Macroeconomics II

Ondřej Krčál

Department of Economics

Office 611

Consultation hours: Monday 17:00 – 18:30

E-mail: krcalo@mail.muni.cz

Literature

MANKIW, G. (2010): Macroeconomics. 7th edition. Worth Publishers.

Exam

❑ Test – 40 questions a/b/c/d (1 correct answer)

❑ Correct answer +1 p., wrong answer -0.5 p., no answer 0 p.

   ❑ A: 34 - 40 points

   ❑ B: 31 – 33,5 points

   ❑ C: 28 – 30,5 points

   ❑ D: 25 – 27,5 points

   ❑ E: 22 – 24,5 points

   ❑ F: 21,5 points and less

C H A P T E R

1

The Science of Macroeconomics

MACROECONOMICS SIXTH EDITION

N. GREGORY MANKIW

PowerPoint® Slides by Ron Cronovich

Learning Objectives

This chapter introduces you to

- the issues macroeconomists study

- the tools macroeconomists use

- some important concepts in macroeconomic analysis

Important issues in macroeconomics

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

- What causes recessions?
  Can the government do anything to combat recessions? Should it?

- What is the government budget deficit?
  How does it affect the economy?
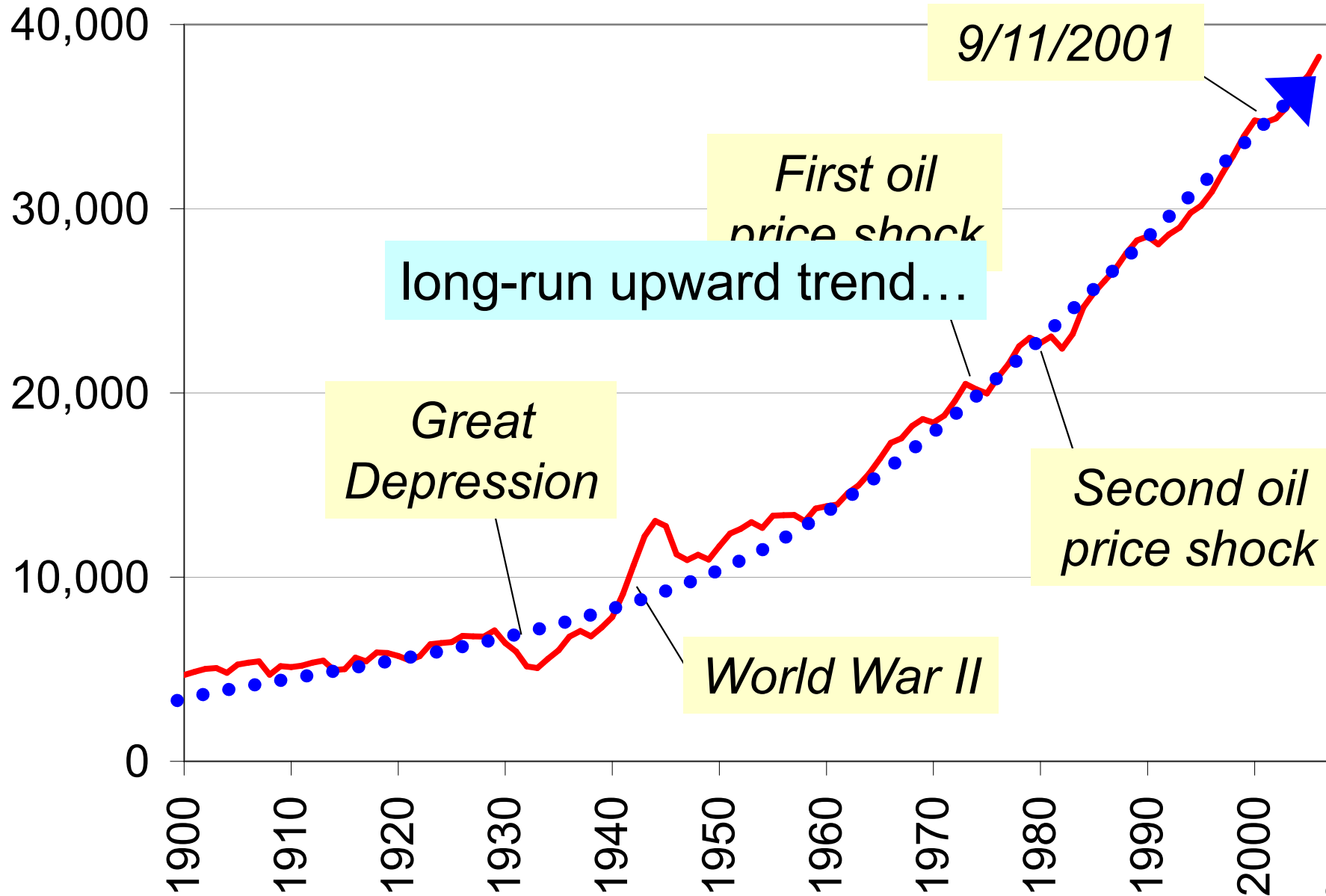
- Why does the U.S. have such a huge trade deficit?

Important issues in macroeconomics

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

- Why are millions of people unemployed, even when the economy is booming?

- Why does the cost of living keep rising?

