1. Modeling Issues

Based on Mankiw, Chapter 1: *The Science of Macroeconomics*

Attila Gyetvai | University of Florida, Department of Economics

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?

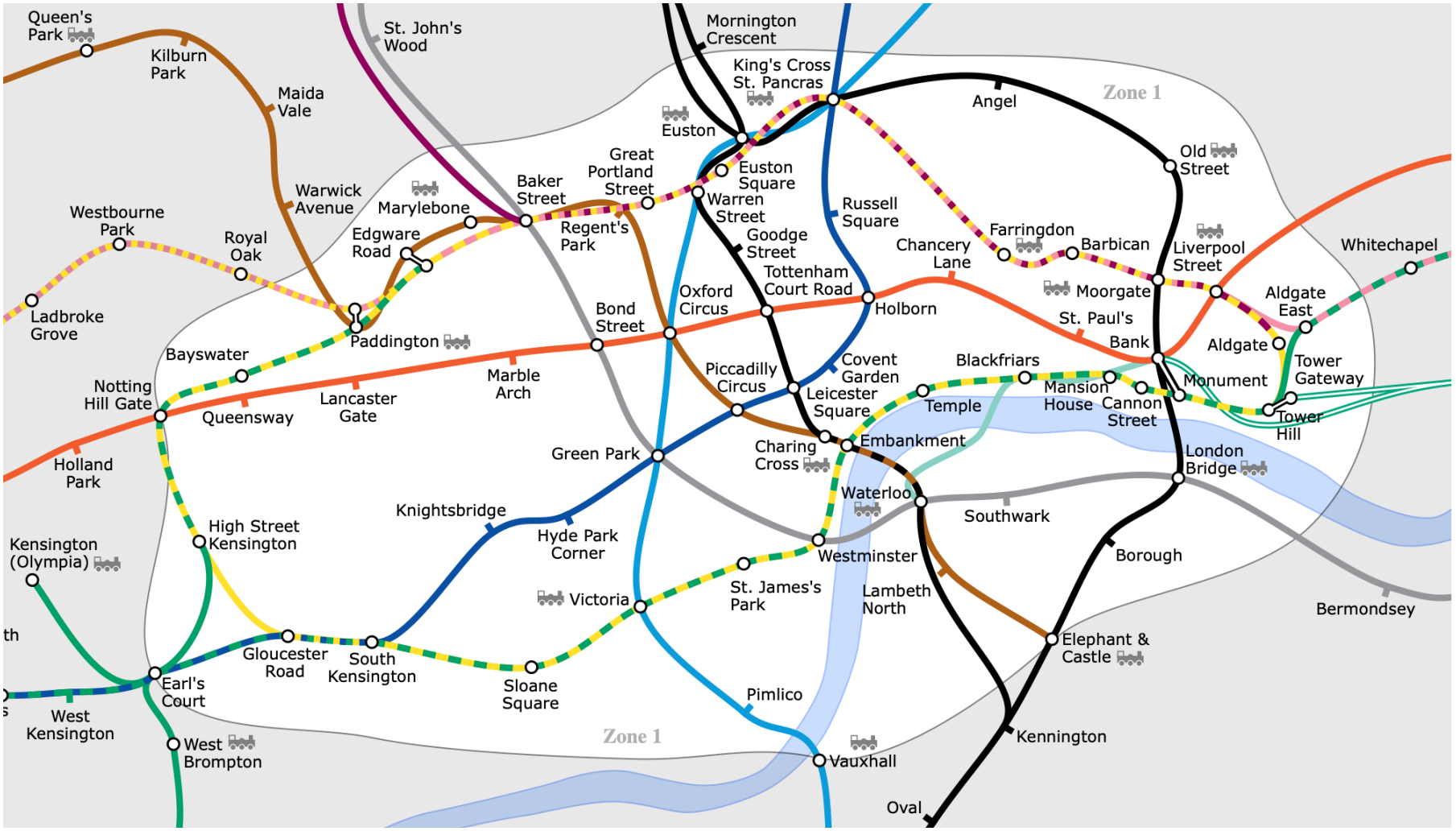
How can problems in the housing market spread to the rest of the economy?

