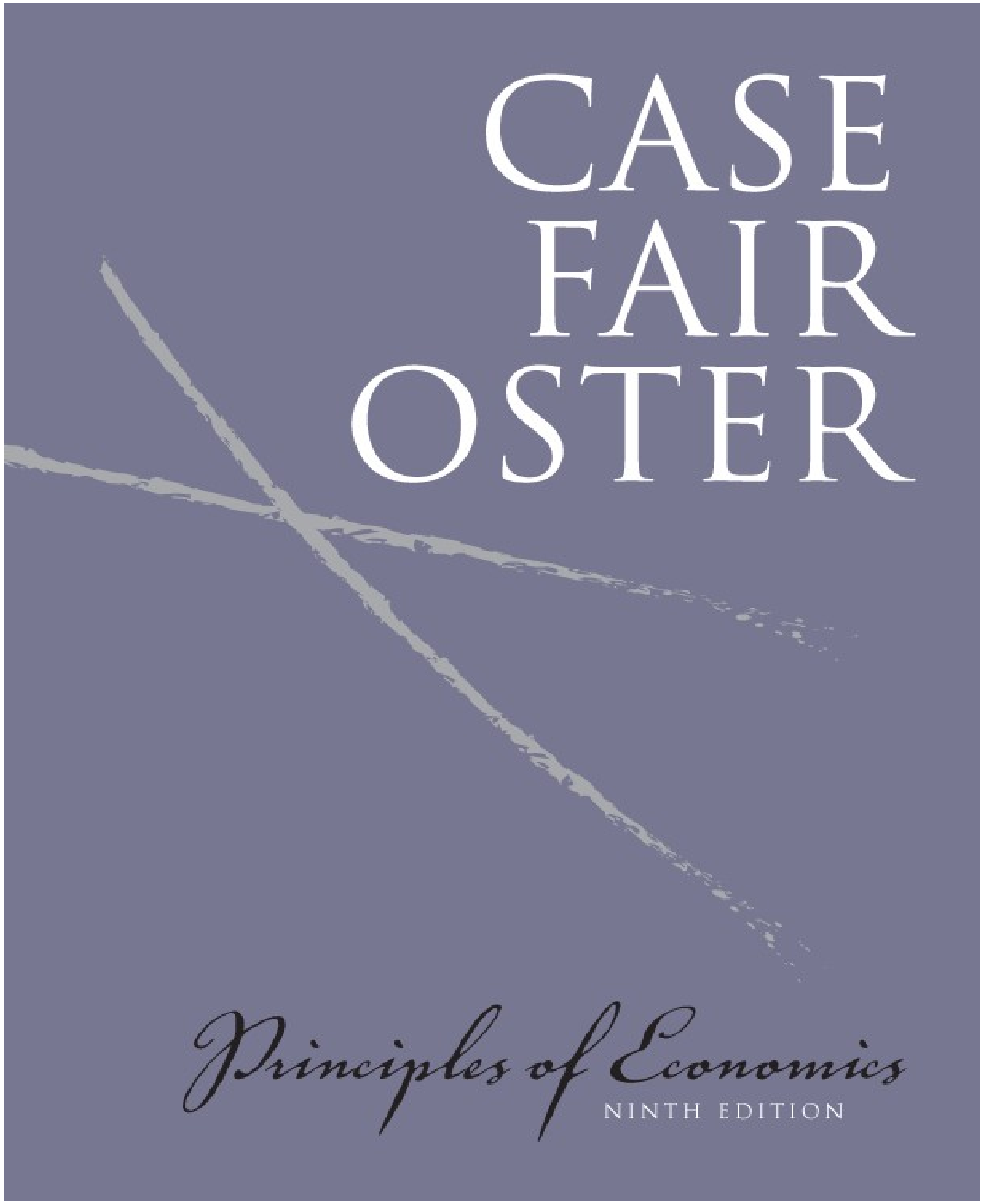


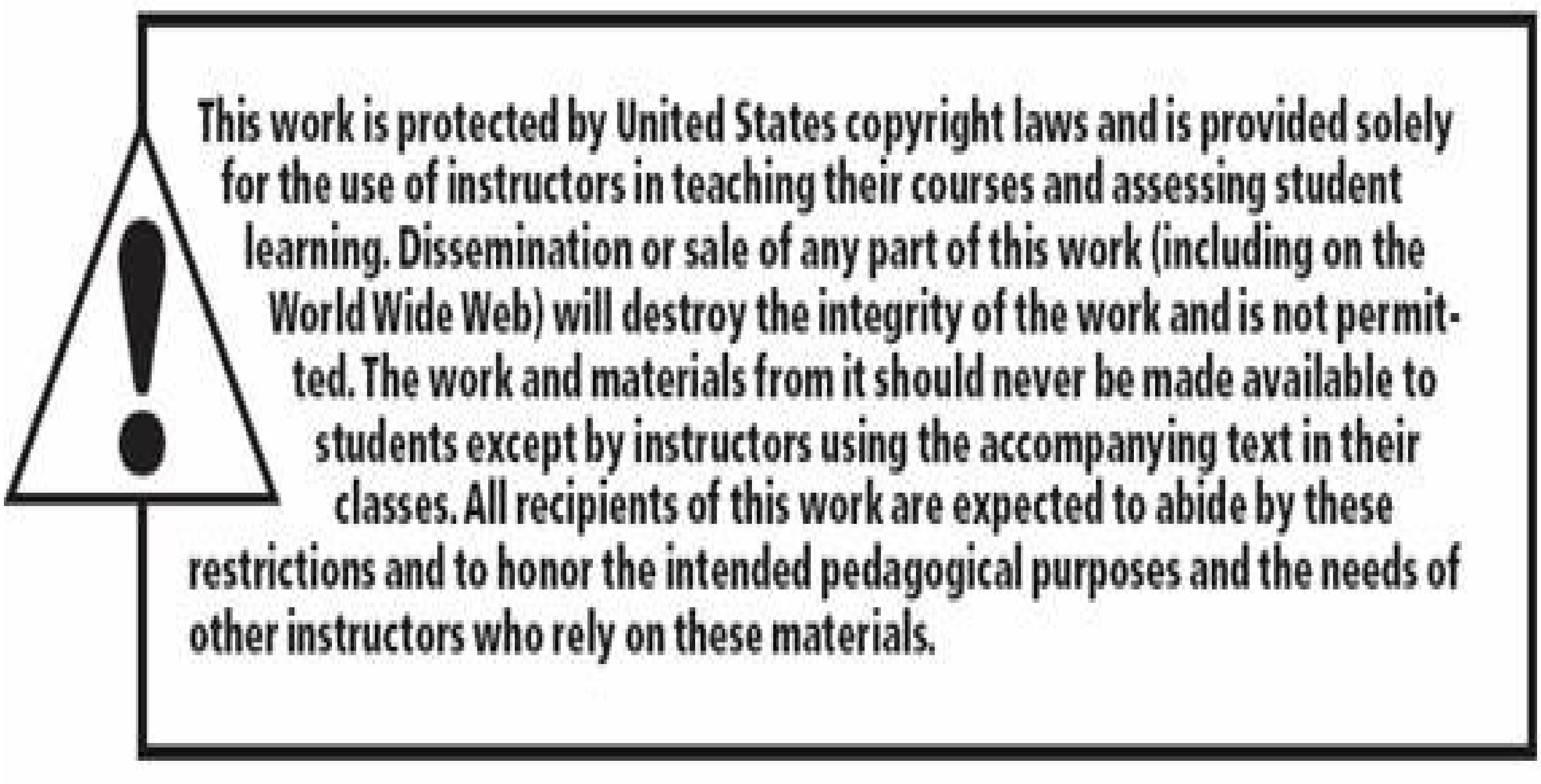
PowerPoint Lectures for

Principles of Economics, 9e

By

Karl E. Case,
Ray C. Fair &
Sharon M. Oster

© 2009 Pearson Education, Inc. Publishing as Prentice Hall



This work is protected by United States copyright laws and is provided solely for the use of instructors in teaching their courses and assessing student learning. Dissemination or sale of any part of this work (including on the World Wide Web) will destroy the integrity of the work and is not permitted. The work and materials from it should never be made available to students except by instructors using the accompanying text in their classes. All recipients of this work are expected to abide by these restrictions and to honor the intended pedagogical purposes and the needs of other instructors who rely on these materials.