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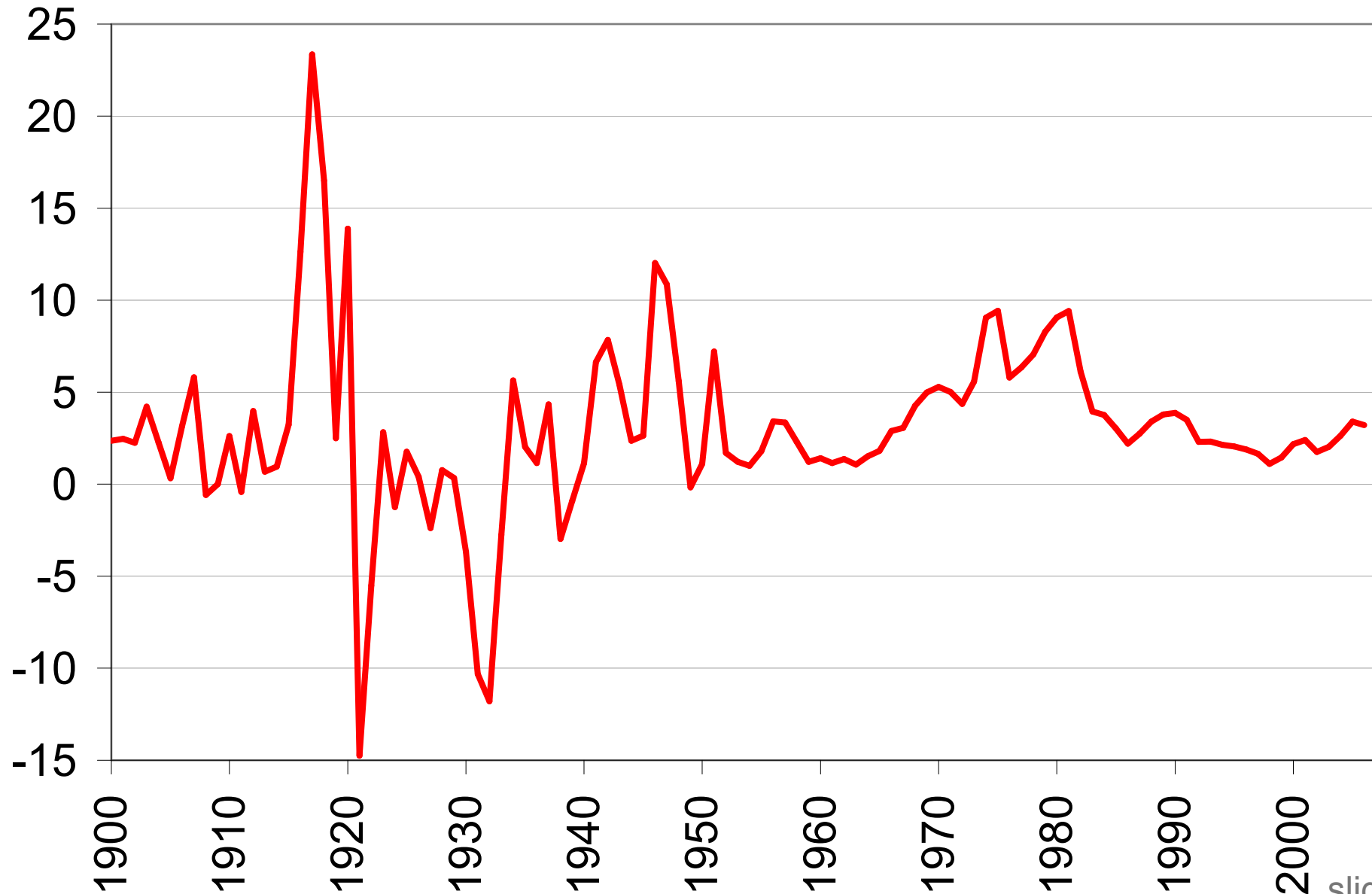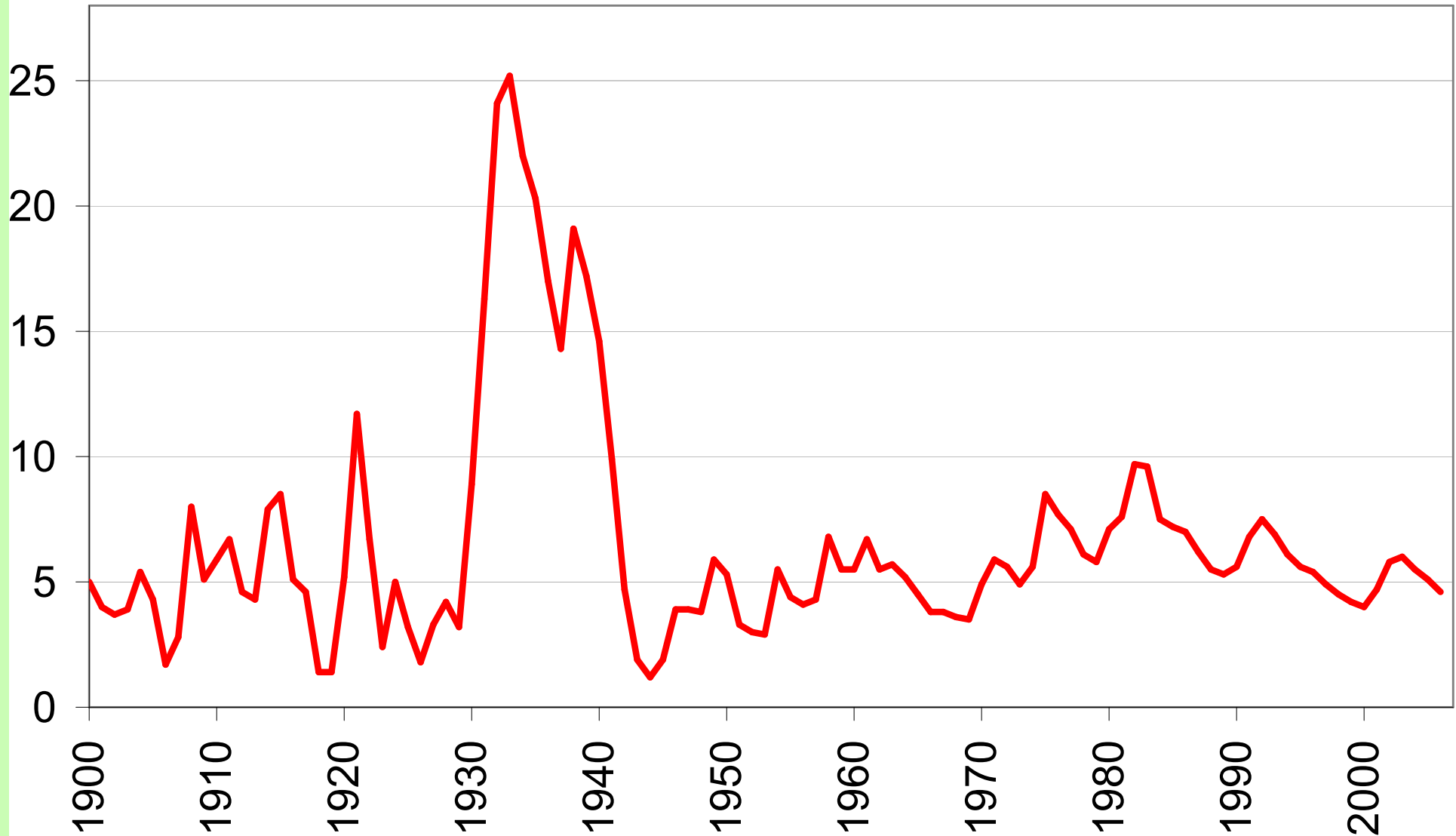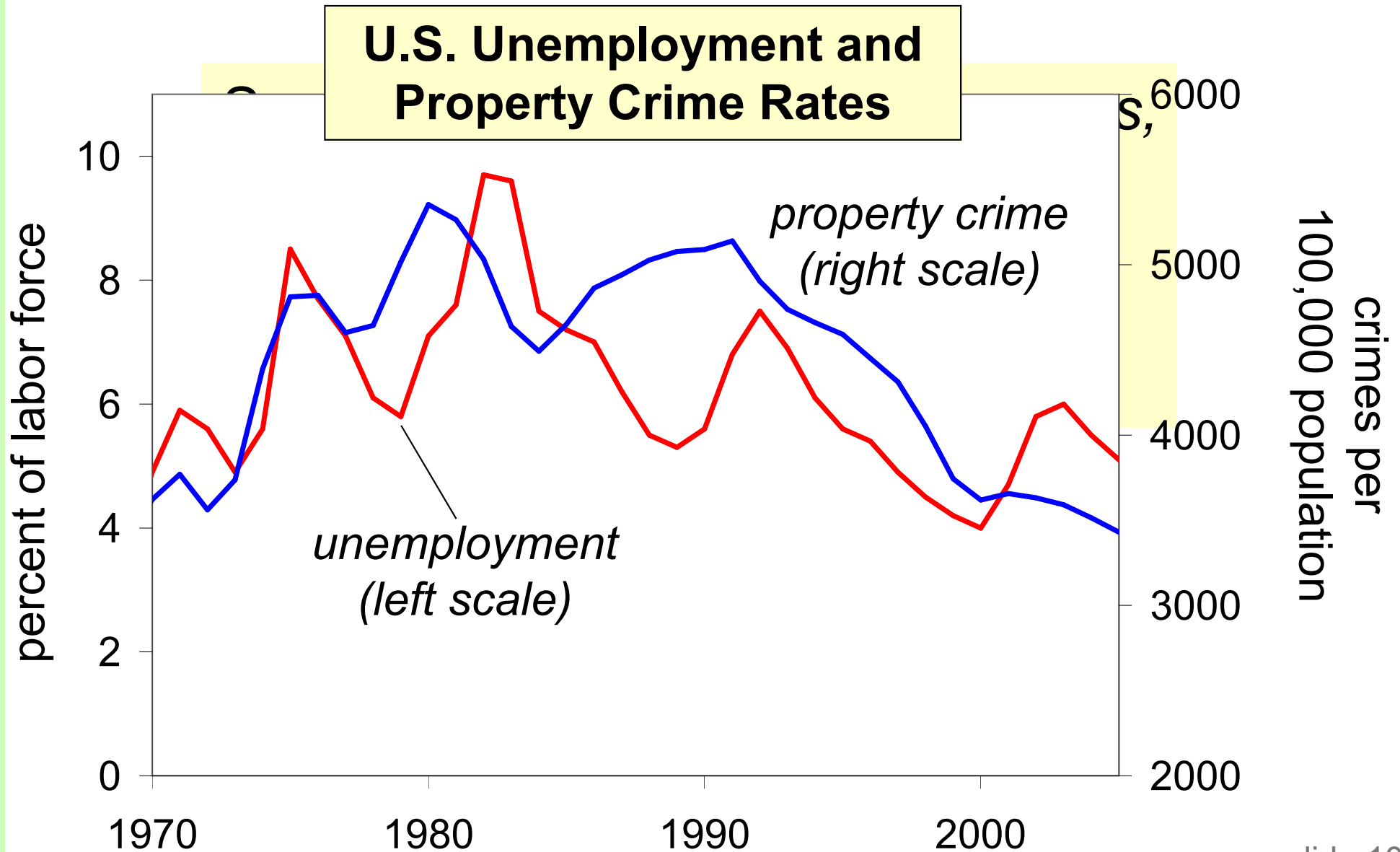 What policies might help them grow out of poverty?

U.S. inflation rate
(% per year)

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

Why learn macroeconomics?

1. The macroeconomy affects society's well-being.

U.S. Unemployment and Property Crime Rates

Why learn macroeconomics?