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

…

Economic models

…are simplified versions of more complex realities with irrelevant details stripped away.


Queen's Park
Kilburn Park
Maida Vale
St. John's Wood
Mornington Crescent
King's Cross St. Pancras
Zone 1
Angel
Euston
Old Street
Great Portland Street
Euston Square
Warwick Avenue
Marylebone
Baker Street
Warren Street
Russell Square
Westbourne Park
Royal Oak
Edgware Road
Regent's Park
Goodge Street
Farringdon
Barbican
Liverpool Street
Whitechapel
Chancery Lane
Tottenham Court Road
Moorgate
Aldgate East
Ladbroke Grove
Oxford Circus
Holborn
St. Paul's
Bond Street
Paddington
Bank
Aldgate
Tower Gateway
Bayswater
Piccadilly Circus
Covent Garden
Blackfriars
Monument
Notting Hill Gate
Marble Arch
Mansion House
Cannon Street
Queensway
Lancaster Gate
Leicester Square
Temple
Tower Hill
Holland Park
Green Park
Charing Cross
Embankment
London Bridge
Knightsbridge
Waterloo
High Street Kensington
Hyde Park Corner
Southwark
Kensington (Olympia)
Westminster
Borough
Victoria
St. James's Park
Lambeth North
Bermondsey
Gloucester Road
South Kensington
Elephant & Castle
Earl's Court
Sloane Square
Pimlico
West Kensington
West Brompton
Zone 1
Kennington
Vauxhall
Oval

Economic models

…are simplified versions of more complex realities
with irrelevant details stripped away.

…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: $Q^d = D(P, Y)$

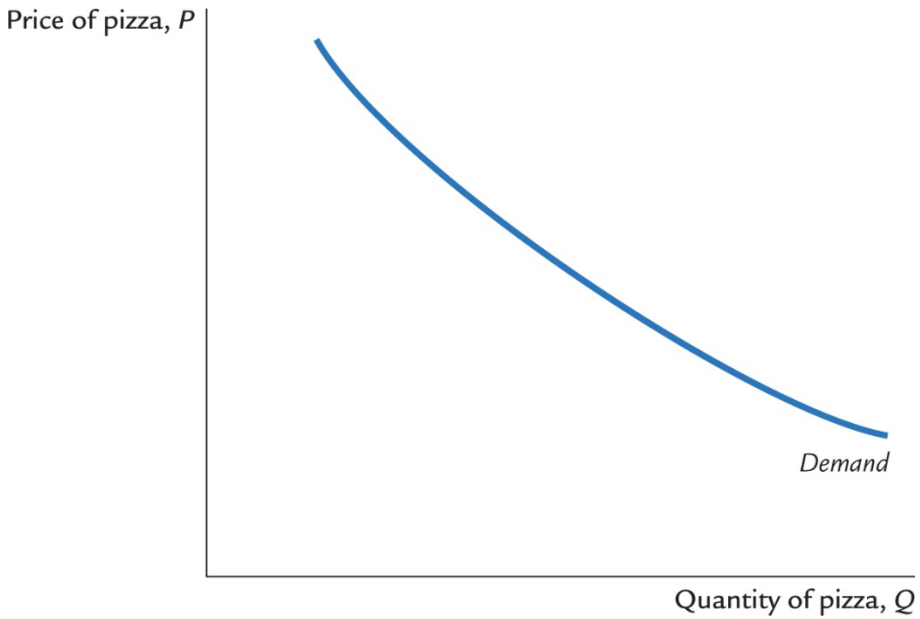
Shows that the quantity of cars consumers demand is related to the price of cars (***P***) and aggregate income (***Y***)

The market for pizza: Demand

Demand equation:

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

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

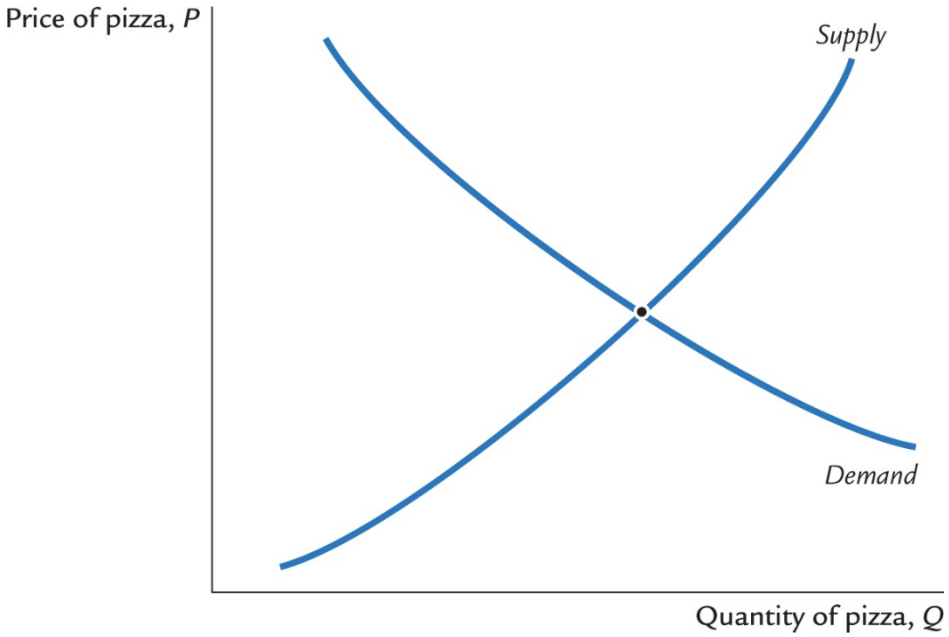


The market for pizza: Supply

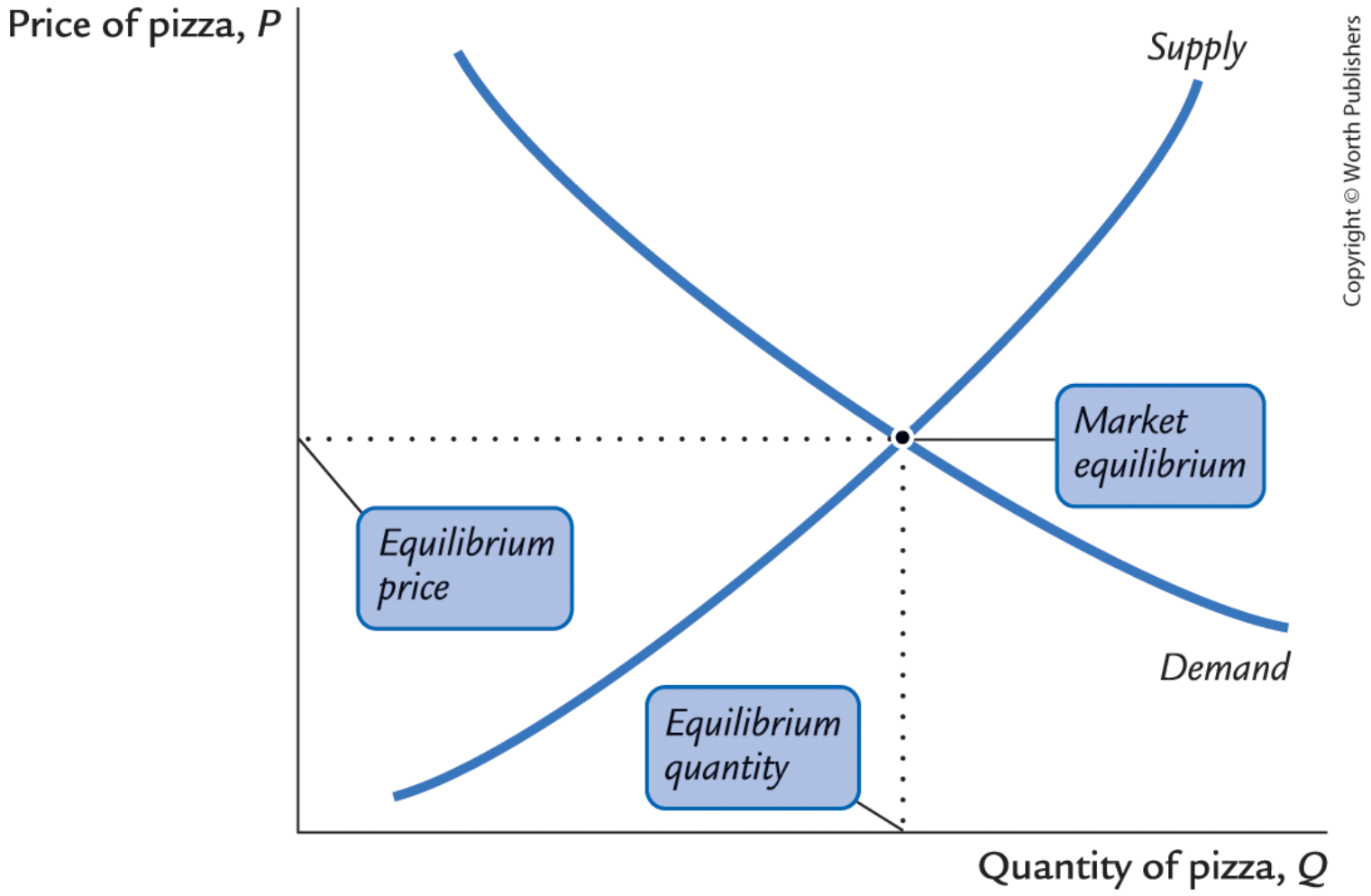
Supply equation:

$$Q^S = S(P, P_S)$$

The **supply curve** shows the relationship between quantity supplied, price (***P***) *and the price of inputs (**P_S**),* other things equal.



The market for pizza: Equilibrium



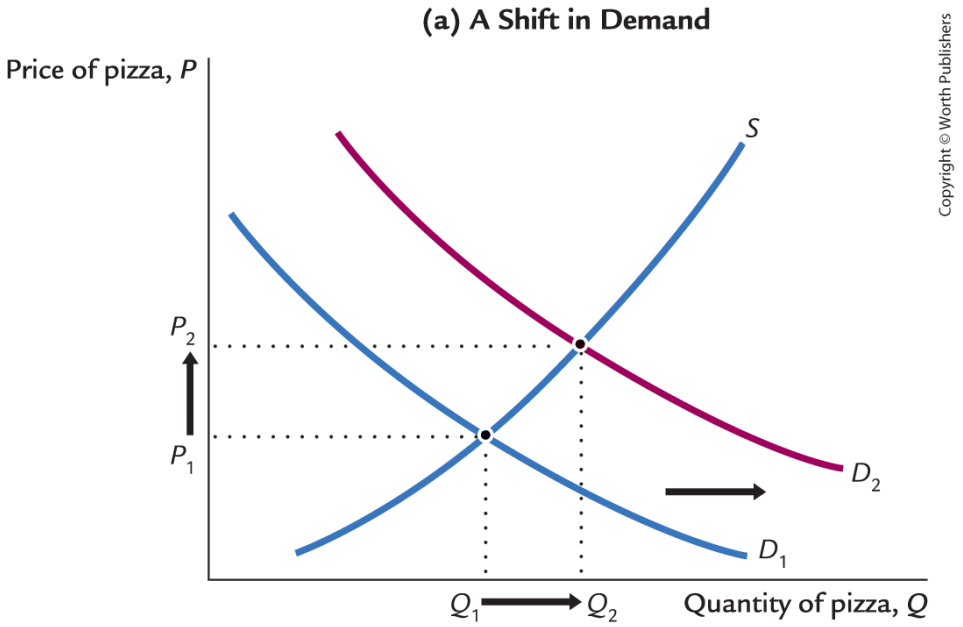
The effects of an increase in income

Demand equation:

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

An increase in income increases the quantity of pizza consumers demand at each price…

…which increases the equilibrium price and quantity.