PART IV CONCEPTS AND PROBLEMS IN MACROECONOMICS

Measuring National Output and National Income

21

Prepared by:

Fernando & Yvonn Quijano

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

PART IV **CONCEPTS AND PROBLEMS IN MACROECONOMICS**

21

Measuring National Output and National Income

CHAPTER OUTLINE

Gross Domestic Product

Final Goods and Services

Exclusion of Used Goods and Paper Transactions

Exclusion of Output Produced Abroad by Domestically Owned Factors of Production

Calculating GDP

The Expenditure Approach

The Income Approach

Nominal versus Real GDP

Calculating Real GDP

Calculating the GDP Deflator

The Problems of Fixed Weights

Limitations of the GDP Concept

GDP and Social Welfare

The Underground Economy

Gross National Income per Capita

Looking Ahead

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Measuring National Output and National Income

national income and product accounts Data collected and published by the government describing the various components of national income and output in the economy.

Gross Domestic Product

gross domestic product (GDP) The total market value of all final goods and services produced within a given period by factors of production located within a country.

GDP is the total market value of a country's output. It is the market value of all final goods and services produced within a given period of time by factors of production located within a country.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Gross Domestic Product

Final Goods and Services

final goods and services Goods and services produced for final use.

intermediate goods Goods that are produced by one firm for use in further processing by another firm.

value added The difference between the value of goods as they leave a stage of production and the cost of the goods as they entered that stage.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Gross Domestic Product

Final Goods and Services

In calculating GDP, we can sum up the value added at each stage of production or we can take the value of final sales. We do not use the value of total sales in an economy to measure how much output has been produced.

TABLE 21.1 Value Added in the Production of a Gallon of Gasoline (Hypothetical Numbers)

Stage Of Production	Value Of Sales	Value Added
(1) Oil drilling	$3.00	$3.00
(2) Refining	3.30	0.30
(3) Shipping	3.60	0.30
(4) Retail sale	4.00	0.40
Total value added		$4.00

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Gross Domestic Product

Exclusion of Used Goods and Paper Transactions

GDP is concerned only with new, or current, production. Old output is not counted in current GDP because it was already counted when it was produced.

GDP does not count transactions in which money or goods changes hands but in which no new goods and services are produced.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Gross Domestic Product

Exclusion of Output Produced Abroad by Domestically Owned Factors of Production

GDP is the value of output produced by factors of production *located within a country*.

gross national product (GNP) The total market value of all final goods and services produced within a given period by factors of production owned by a country’s citizens, regardless of where the output is produced.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

expenditure approach A method of computing GDP that measures the total amount spent on all final goods and services during a given period.

income approach A method of computing GDP that measures the income—wages, rents, interest, and profits—received by all factors of production in producing final goods and services.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

There are four main categories of expenditure:

- Personal consumption expenditures (*C*): household spending on consumer goods
- Gross private domestic investment (*I*): spending by firms and households on new capital, that is, plant, equipment, inventory, and new residential structures
- Government consumption and gross investment (*G*)
- Net exports (*EX* - *IM*): net spending by the rest of the world, or exports (*EX*) minus imports (*IM*)

$$\text{GDP} = C + I + G + (EX - IM)$$

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

TABLE 21.2 Components of U.S. GDP, 2007: The Expenditure Approach

	Billions Of Dollars		Percentage of GDP	
Personal consumption expenditures (C)	9,734.2		70.3	
Durable goods		1,078.2		7.8
Nondurable goods		2,833.2		20.5
Services		5,822.8		42.1
Gross private domestic investment (I)	2,125.4		15.4	
Nonresidential		1,481.8		10.7
Residential		640.7		4.6
Change in business inventories		2.9		0.0
Government consumption and gross investment (G)	2,689.8		19.4	
Federal		976.0		7.1
State and local		1,713.8		12.4
Net exports (EX – IM)	–708.0		– 5.1	
Exports (*EX*)		1,643.0		11.9
Imports (*IM*)		2,351.0		17.0
Gross domestic product	13,841.3		100.0	

Note: Numbers may not add exactly because of rounding.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Personal Consumption Expenditures (*C*)

personal consumption expenditures (*C*) Expenditures by consumers on goods and services.

durable goods Goods that last a relatively long time, such as cars and household appliances.

nondurable goods Goods that are used up fairly quickly, such as food and clothing.

services The things we buy that do not involve the production of physical things, such as legal and medical services and education.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Personal Consumption Expenditures (*C*)

ECONOMICS IN PRACTICE

Where Does eBay Get Counted?