2. The macroeconomy affects <u>your</u> well-being.

In most years, wage growth falls when unemployment is rising.
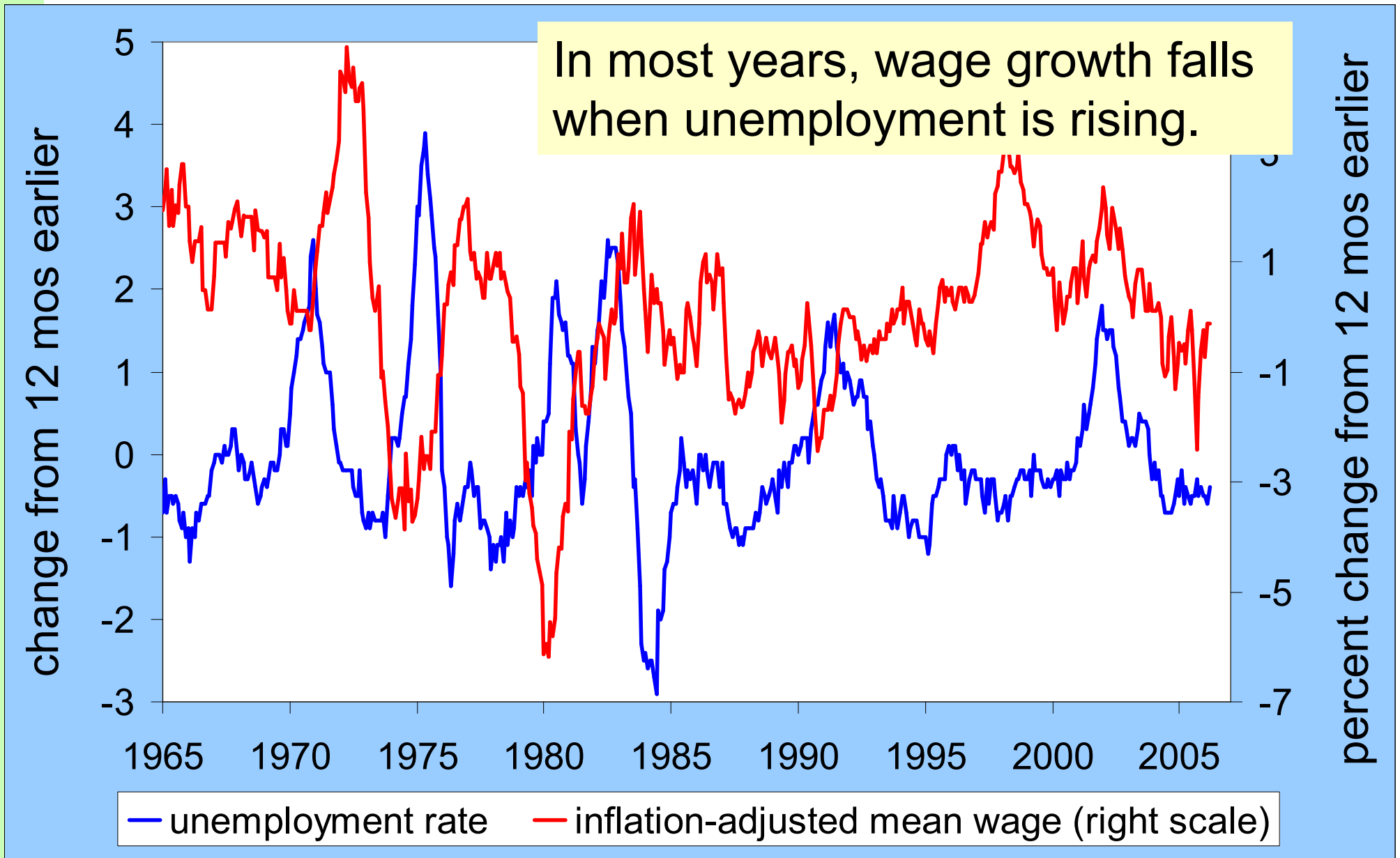
Why learn macroeconomics?

3. The macroeconomy affects politics.

Unemployment & inflation in election years

year	U rate	inflation rate	elec. outcome
1976	7.7%	5.8%	Carter (D)
1980	7.1%	13.5%	Reagan (R)
1984	7.5%	4.3%	Reagan (R)
1988	5.5%	4.1%	Bush I (R)
1992	7.5%	3.0%	Clinton (D)
1996	5.4%	3.3%	Clinton (D)
2000	4.0%	3.4%	Bush II (R)
2004	5.5%	3.3%	Bush II (R)

Economic models

…are simplified versions of a more complex reality

- irrelevant details are 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 & demand for new cars

- shows how various events affect 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 that producers supply

    P = price of new cars

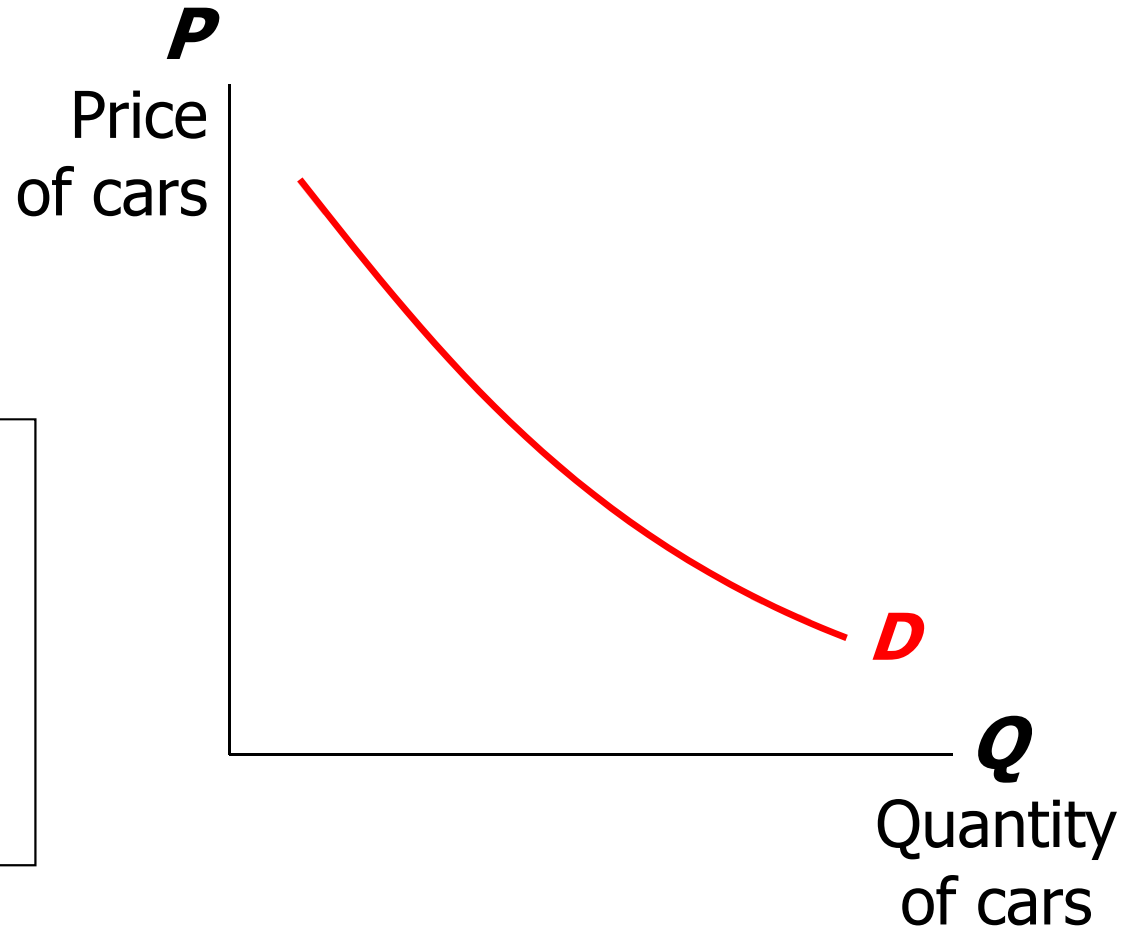 Y = aggregate income

    P_s = price of steel (an input)

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.

