GLOBAL EDITION

Foundations of Macroeconomics

EIGHTH EDITION

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Pearson

FOUNDATIONS OF MACROECONOMICS

delivers a complete, hands-on learning system designed around active learning.

A Learning-by-Doing Approach

The **Checklist** that begins each chapter highlights the key topics covered and the chapter is divided into sections that directly correlate to the Checklist.

The **Checkpoint** that ends each section provides a full page of practice problems to encourage students to review the material while it is fresh in their minds.

Each chapter opens with a question about a central issue that sets the stage for the material.

Why did the price of coffee rise in 2014?

4

Demand and Supply

CHAPTER CHECKLIST

When you have completed your study of this chapter, you will be able to

1. Distinguish between quantity demanded and demand, and explain what determines demand.
2. Distinguish between quantity supplied and supply, and explain what determines supply.
3. Explain how demand and supply determine price and quantity in a market, and explain the effects of changes in demand and supply.

MyLab Economics Big Picture Video

CHECKPOINT 4.1

MyLab Economics Study Plan 4.1
Key Terms Quiz
Solutions Video

Distinguish between quantity demanded and demand, and explain what determines demand.

Practice Problems

The following events occur one at a time in the market for smartphones:

- The price of a smartphone falls.
- Producers announce that the price of a smartphone will fall next month.
- The price of a call made from a smartphone falls.
- The price of a call made from a land-line phone increases.
- An increase in memory makes smartphones more popular.

1. Explain the effect of each event on the demand for smartphones.
2. Use a graph to illustrate the effect of each event.
3. Does any event (or events) illustrate the law of demand?

In the News

South Korea: Cigarette sales plummet after price hike

EYE on the PRICE OF COFFEE

MyLab Economics Critical Thinking Exercise

Why Did the Price of Coffee Rise in 2014?

When a fungus called coffee rust swept through Brazil and other countries of South America in 2014, world coffee production decreased and the price of coffee beans increased.

The table below provides some data on the quantity and price of coffee in 2013 and 2014. What does the data table tell us?

It tells us that the quantity of coffee

You can answer this question from the information provided. You know that an increase in demand brings a rise in the price and an increase in the quantity bought, while a decrease in supply brings a rise in the price and a decrease in the quantity bought.

Because the quantity of coffee decreased and the price increased, there must have been a decrease in the sup-

The figure illustrates the global market for coffee in 2013 and 2014. The demand curve D shows the demand for coffee, which we will assume was the same in both years.

In 2013, the supply curve was S_{2013}, the equilibrium price was $1.04 per pound and the equilibrium quantity traded was 19.4 billion pounds.

In 2014, decreased coffee produc-

Eye On boxes apply theory to important issues and problems that shape our global society and individual decisions.

Confidence-Building Graphs

use color to show the direction of shifts and detailed, numbered captions guide students step-by-step through the action.

100% of the figures are animated in MyLab Economics, with step-by-step audio narration.

FIGURE 4.4

Change in Quantity Demanded Versus Change in Demand

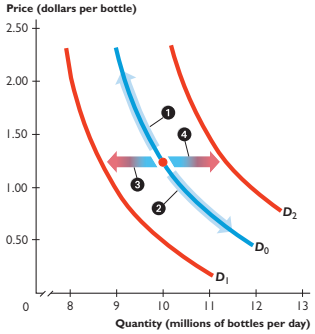
MyLab Economics Animation

1 A decrease in the quantity demanded
The quantity demanded decreases and there is a movement up along the demand curve D_0 if the price of the good rises and other things remain the same.

3 A decrease in demand
Demand decreases and the demand curve shifts leftward (from D_0 to D_1) if

- The price of a substitute falls or the price of a complement rises.
- The price of the good is expected to fall.
- Income decreases.*
- Expected future income or credit decreases.
- The number of buyers decreases.

* Bottled water is a normal good.



2 An increase in the quantity demanded
The quantity demanded increases and there is a movement down along the demand curve D_0 if the price of the good falls and other things remain the same.