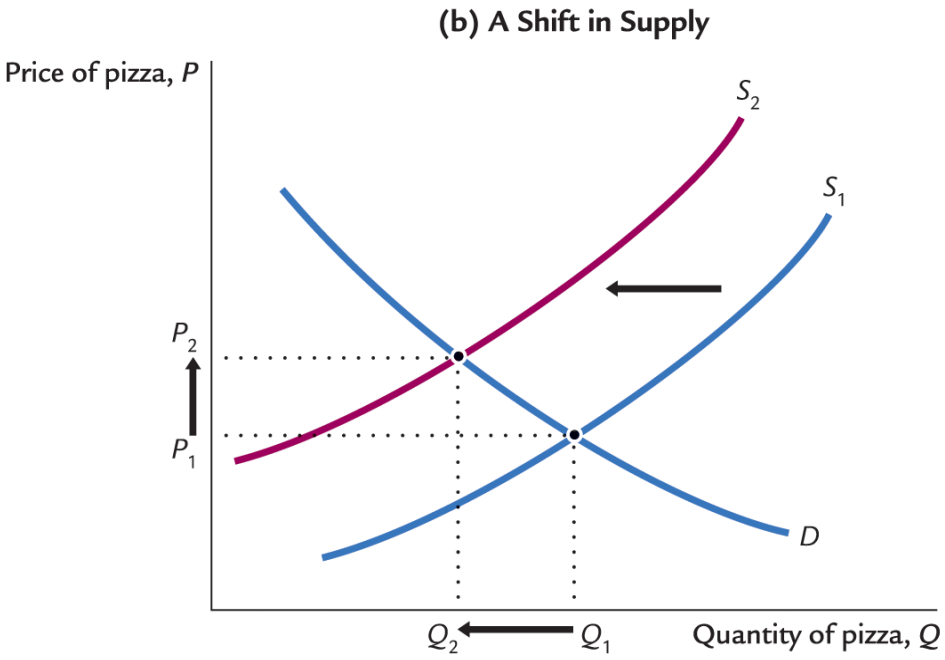
The effects of a steel price increase

Supply equation:

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

An increase in $\mathbf{P}_s$ reduces the quantity of pizza producers supply at each price…

…which increases the market price and reduces the quantity.



Endogenous versus exogenous variables

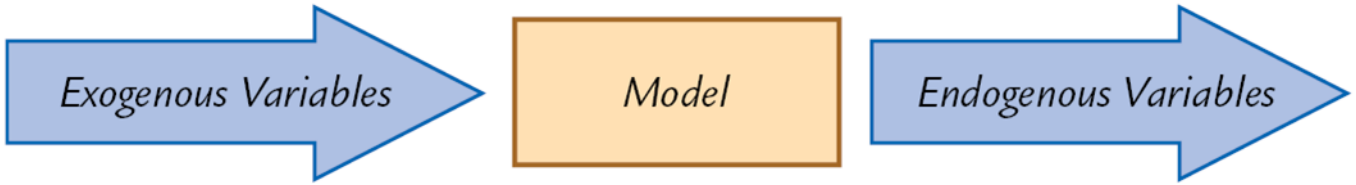
The values of **endogenous variables** are determined in the model.

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: ???



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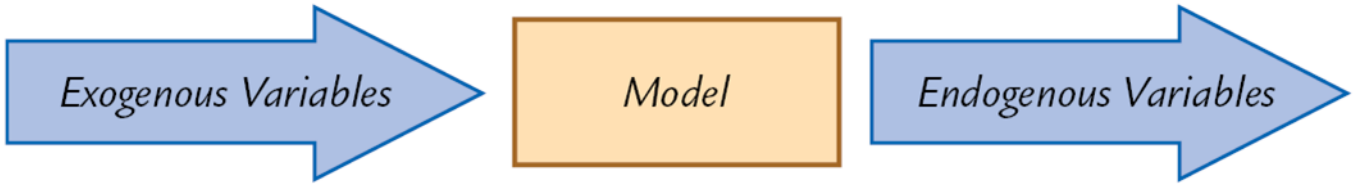
In the model of supply and demand for cars,

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 versus 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 three to four years.

Prices: Flexible versus 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.

CHAPTER SUMMARY, PART 1

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

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.