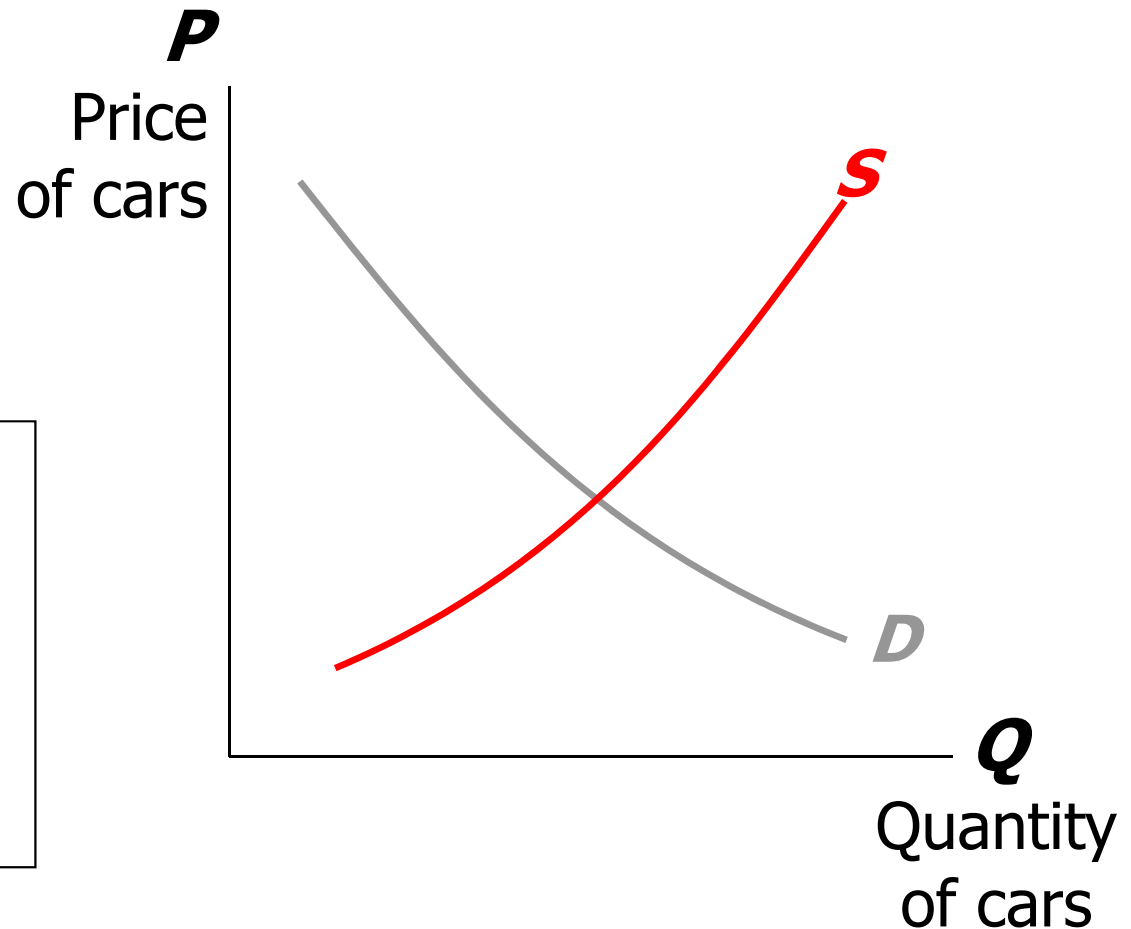**P**
Price of cars

Q
Quantity of cars

D

The market for cars: **Supply**

supply equation:
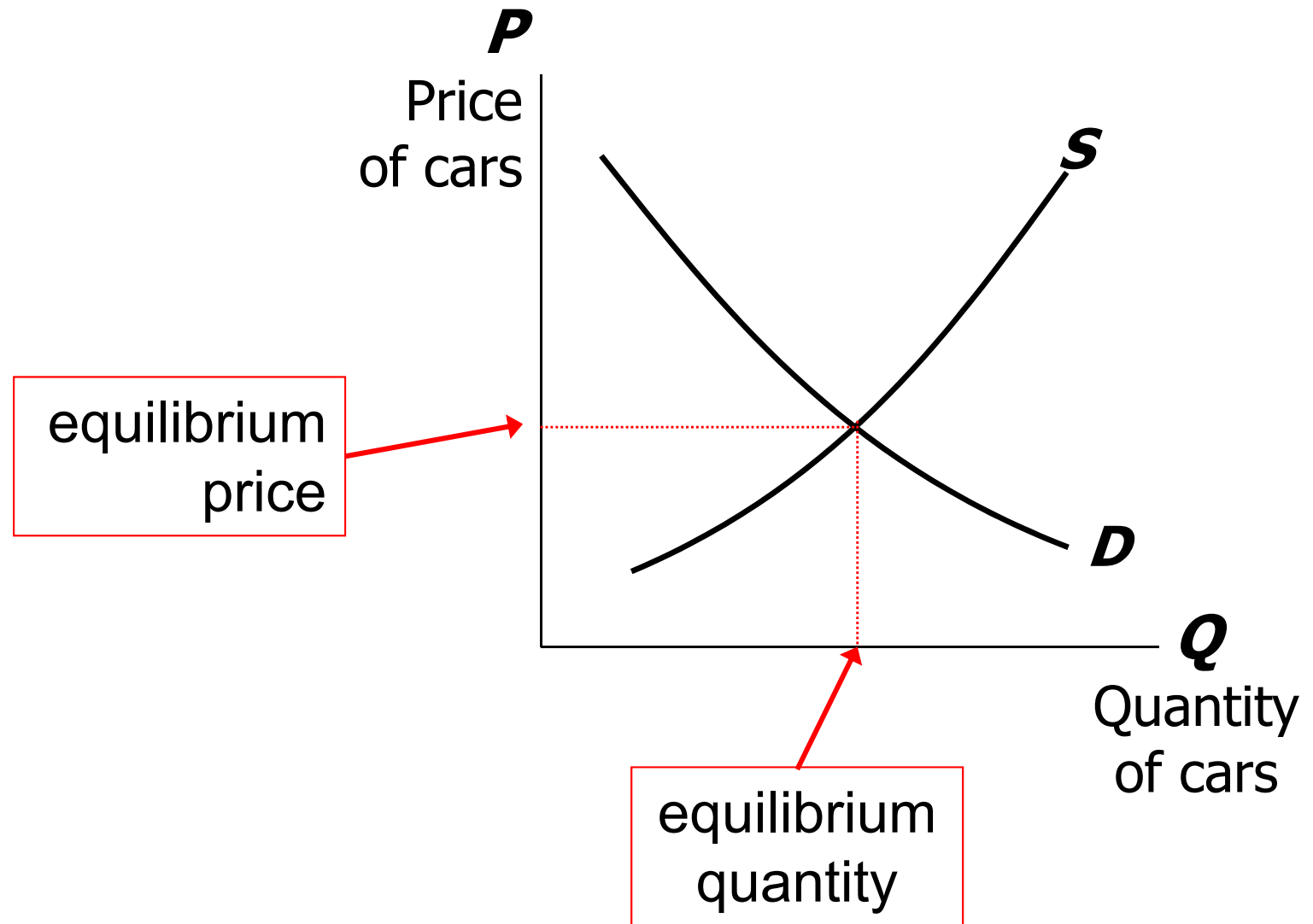
$$Q^s = S(P, P_s)$$

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

P
Price of cars

S

D

Q
Quantity of cars

The market for cars: Equilibrium

P
Price
of cars

S

equilibrium
price

D

Q
Quantity
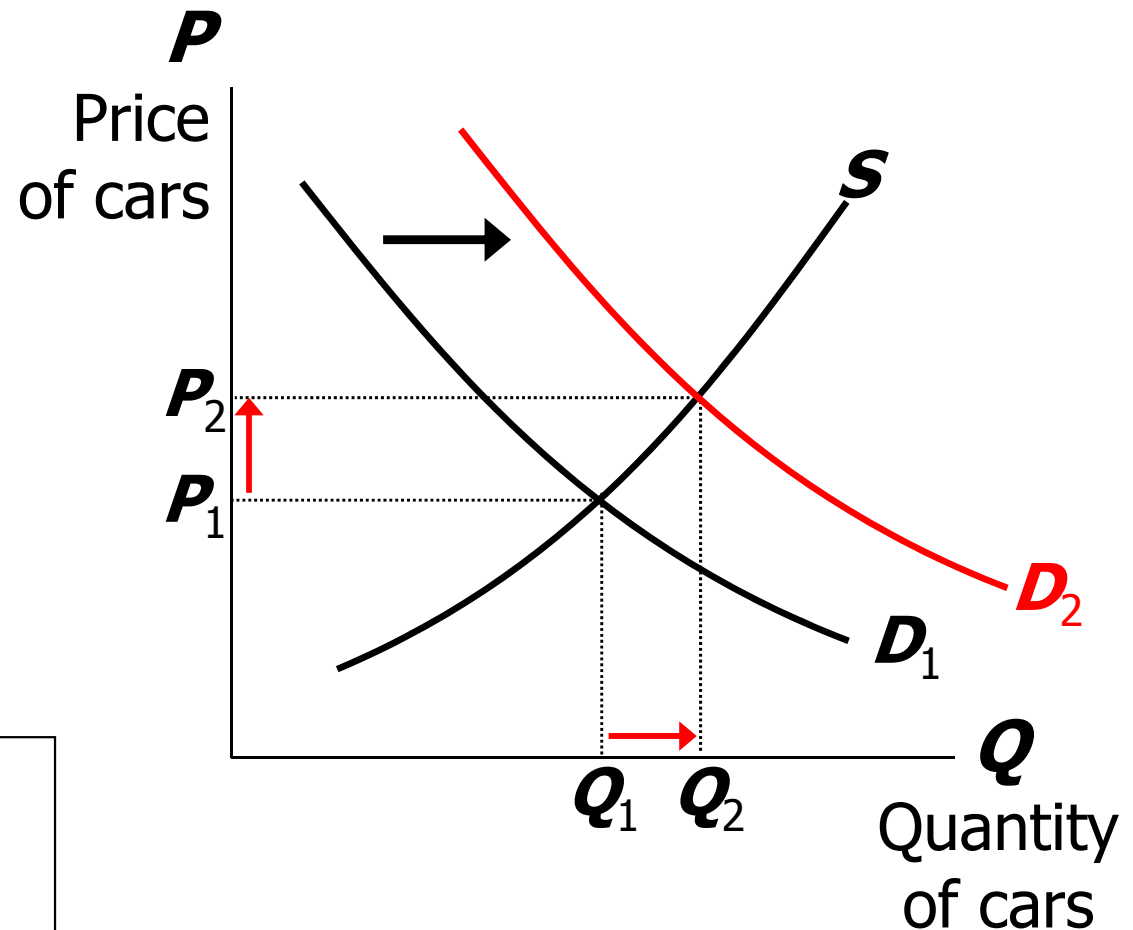of cars

equilibrium
quantity

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…

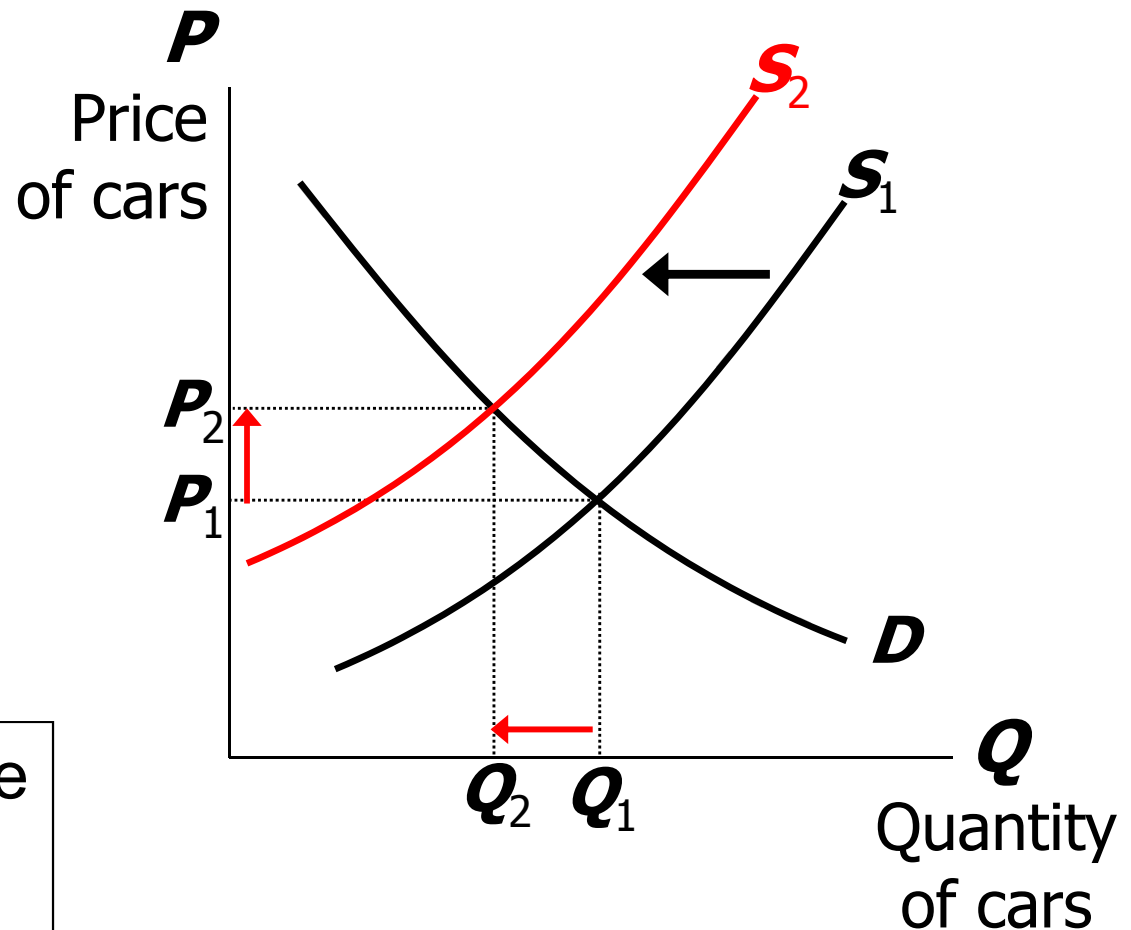…which increases the equilibrium price and quantity.

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.

P
Price of cars

S_2
S_1

P_2
P_1

D

Q_2 Q_1

Q
Quantity of cars

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 & behavior as given.

- In the model of supply & demand for cars,

    exogenous: Y , P_s

    endogenous: P , Q^d , Q^s

A multitude of models

- No one model can address all the issues we care about.

- *e.g.*, our supply-demand model of the car market…

  - <u>can</u> tell us how a fall in aggregate income affects price & quantity of cars.