4 An increase in demand
Demand increases and the demand curve shifts rightward (from D_0 to D_2) if

- The price of a substitute rises or the price of a complement falls.
- The price of the good is expected to rise.
- Income increases.
- Expected future income or credit increases.
- The number of buyers increases.

MyLab Economics Study Plan 5.3
Key Terms Quiz
Solutions Video

CHECKPOINT 5.3

Describe the uses of real GDP and explain its limitations as a measure of the standard of living.

Practice Problems

The United Nations Human Development Report gives the data for 2014 in Table 1. Other information suggests that household production is similar in Canada and the United States and smaller than in China and Russia. The underground economy is larger in Russia and China and a similar proportion of each of these economies. Canadians and Americans enjoy more leisure hours than do the Chinese and Russians. Canada and the United States spend significantly more on the environment than do China and Russia. Use this information and ignore any other influences to work Problems **1** and **2**.

TABLE 1

Country	Real GDP per person
China	$12,547
Russia	$22,352
United States	$52,947
Canada	$42,155

1. In which pair (or pairs) of countries is it easiest to compare the standard of living? And in which pair (or pairs) is it most difficult? Explain why.

2. Do the differences in real GDP per person correctly rank the standard of living in these four countries? What additional information would we need to be able to make an accurate assessment of the relative standard of living in these four countries?

In the News

Why GDP fails as a measure of well-being

There is a new reason why GDP is a poor measure of economic well-being: It doesn't measure the benefits we gain from free apps and lots of other free stuff on the Internet. And none of the other indexes deal with this problem.

Source: *CBS News*, January 27, 2016

What are the other reasons why GDP is a poor measure of economic well-being?

Solutions to Practice Problems

1. Two pairs—Canada and the United States, and China and Russia—are easy to compare because household production, the underground economy, leisure hours, and the environment are similar in the countries in each pair. The most difficult comparison is Canada and the United States with either China or Russia. Household production and the underground economy narrow the differences but leisure hours and the environment widen them.

2. Differences in real GDP per person probably correctly rank the standard of living because where the gap is small (Canada and the United States), other factors are similar, and where other factors differ, the gaps are huge. More information on the value of household production, the underground economy, the value of leisure, and the value of environmental differences is required to make an accurate assessment of relative living standards.

Solution to In the News

Because GDP measures production that is traded in markets, it does not include household production, leisure time, health and life expectancy, political freedom, and social justice. These contributors to economic well-being are what other indexes such as green GDP and the HDI are designed to deal with.

CHAPTER SUMMARY

Key Points

1. Define GDP and explain why the value of production, income, and expenditure are the same for an economy.

- GDP is the market value of all final goods and services produced within a country in a given time period.
- We can value goods and services either by what they cost to produce (incomes) or by what people are willing to pay (expenditures).
- The value of production equals income equals expenditure.

2. Describe how economic statisticians measure GDP and distinguish between nominal GDP and real GDP.

- BEA measures GDP by summing expenditures and by summing incomes. With no errors of measurement the two totals are the same, but in practice, a small statistical discrepancy arises.
- A country's GNP is similar to its GDP, but GNP is the value of production by factors of production supplied by the residents of a country.
- Nominal GDP is the value of production using the prices of the current year and the quantities produced in the current year.
- Real GDP is the value of production using the prices of a base year and the quantities produced in the current year.

3. Describe the uses of real GDP and explain its limitations as a measure of the standard of living.

- We use real GDP per person to compare the standard of living over time.
- We use real GDP to determine when the economy has reached a business cycle peak or trough.
- We use real GDP per person expressed in purchasing power parity dollars to compare the standard of living among countries.
- Real GDP omits some goods and services and ignores some factors that influence the standard of living.
- The Human Development Index takes some other factors into account.