So do any of eBay’s services count as part of GDP? eBay’s business is to provide a marketplace for exchange. In doing so, it uses labor and capital and creates value. In return for creating this value, eBay charges fees to the sellers that use its site. The value of these fees do enter into GDP. So while the old knickknacks that people sell on eBay do not contribute to current GDP, the cost of finding an interested buyer for those old goods does indeed get counted.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Gross Private Domestic Investment (*I*)

gross private domestic investment (*I*) Total investment in capital—that is, the purchase of new housing, plants, equipment, and inventory by the private (or nongovernment) sector.

nonresidential investment Expenditures by firms for machines, tools, plants, and so on.

residential investment Expenditures by households and firms on new houses and apartment buildings.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Gross Private Domestic Investment (*I*)

Change in Business Inventories

change in business inventories The amount by which firms’ inventories change during a period. Inventories are the goods that firms produce now but intend to sell later.

GDP = Final sales + Change in business inventories

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Gross Private Domestic Investment (*I*)

Gross Investment versus Net Investment

depreciation The amount by which an asset's value falls in a given period.

gross investment The total value of all newly produced capital goods (plant, equipment, housing, and inventory) produced in a given period.

net investment Gross investment minus depreciation.

$$\text{capital}_{\text{end of period}} = \text{capital}_{\text{beginning of period}} + \text{net investment}$$

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Expenditure Approach

Government Consumption and Gross Investment (*G*)

government consumption and gross investment (*G*) Expenditures by federal, state, and local governments for final goods and services.

Net Exports (*EX* - *IM*)

net exports (*EX* - *IM*) The difference between exports (sales to foreigners of U.S.-produced goods and services) and imports (U.S. purchases of goods and services from abroad). The figure can be positive or negative.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

national income The total income earned by the factors of production owned by a country's citizens.

TABLE 21.3 National Income, 2007

	Billions of Dollars	Percentage of National Income
National Income	12,221.1	100.0
Compensation of employees	7,874.2	64.4
Proprietors' income	1,042.6	8.5
Rental income	65.4	0.5
Corporate profits	1,598.2	13.1
Net interest	602.6	4.9
Indirect taxes minus subsidies	961.4	7.9
Net business transfer payments	94.2	0.8
Surplus of government enterprises	–14.5	–0.1

Source: See Table 6.2.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

compensation of employees Includes wages, salaries, and various supplements—employer contributions to social insurance and pension funds, for example—paid to households by firms and by the government.

proprietors' income The income of unincorporated businesses.

rental income The income received by property owners in the form of rent.

corporate profits The income of corporations.

net interest The interest paid by business.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

indirect taxes minus subsidies Taxes such as sales taxes, customs duties, and license fees less subsidies that the government pays for which it receives no goods or services in return.

net business transfer payments Net transfer payments by businesses to others.

surplus of government enterprises Income of government enterprises.

Calculating GDP

The Income Approach

TABLE 21.4 GDP, GNP, NNP and National Income, 2007

	Dollars (Billions)
GDP	**13,841.3**
Plus: Receipts of factor income from the rest of the world	+ 817.5
Less: Payments of factor income to the rest of the world	– 721.8
Equals: **GNP**	**13,937.1**
Less: Depreciation	– 1,686.6
Equals: **Net national product (NNP)**	**12,250.5**
Less: Statistical discrepancy	– 29.4
Equals: **National income**	**12,221.1**

Source: See Table 6.2.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

net national product (NNP) Gross national product minus depreciation; a nation’s total product minus what is required to maintain the value of its capital stock.

statistical discrepancy Data measurement error.

personal income The total income of households.

