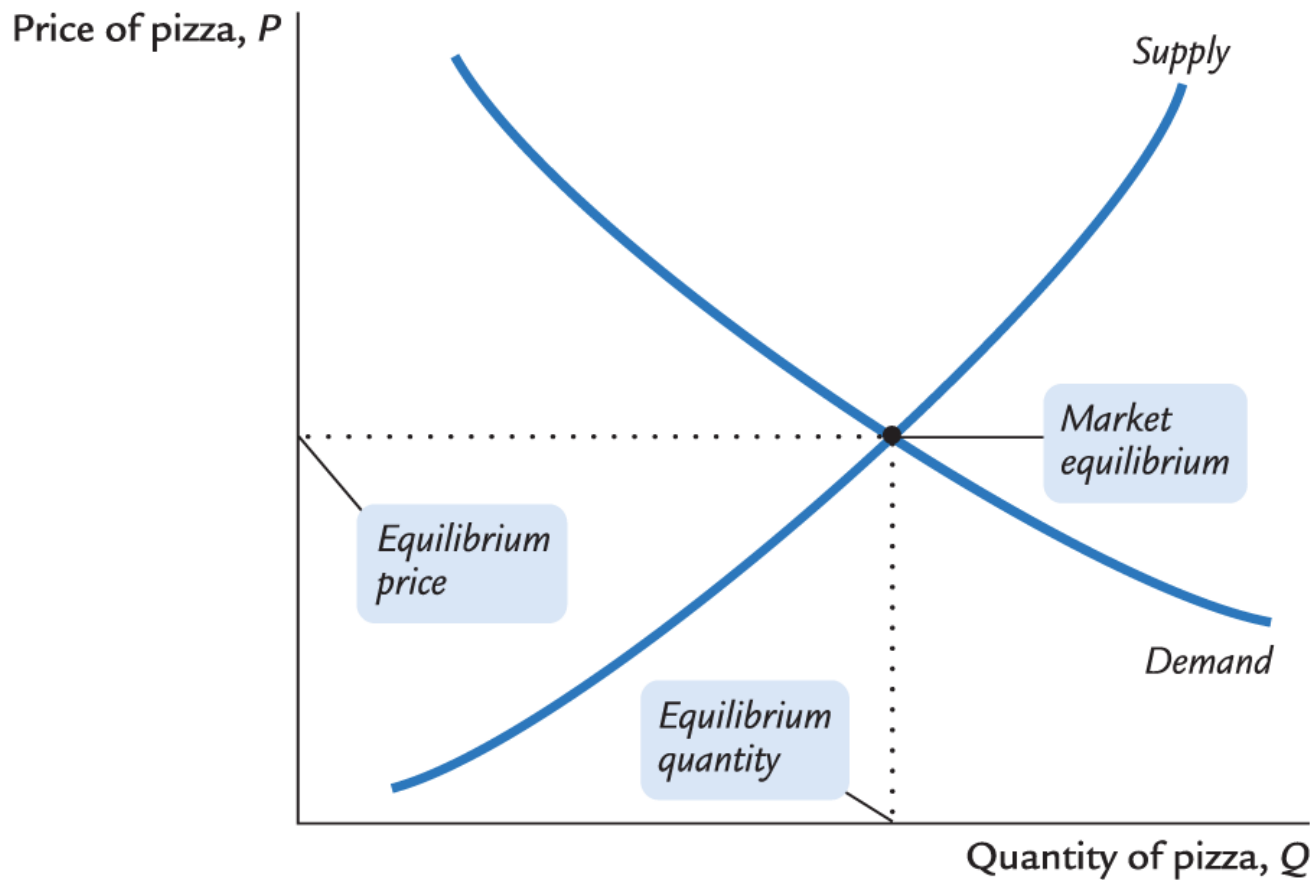
$$Q^s = S(P, P_s)$$

+      -

The **supply curve** shows the relationship between quantity supplied and price, other things equal.



# The market for cars: **Equilibrium**



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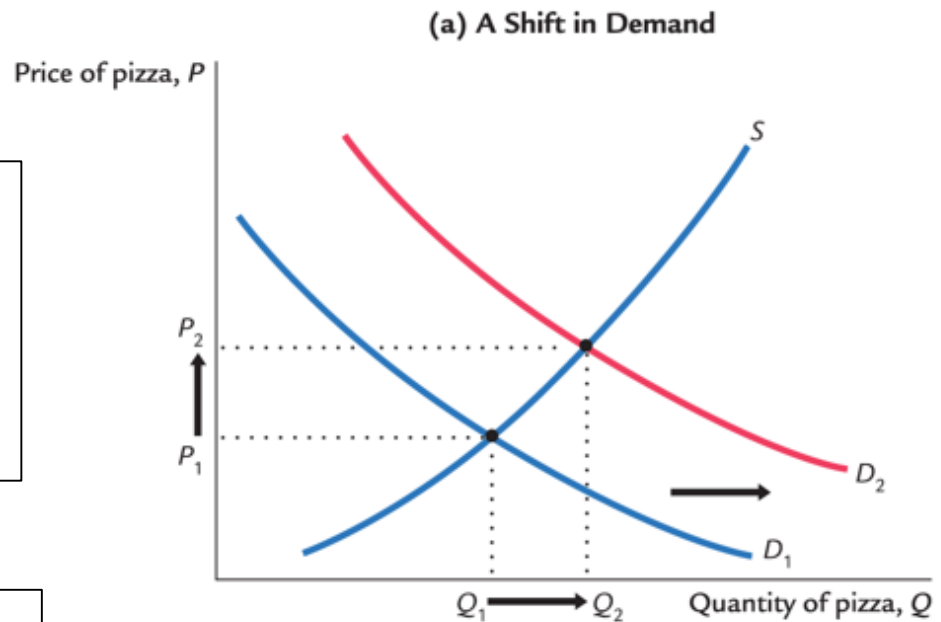
# The effects of an increase in income

Demand equation:

$$Q^d = D(P, Y)$$

An increase in income increases the quantity of cars consumers demand at each price...