Key Terms

MyLab Economics Key Terms Quiz

Business cycle, 166
Consumption expenditure, 153
Depreciation, 160
Exports of goods and services, 154
Final good or service, 152
Government expenditure on goods and services, 154
Gross domestic product (GDP), 152
Imports of goods and services, 154
Intermediate good or service, 152
Investment, 153
Net exports of goods and services, 154
Net taxes, 154
Nominal GDP, 162
Potential GDP, 165
Real GDP, 162
Recession, 166
Saving, 154

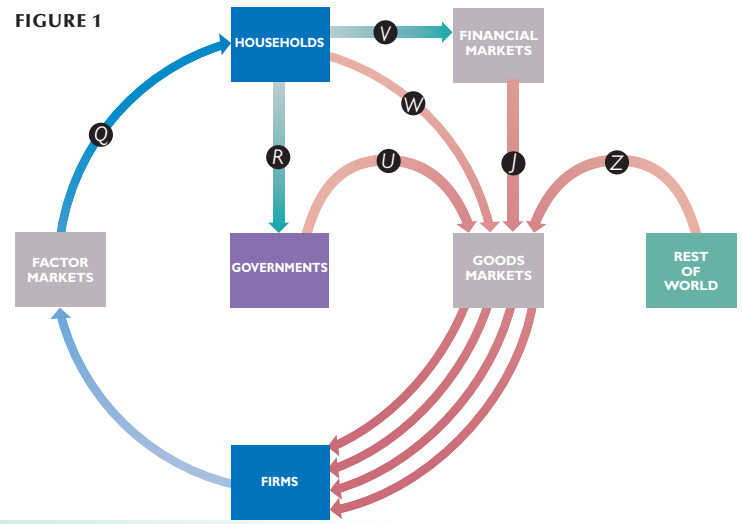
MyLab Economics Chapter 5 Study Plan

CHAPTER CHECKPOINT

Study Plan Problems and Applications

1. Figure 1 shows the flows of income and expenditure in an economy. In 2013, *U* was $2 trillion, *V* was $1.5 trillion, *W* was $7 trillion, *J* was $1.5 trillion, and *Z* was zero. Calculate total income, net taxes, and GDP.

FIGURE 1



Use the following data to work Problems **2** and **3**.

The national accounts of Parchment Paradise are kept on (you guessed it) parchment. A fire in the statistics office destroys some accounts, leaving only the following data:

- GDP (income approach) $2,900
- Consumption expenditure $2,000
- Indirect taxes less subsidies $100
- Interest, rent, and profit $500
- Investment $800
- Government expenditure $400
- Wages $2,000
- Net factor income from abroad $50
- Net exports −$200

2. Calculate GDP (expenditure approach) and depreciation.

3. Calculate net domestic product at factor cost, the statistical discrepancy, and GNP.

Use the following information to work Problems **4** to **6**.

An economy produces only fun and food. Table 1 shows the prices and the quantities of fun and food produced in 2016 and 2017. The base year is 2016.

TABLE 1

(a) In 2016:

Item	Quantity	Price
Fun	40	$2
Food	60	$3

(b) In 2017:

Item	Quantity	Price
Fun	35	$3
Food	65	$2

4. Calculate nominal GDP in 2016 and 2017.

5. Calculate the percentage increase in real GDP in 2017.

6. If potential GDP was $270 in 2016 and it grew by 1 percent in 2017, in which phase of the business cycle is the economy? Explain.

Use the following information to work Problems **7** to **9**.

Expansion remains slow

The Commerce Department reported that retail sales increased 1.3 percent in June. Net exports were up 0.8 percent in the first quarter and inventories held by businesses rose by 0.3 percent in June. Total sales by businesses rose 0.3 percent.

Source: Commerce Department, 2013

7. Which component of GDP changed because retail sales increased? Which component of GDP changed because inventories held by businesses rise?

8. Explain the effect of the rise in net exports on GDP.

9. Does the statement that total sales by businesses were up 0.3 percent mean that GDP increased by 0.3 percent? Explain your answer.

10. Read *Eye on the Booms and Busts* on p. 168 and explain why the expenditure approach and the income approach to calculate GDP led to conflicting stories concerning the peak in economic activity? What was the solution of the NBER committee to conclude about the change in economic activity?