Calculating GDP

The Income Approach

TABLE 21.5 National Income, Personal Income, Disposable Personal Income, and Personal Saving, 2007

	Dollars (Billions)
National income	**12,221.1**
Less: Amount of national income not going to households	– 561.6
Equals: **Personal income**	11,659.5
Less: Personal income taxes	– 1,482.5
Equals: **Disposable personal income**	10,177.0
Less: Personal consumption expenditures	– 9,734.2
Personal interest payments	–262.8
Transfer payments made by households	–137.1
Equals: **Personal saving**	42.9
Personal saving as a percentage of disposable personal income:	0.4%

Source: See Table 6.2.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

ECONOMICS IN PRACTICE

GDP: One of the Great Inventions of the 20th Century

While the GDP and the rest of the national income accounts may seem to be arcane concepts, they are truly among the great inventions of the twentieth century.

Paul A. Samuelson and
William D. Nordhaus

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Calculating GDP

The Income Approach

disposable personal income *or* after-tax income Personal income minus personal income taxes. The amount that households have to spend or save.

personal saving The amount of disposable income that is left after total personal spending in a given period.

personal saving rate The percentage of disposable personal income that is saved. If the personal saving rate is low, households are spending a large amount relative to their incomes; if it is high, households are spending cautiously.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Nominal versus Real GDP

current dollars The current prices that we pay for goods and services.

nominal GDP Gross domestic product measured in current dollars.

weight The importance attached to an item within a group of items.

Nominal versus Real GDP

Calculating Real GDP

TABLE 21.6 A Three-Good Economy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Production		**Price Per Unit**		**GDP in Year 1 in Year 1 Prices**	**GDP in Year 2 in Year 1 Prices**	**GDP in Year 1 in Year 2 Prices**	**GDP in Year 2 in Year 2 Prices**
	Year 1 Q_1	**Year 2** Q_2	**Year 1** P_1	**Year 2** P_2	$P_1 \times Q_1$	$P_1 \times Q_2$	$P_2 \times Q_1$	$P_2 \times Q_2$
Good *A*	6	11	$0.50	$0.40	$3.00	$5.50	$2.40	$4.40
Good *B*	7	4	0.30	1.00	2.10	1.20	7.00	4.00
Good *C*	10	12	0.70	0.90	7.00	8.40	9.00	10.80
Total					$12.10	$15.10	$18.40	$19.20
					Nominal GDP in year 1			Nominal GDP in year 2

Nominal versus Real GDP

Calculating Real GDP

base year The year chosen for the weights in a fixed-weight procedure.

fixed-weight procedure A procedure that uses weights from a given base year.

weight The importance attached to an item within a group of items.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Nominal versus Real GDP

Calculating the GDP Deflator

The GDP deflator is one measure of the overall price level. The GDP deflator is computed by the Bureau of Economic Analysis (BEA).

Overall price increases can be sensitive to the choice of the base year. For this reason, using fixed-price weights to compute real GDP has some problems.

Nominal versus Real GDP

The Problems of Fixed Weights

The use of fixed-price weights to estimate real GDP leads to problems because it ignores:

- Structural changes in the economy.
- Supply shifts, which cause large decreases in price and large increases in quantity supplied.
- The substitution effect of price increases.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Limitations of the GDP Concept

GDP and Social Welfare

Society is better off when crime decreases; however, a decrease in crime is not reflected in GDP.

An increase in leisure is an increase in social welfare, but not counted in GDP.

Most nonmarket and domestic activities, such as housework and child care, are not counted in GDP even though they amount to real production.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Limitations of the GDP Concept

Gross National Income per Capita

gross national income (GNI) GNP converted into dollars using an average of currency exchange rates over several years adjusted for rates of inflation.