  - <u>cannot</u> tell us *why* aggregate income falls.

A multitude of models

- So 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, which are exogenous

  - the questions it can help us understand, and those it cannot
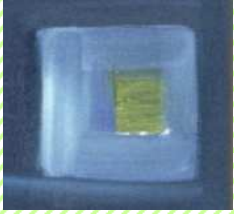
Chapter Summary

- Macroeconomics is the study of the economy as a whole.

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

- Economists use different models to examine different issues.

C H A P T E R 2

The Data of Macroeconomics

MACROECONOMICS SIXTH EDITION

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PowerPoint® Slides by Ron Cronovich

In this chapter, you will learn…

…the meaning and measurement of the most important macroeconomic statistics:

- Gross Domestic Product (GDP)

- The Consumer Price Index (CPI)

- The unemployment rate

Gross Domestic Product: Expenditure and Income
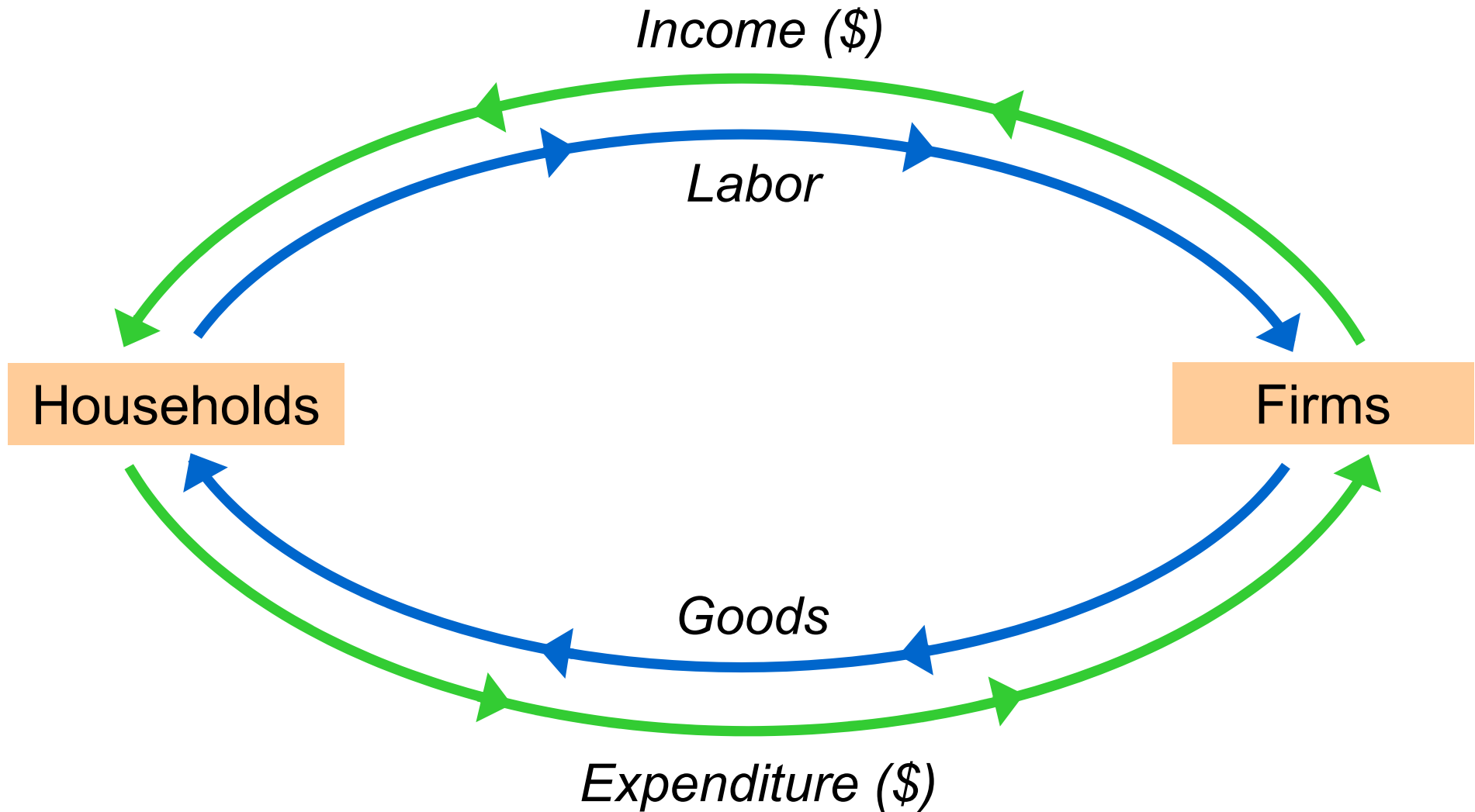
Two definitions:

- Total expenditure on domestically-produced final goods and services.

- Total income earned by domestically-located factors of production.

Expenditure equals income because every dollar spent by a buyer becomes income to the seller.