Instructor Assignable Problems and Applications

MyLab Economics Homework, Quiz, or Test if assigned by instructor

1. In France, real GDP was the same in 2012 as it had been in 2011, but in the last quarter of 2012 and the first quarter of 2013, France's real GDP decreased. In the United States, real GDP increased in 2012, and in the first quarter of 2013, it was higher than in the last quarter of 2012.

Based on this information, which country was in a recession at the beginning of 2013? What features of the information provided led you to your conclusion?

2. Classify each of the items in List 1 as a final good or service or an intermediate good or service and identify it as a component of consumption expenditure, investment, or government expenditure on goods and services.

LIST 1

- Banking services bought by Target
- Security system bought by the White House
- Coffee beans bought by Starbucks
- New coffee machines bought by Starbucks
- Starbucks grande mocha frappuccino bought by a student
- New battle ship bought by the U.S. navy

Use the following information to work Problems **3** and **4**.

Kavo Parts is a Dutch company that supplies car parts, such as brake parts, water pumps, and wheel bearings, to Japanese companies. Many Japanese companies, such as Fujifilm and Canon, have branches in the Netherlands.

3. Explain where these activities appear in the National Income and Product Accounts of the Netherlands.

4. Explain where these activities appear in the National Income and Product Accounts of Japan.

Use the data on the economy of Iberia in Table 1 to work Problems **5** and **6**.

TABLE 1

Item	Amount
Net taxes	$18 billion
Government expenditure	$20 billion
Saving	$15 billion
Consumption expenditure	$67 billion
Investment	$21 billion
Exports	$30 billion.

5. Calculate Iberia's GDP.

6. Calculate Iberia's imports of goods and services.

Use Table 2, which shows an economy's total production and the prices of the final goods it produced in 2017 and 2018, to work Problems **7** to **9**.

TABLE 2

(a) In 2017:

Item	Quantity	Price
Fish	100	$2
Berries	50	$6

(b) In 2018:

Item	Quantity	Price
Fish	75	$5
Berries	65	$10

7. Calculate nominal GDP in 2017 and 2018.

8. The base year is 2017. Calculate real GDP in 2017 and 2018.

9. Calculate the percentage increase in production in 2018.

Use the following information to work Problems **10** and **11**.

In 2016, Germany witnessed an increase in the sales of used cars, €67.6 billion, up by 17% from 2015. This is higher than the sales of new cars in 2016, €61.1 billion, which was up by only 4.9 percent in 2015.

Source: autovistaintelligence.com, February 20, 2017

10. Where do new car sales appear in the circular flow of expenditure and income? Explain how an increase in new car sales affects real GDP.

11. Where do sales of used cars appear in the circular flow of expenditure and income? Explain how an increase in used car sales affects real GDP.

12. **The road less traveled**

If we are right, this year is different and global growth will rise to an above trend pace during the second half of 2013.

Source: J.P. Morgan Global Data Watch, May, 2013

Does this news mean that the 2008–2009 recession was expected to end in the second half of 2013? Does recession end only when real GDP growth rises above trend?

MyLab Economics Chapter 5 Study Plan

Multiple Choice Quiz

1. Gross domestic product is the market value of all the _____ in a given time period.

A. goods and services bought by Americans
B. goods and services produced by American companies in all countries
C. final goods and services produced by all firms located in the United States
D. U.S.-produced goods and services bought in the United States

2. A _____ is a final good and _____ is an intermediate good.

A. new car bought by a student; a used SUV bought by a dealer
B. new textbook; a used textbook
C. new iPhone bought by a student; a new computer bought by Walmart
D. tank of gasoline bought by you; jet fuel bought by Southwest Airlines

3. Saving equals _____.

A. income minus consumption expenditure minus net taxes
B. income minus net taxes
C. total income minus total expenditure
D. net taxes minus government expenditure

4. The expenditure approach to measuring GDP _____.

A. should result in a greater value of GDP when compared with the income approach.
B. computes the value of final goods and services produced within Nigeria in a given year.
C. is the sum of Nigerian consumption expenditure and Nigerian investment.
D. computes the value of final goods and services produced by Nigerians everywhere during a year.