Limitations of the GDP Concept

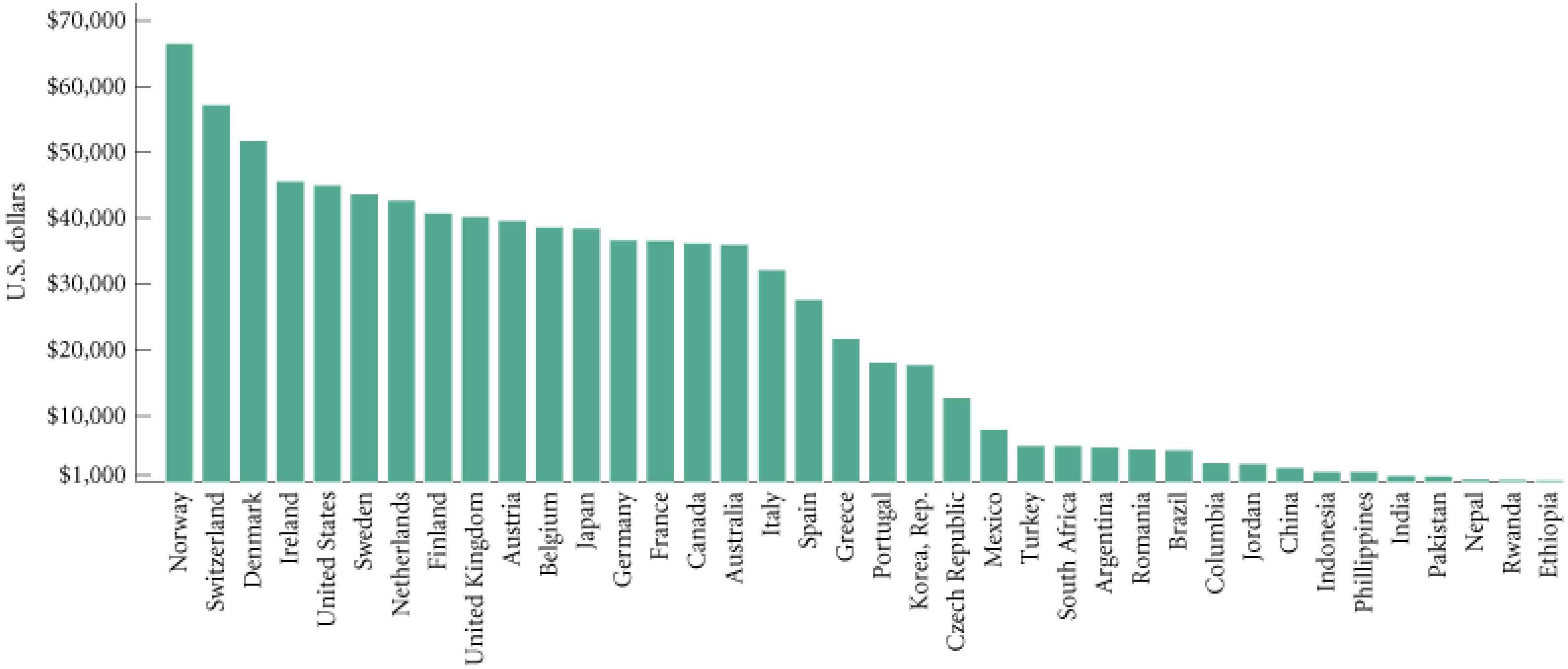
The Underground Economy

underground economy The part of the economy in which transactions take place and in which income is generated that is unreported and therefore not counted in GDP.

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

Limitations of the GDP Concept

The Underground Economy



☐ **FIGURE 21.1** **Per Capita Gross National Income for Selected Countries, 2006**

© 2009 Pearson Education, Inc. Publishing as Prentice Hall

REVIEW TERMS AND CONCEPTS

base year
change in business inventories
compensation of employees
corporate profits
current dollars
depreciation
disposable personal income, or after-tax income
durable goods
expenditure approach
final goods and services
fixed-weight procedure
government consumption and gross investment (G)
gross domestic product (GDP)
gross investment
gross national income (GNI)
gross national product (GNP)
gross private domestic investment (I)
income approach
indirect taxes minus subsidies
intermediate goods
national income
national income and product accounts
net business transfer payments
net exports ($EX - IM$)
net interest
net investment
net national product (NNP)
nominal GDP
nondurable goods
nonresidential investment
personal consumption expenditures (C)
personal income
personal saving
personal saving rate
proprietors' income
rental income
residential investment
services
statistical discrepancy
surplus of government enterprises
underground economy
value added
weight
Expenditure approach to GDP: GDP = $C + I + G + (EX - IM)$
GDP = Final sales - Change in business inventories
Net investment = Capital end of period - Capital beginning of period

©2009 Pearson Education, Inc. Publishing as Prentice Hall