...which increases the equilibrium price and quantity.



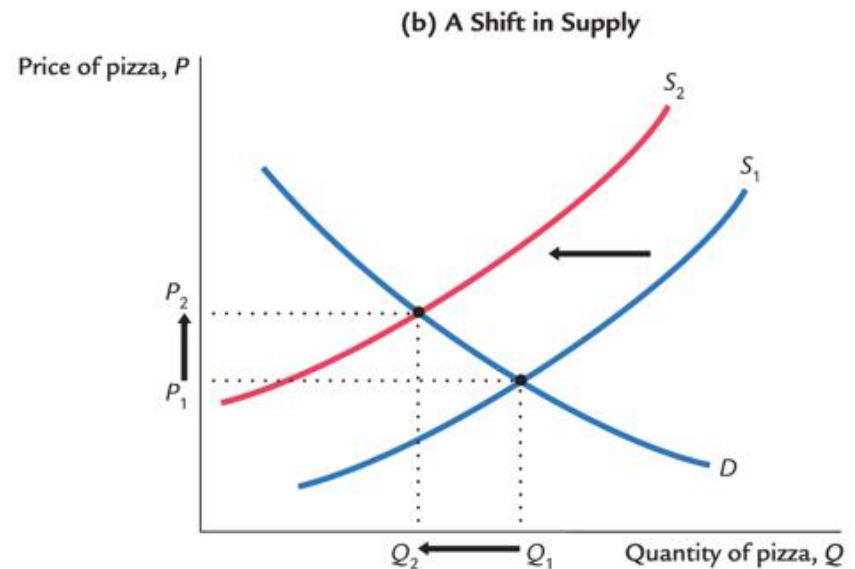
# The effects of a steel price increase

Supply equation:

$$Q^s = S(P, P_s)$$

An increase in  $P_s$  reduces the quantity of cars producers supply at each price...

...which increases the market price and reduces the quantity.



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# Endogenous vs. exogenous variables

The values of **endogenous variables** are determined in the model.

The values of **exogenous variables** are determined outside the model: the model takes their values and behaviors as given.

In the model of supply and demand for cars,

endogenous variables: ? ? ?

exogenous variables: ? ?

# Endogenous vs. exogenous variables

In the model of supply and demand for cars:

endogenous variables:  $P$ ,  $Q^d$ ,  $Q^s$

exogenous variables:  $Y$ ,  $P_s$

# NOW YOU TRY

## Supply and demand

1. Write down demand and supply equations for smartphones, include two exogenous variables in each equation.
2. Draw a supply–demand graph for smartphones and identify the equilibrium price and quantity.
3. Use your graph to show how a change in one of your exogenous variables affects the model's endogenous variables.

# The use of multiple models, part 1

No single model can address all the issues we care about.

For example, our supply–demand model of the car market...

- *can* tell us how a fall in aggregate income affects price and quantity of cars
- *cannot* tell us *why* aggregate income falls

## The use of multiple models, part 2

We will learn different models for studying different issues (e.g., unemployment, inflation, long-run growth).

For each new model, you should keep track of:

- its assumptions
- which variables are endogenous and which are exogenous
- the questions it can help us understand and those it cannot

# Prices: Flexible vs. sticky, part 1

**Market clearing:** An assumption that prices are flexible and adjust to equate supply and demand.

In the short run, many prices are **sticky**—adjust sluggishly in response to changes in supply or demand. For example:

- many labor contracts fix the nominal wage for a year or longer
- many magazine publishers change prices only once every 3 to 4 years

## Prices: Flexible vs. sticky, part 2

The economy's behavior depends partly on whether prices are sticky or flexible:

- If prices are sticky (short run), demand may not equal supply, which explains:
  - unemployment (excess supply of labor)
  - why firms cannot always sell all the goods they produce
- If prices are flexible (long run), markets clear, and the economy behaves very differently.

## Outline of this book (1 of 2)

**Introductory material (Chapters 1, 2)**

**Classical theory (Chapters 3–7)**

How the economy works in the long run, when prices are flexible

**Growth theory (Chapters 8, 9)**

The standard of living and its growth rate over the very long run

**Business cycle theory (Chapters 10–14)**

How the economy works in the short run, when prices are sticky



## Outline of this book (2 of 2)

### **Macroeconomic theory (Chapters 15–17)**

Macroeconomic dynamics, models of consumer behavior, theories of firms' investment decisions

### **Macroeconomic policy (Chapters 18–19)**

Stabilization policy, government debt and deficits, financial crises

# CHAPTER SUMMARY, PART 1

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Macroeconomics is the study of the economy as a whole, including

- growth in incomes
- changes in the overall level of prices
- the unemployment rate

Macroeconomists attempt to explain the economy and to devise policies to improve its performance.

## CHAPTER SUMMARY, PART 2

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Economists use different models to examine different issues.

Models with flexible prices describe the economy in the long run; models with sticky prices describe the economy in the short run.

Macroeconomic events and performance arise from many microeconomic transactions, so macroeconomics uses many of the tools of microeconomics.