5. When using the income approach to measure GDP at market prices, in addition to summing all factor incomes it is necessary to _____.

A. subtract depreciation because profit is not reported as net profit
B. add depreciation because capital depreciates when goods are manufactured
C. add indirect taxes less subsidies to convert aggregate income from factor cost to market prices
D. add a statistical discrepancy which is the sum of depreciation and indirect taxes less subsidies

6. The following statements about the business cycle are correct *except* _____.

A. it is a regular predictable cycle in real GDP around potential GDP
B. from the peak to the trough, the economy is in a recession
C. from the trough to the peak, the economy is in an expansion
D. it is a periodic movement in economic activity including employment

7. Real GDP per person is not an accurate measure of the standard of living because it _____.

A. includes the goods and services that governments buy
B. omits the goods and services that people produce for themselves
C. includes goods and services bought by firms
D. omits the goods and services imported from other countries

APPENDIX: MEASURING REAL GDP

This appendix explains the method used by the Bureau of Economic Analysis (BEA) to calculate real GDP using a measure called **chained-dollar real GDP**. We begin by explaining the problem that arises from using the prices of the base year (the method on pp. 162–163) and how the problem can be overcome.

Chained-dollar real GDP
The measure of real GDP calculated by the Bureau of Economic Analysis.

The Problem With Base Year Prices

When we calculated real GDP on pp. 162–163, we found that real GDP in 2016 was 60 percent greater than it was in 2009. But instead of using the prices of 2009 as the constant prices, we could have used the prices of 2016. In this case, we would have valued the quantities produced in 2009 at the prices of 2016. By comparing the values of real GDP in 2009 and 2016 at the constant prices of 2016, we get a different number for the percentage increase in production. If you use the numbers in Table 5.3 on p. 163 to value 2009 production at 2016 prices, you will get a real GDP in 2009 of $150 million (2016 dollars). Real GDP in 2016 at 2016 prices is $300 million. So by using the prices of 2016, production doubled—a 100 percent increase—from 2009 to 2016. Did production in fact increase by 60 percent or 100 percent?

The problem arises because to calculate real GDP, we weight the quantity of each item produced by its price. If all prices change by the same percentage, then the *relative* weight on each good or service doesn't change and the percentage change in real GDP from the first year to the second is the same regardless of which year's prices we use. But if prices change by different percentages, then the *relative* weight on each good or service *does* change and the percentage change in real GDP from the first year to the second depends on which prices we use. So which year's prices should we use: those of the first year or those of the second?

The answer given by the BEA method is to use the prices of both years. If we calculate the percentage change in real GDP twice, once using the prices of the first year and again using the prices of the second year, and then take the average of those two percentage changes, we get a unique measure of the change in real GDP and one that gives equal importance to the *relative* prices of both years.

To illustrate the calculation of the BEA measure of real GDP, we'll work through an example. The method has three steps:

- Value production in the prices of adjacent years.
- Find the average of two percentage changes.
- Link (chain) to the base year.

Value Production in the Prices of Adjacent Years

The first step is to value production in *adjacent* years at the prices of both years. We'll make these calculations for 2016, and its preceding year, 2015.

Table A5.1 shows the quantities produced and prices in the two years. Part (a) shows the nominal GDP calculation for 2015—the quantities produced in 2015 valued at the prices of 2015. Nominal GDP in 2015 is $145 million. Part (b) shows the nominal GDP calculation for 2016—the quantities produced in 2016 valued at the prices of 2016. Nominal GDP in 2016 is $172 million. Part (c) shows the value of the quantities produced in 2016 at the prices of 2015. This total is $160 million. Finally, part (d) shows the value of the quantities produced in 2015 at the prices of 2016. This total is $158 million.