The Circular Flow

The expenditure components of GDP

- consumption

- investment

- government spending

- net exports

Consumption (C)

definition: The value of all goods and services bought by households. Includes:
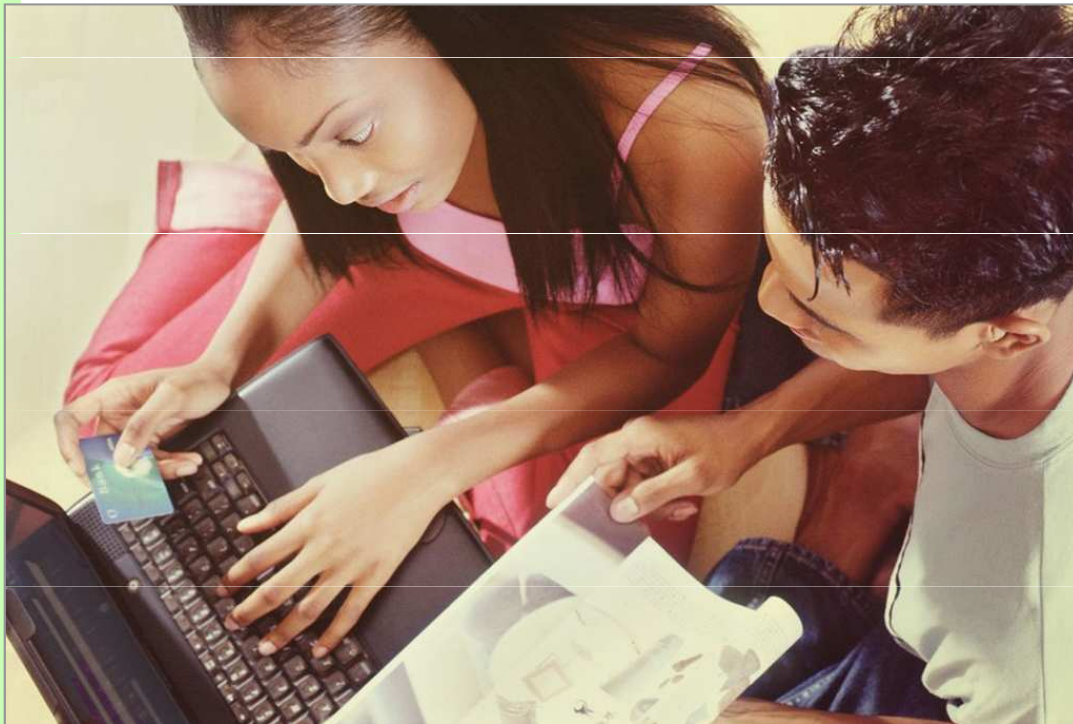
- *durable goods*
  last a long time
  ex: cars, home appliances
- *nondurable goods*
  last a short time
  ex: food, clothing
- *services*
  work done for consumers
  ex: dry cleaning, air travel.

U.S. consumption, 2006

	$ billions	% of GDP
Consumption	$9,268.9	70.0%
Durables	1,070.3	8.1
Nondurables	2,714.9	20.5
Services	5,483.7	41.4

Investment (I)

Definition 1: Spending on [the factor of production] capital.

Definition 2: Spending on goods bought for future use

Includes:

- ***business fixed investment***
  Spending on plant and equipment that firms will use to produce other goods & services.

- ***residential fixed investment***
  Spending on housing units by consumers and landlords.

- ***inventory investment***
  The change in the value of all firms' inventories.

U.S. investment, 2006

	$ billions	% of GDP
Investment	$2,212.5	16.7%
Business fixed	1,396.2	10.5
Residential	766.7	5.8
Inventory	49.6	0.4

Stocks vs. Flows

A **stock** is a quantity measured at a point in time.

E.g., "The U.S. capital stock was $26 trillion on January 1, 2006."

A **flow** is a quantity measured per unit of time.

E.g., "U.S. investment was $2.5 trillion during 2006."
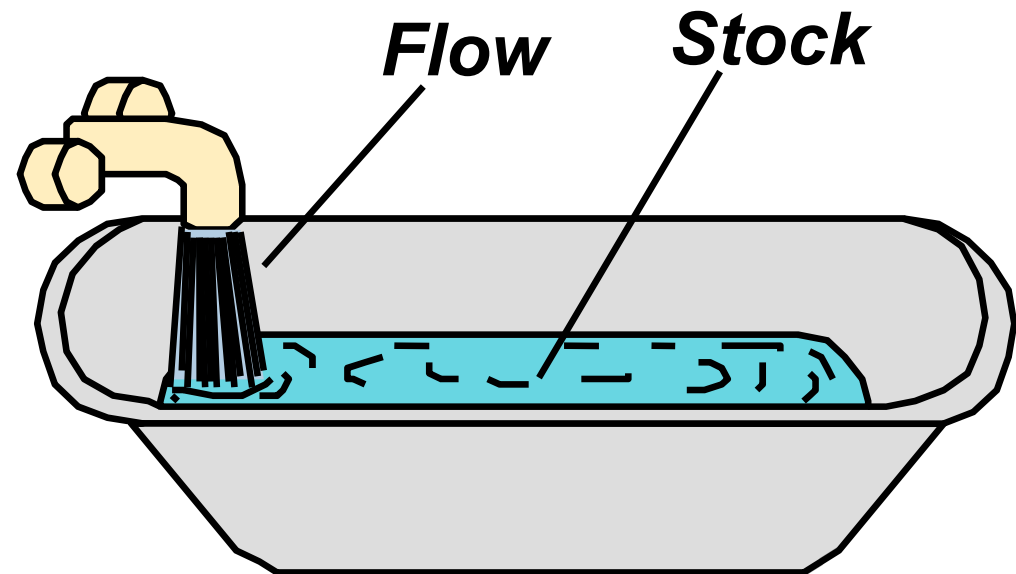
Stocks vs. Flows - examples

stock	flow
a person's wealth	a person's annual saving
# of people with college degrees	# of new college graduates this year
the govt debt	the govt budget deficit

Government spending (G)

- **G** includes all government spending on goods and services..

- **G** excludes transfer payments (e.g., unemployment insurance payments), because they do not represent spending on goods and services.

U.S. government spending, 2006

	$ billions	% of GDP
Govt spending	$2,527.7	19.1%
Federal	926.6	7.0
Non-defense	305.6	2.3
Defense	621.0	4.7
State & local	1,601.1	12.1

Net exports: NX = EX − IM

def: The value of total exports (**EX**)
      minus the value of total imports (**IM**).

U.S. Net Exports, 1950-2007
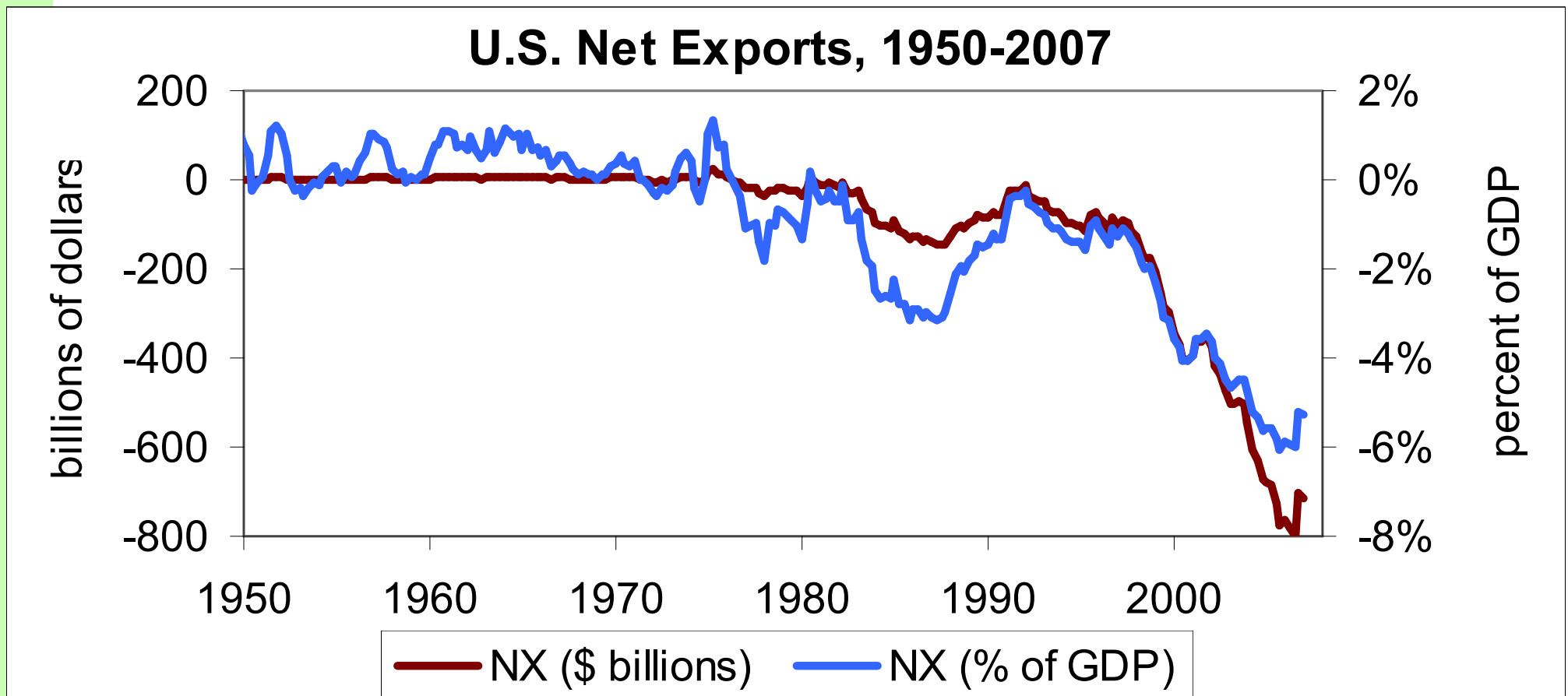
An important identity

$$Y = C + I + G + NX$$

*value of
total output*

*aggregate
expenditure*

A question for you:

Suppose a firm

- produces $10 million worth of final goods

- but only sells $9 million worth.

Does this violate the
expenditure = output identity?

Why output = expenditure

- Unsold output goes into inventory, and is counted as "inventory investment"… …whether or not the inventory buildup was intentional.

- In effect, we are assuming that firms purchase their unsold output.

GNP vs. GDP

- Gross **National** Product (GNP):
  Total income earned by the nation's factors of production, regardless of where located.

- Gross **Domestic** Product (GDP):
  Total income earned by domestically-located factors of production, regardless of nationality.

  (GNP – GDP) = (factor payments from abroad)
  – (factor payments to abroad)

(HNP – HDP) jako % HDP
vybrané země, 2005

ČR: 2010

Phillippines	9.2%
Bangladesh	5.1
U.K.	2.2
U.S.A.	0.3
Mexico	-1.8
Russia	-2.5
El Salvador	-3.4
Argentina	-5.4
Indonesia	-6.5
Panama	-7.3

HNP mld. Kč	3.449
HDP mld. Kč	3.693
Rozdíl % HDP	-7.1

zdroje:
World Development Indicators, World Bank
Makroekonomická predikce MFČR

Real vs. nominal GDP

- GDP is the <u>value</u> of all final goods and services produced.

- **nominal GDP** measures these values using current prices.

- **real GDP** measure these values using the prices of a base year.

Practice problem, part 1

	2006		2007		2008	
	P	Q	P	Q	P	Q
good A	$30	900	$31	1,000	$36	1,050
good B	$100	192	$102	200	$100	205

- Compute nominal GDP in each year.

- Compute real GDP in each year using 2006 as the base year.

Answers to practice problem, part 1

nominal GDP   *multiply Ps & Qs from same year*

  2006: $46,200 = $30 $\times$ 900 + $100 $\times$ 192

  2007: $51,400

  2008: $58,300

real GDP   *multiply each year's Qs by 2006 Ps*

  2006: $46,200

  2007: $50,000

  2008: $52,000 = $30 $\times$ 1050 + $100 $\times$ 205

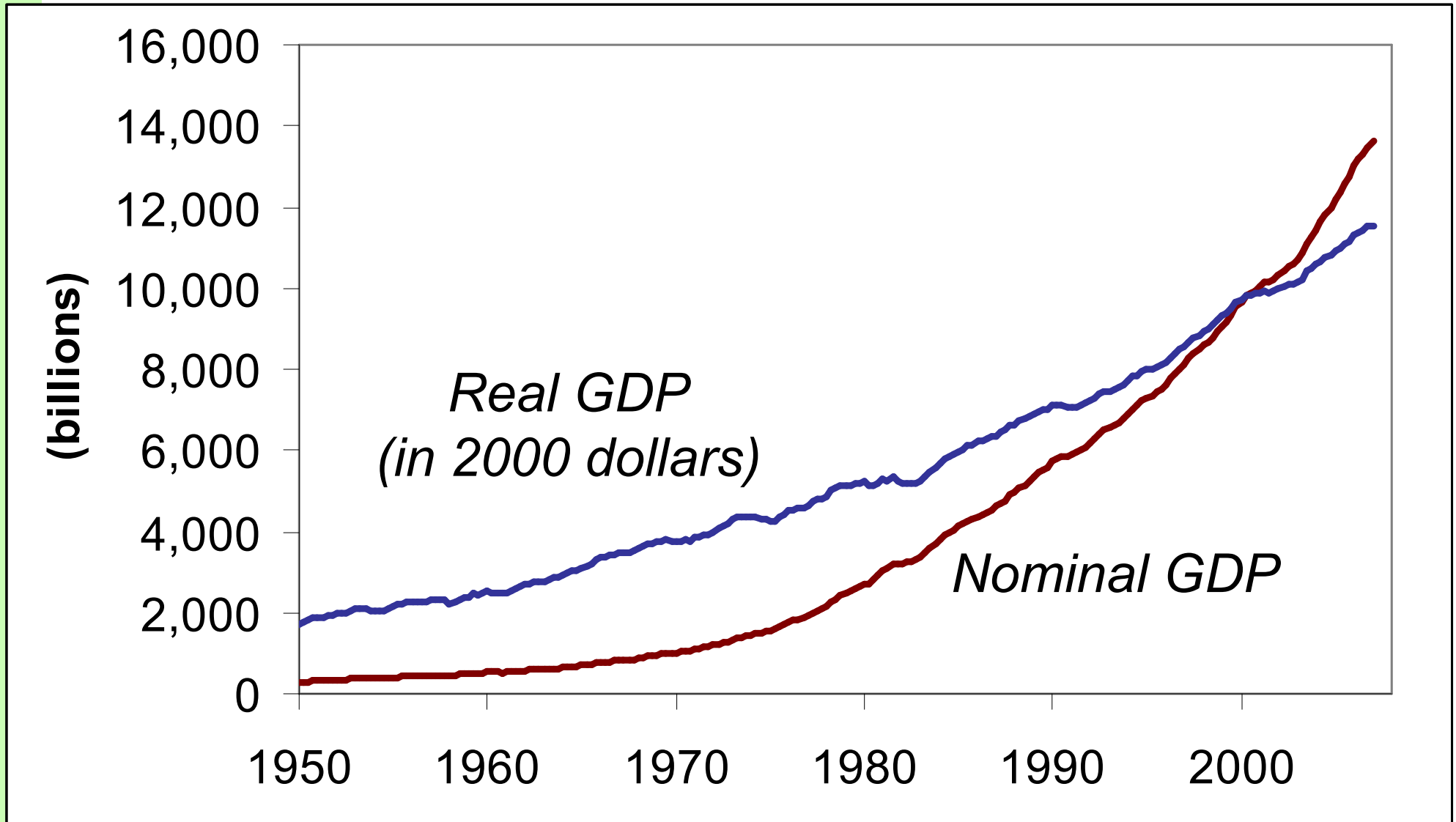# Real GDP controls for inflation

Changes in nominal GDP can be due to:

- changes in prices.
- changes in quantities of output produced.

Changes in real GDP can <u>only</u> be due to changes in quantities,

because real GDP is constructed using constant base-year prices.

U.S. Nominal and Real GDP, 1950–2007

GDP Deflator

- The **inflation rate** is the percentage increase in the overall level of prices.

- One measure of the price level is the **GDP deflator**, defined as

$$\text{GDP deflator} = 100 \times \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

Practice problem, part 2

	Nom. GDP	Real GDP	GDP deflator	Inflation rate
2006	$46,200	$46,200		*n.a.*
2007	51,400	50,000		
2008	58,300	52,000		

- Use your previous answers to compute the GDP deflator in each year.

- Use GDP deflator to compute the inflation rate from 2006 to 2007, and from 2007 to 2008.

Answers to practice problem, part 2

	Nominal GDP	Real GDP	GDP deflator	Inflation rate
2006	$46,200	$46,200	100.0	*n.a.*
2007	51,400	50,000	102.8	2.8%
2008	58,300	52,000	112.1	9.1%

Consumer Price Index (CPI)

- A measure of the overall level of prices

- Published by the Bureau of Labor Statistics (BLS)

- Uses:

  - tracks changes in the typical household's cost of living

  - adjusts many contracts for inflation

  - allows comparisons of dollar amounts over time

How the BLS constructs the CPI

1. Survey consumers to determine composition of the typical consumer's "basket" of goods.

2. Every month, collect data on prices of all items in the basket; compute cost of basket

3. CPI in any month equals

$$100 \times \frac{\text{Cost of basket in that month}}{\text{Cost of basket in base period}}$$

Exercise: *Compute the CPI*

Basket contains 20 pizzas and 10 compact discs.

prices:		
	pizza	CDs
2002	$10	$15
2003	$11	$15
2004	$12	$16
2005	$13	$15

For each year, compute

- the cost of the basket
- the CPI (use 2002 as the base year)
- the inflation rate from the preceding year

Answers:

	Cost of basket	CPI	Inflation rate
2002	$350	100.0	*n.a.*
2003	370	105.7	5.7%
2004	400	114.3	8.1%
2005	410	117.1	2.5%

The composition of the CPI's "basket"
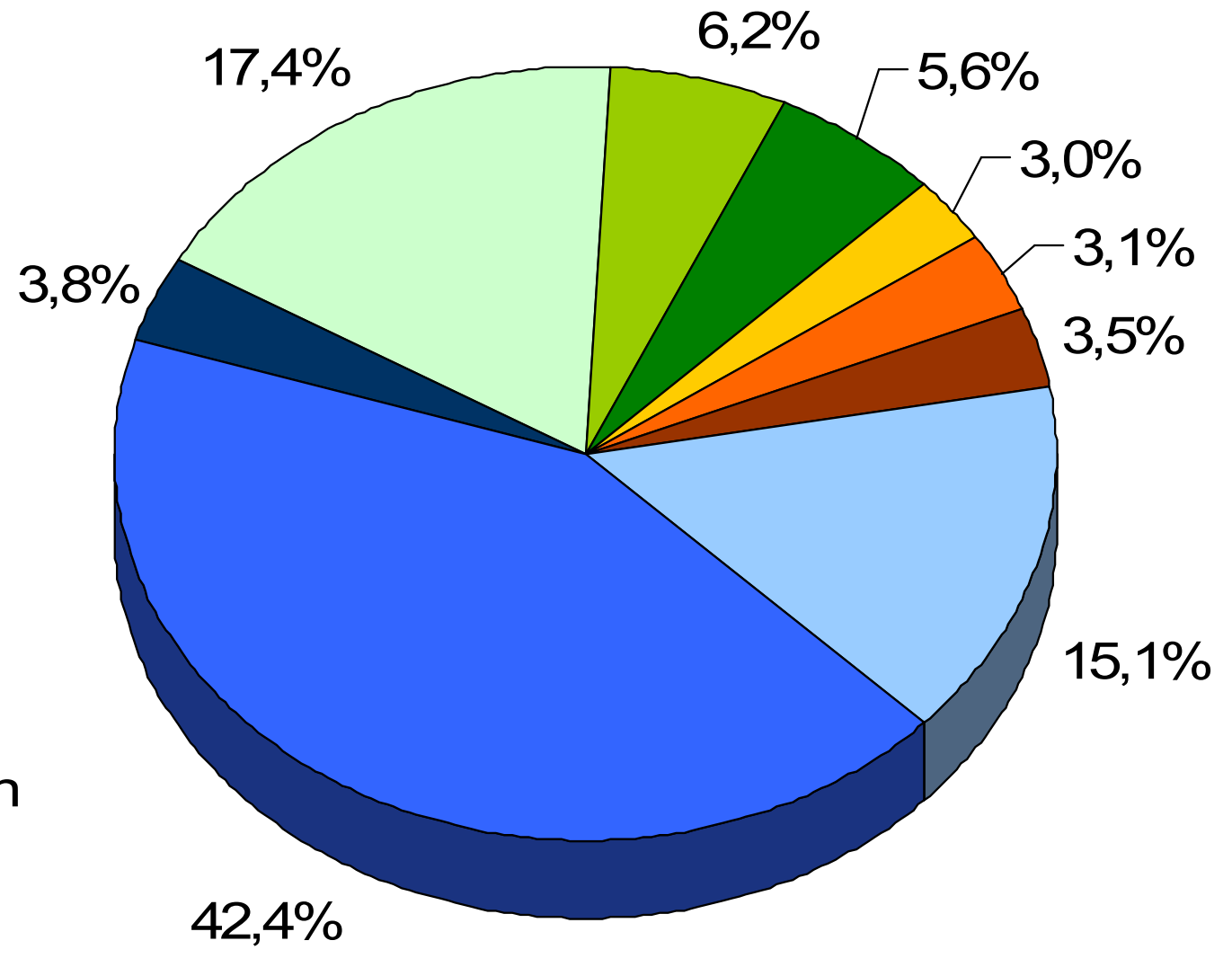
Reasons why the CPI may overstate inflation

- **Substitution bias**:   The CPI uses fixed weights, so it cannot reflect consumers' ability to substitute toward goods whose relative prices have fallen.

- **Introduction of new goods**:   The introduction of new goods makes consumers better off and, in effect, increases the real value of the dollar. But it does not reduce the CPI, because the CPI uses fixed weights.

- **Unmeasured changes in quality**: Quality improvements increase the value of the dollar, but are often not fully measured.

The size of the CPI's bias

- In 1995, a Senate-appointed panel of experts estimated that the CPI overstates inflation by about 1.1% per year.

- So the BLS made adjustments to reduce the bias.

- Now, the CPI's bias is probably under 1% per year.

CPI vs. GDP Deflator

prices of capital goods

- included in GDP deflator (if produced domestically)
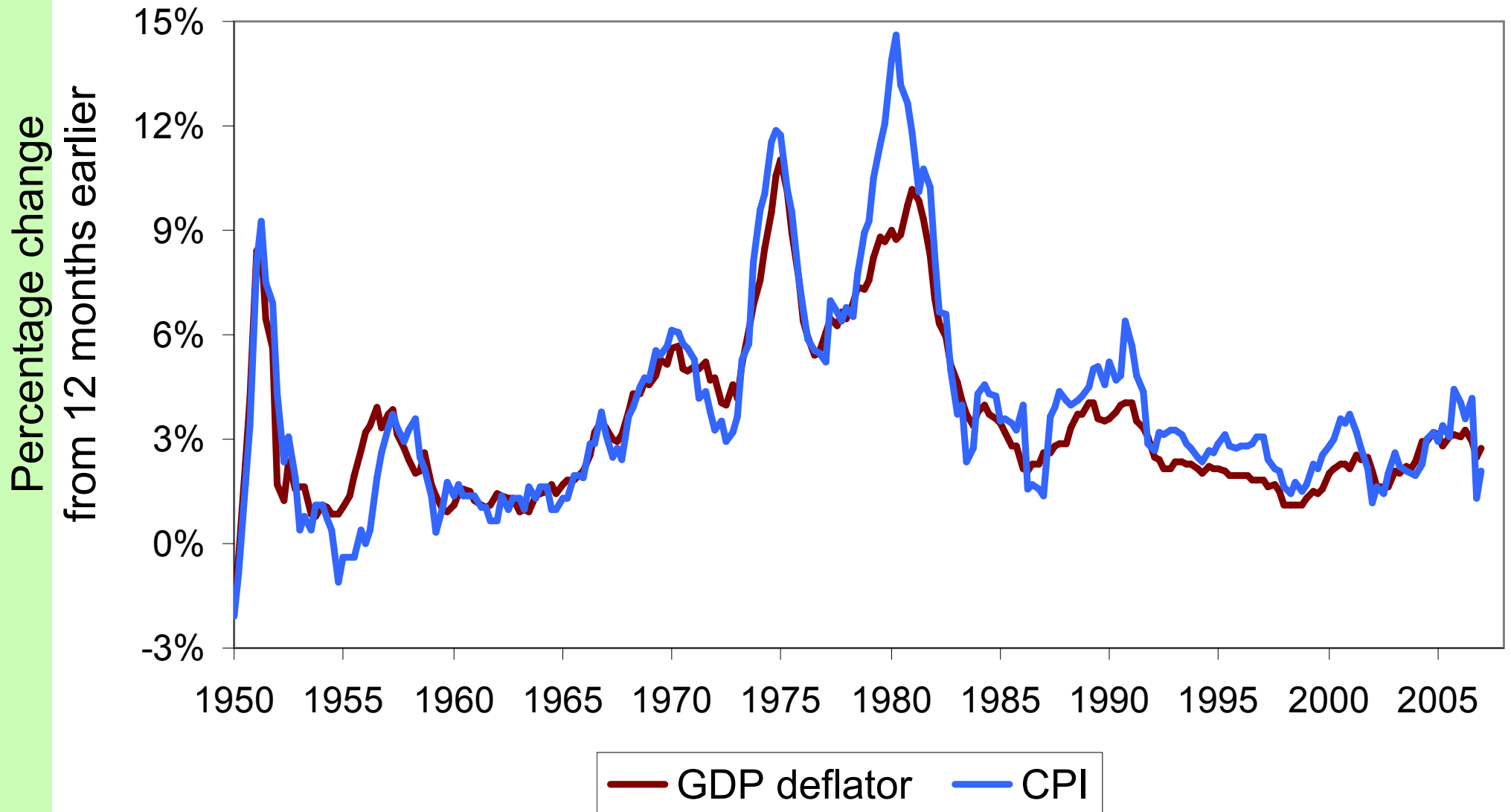- excluded from CPI

prices of imported consumer goods

- included in CPI
- excluded from GDP deflator

the basket of goods

- CPI: fixed
- GDP deflator: changes every year

Two measures of inflation in the U.S.

Categories of the population

- **employed**
  working at a paid job

- **unemployed**
  not employed but looking for a job

- **labor force**
  the amount of labor available for producing goods and services; all employed plus unemployed persons

- **not in the labor force**
  not employed, not looking for work

Two important labor force concepts

- **unemployment rate**
  percentage of the labor force that is unemployed

- **labor force participation rate**
  the fraction of the adult population
  that "participates" in the labor force

Exercise:
Compute labor force statistics

U.S. adult population by group, June 2007

Number employed	=	146.1 million
Number unemployed	=	6.9 million
Adult population	=	231.7 million

Use the above data to calculate

- the labor force
- the number of people not in the labor force
- the labor force participation rate
- the unemployment rate

Answers:

- data: $E = 146.1$, $U = 6.9$, $POP = 231.7$

- labor force
  $L = E + U = 146.1 + 6.9 = \underline{153.0}$

- not in labor force
  $NILF = POP - L = 231.7 - 153 = \underline{78.7}$

- unemployment rate
  $U/L \times 100\% = (6.9/153) \times 100\% = \underline{4.5\%}$

- labor force participation rate
  $L/POP \times 100\% = (153/231.7) \times 100\% = \underline{66.0\%}$

Chapter Summary

1. Gross Domestic Product (GDP) measures both total income and total expenditure on the economy's output of goods & services.

2. Nominal GDP values output at current prices; real GDP values output at constant prices. Changes in output affect both measures, but changes in prices only affect nominal GDP.

3. GDP is the sum of consumption, investment, government purchases, and net exports.

Chapter Summary

4. The overall level of prices can be measured by either

    - the Consumer Price Index (CPI),
      the price of a fixed basket of goods
      purchased by the typical consumer, or

    - the GDP deflator,
      the ratio of nominal to real GDP

5. The unemployment rate is the fraction of the labor force that is not employed.