CHAPTER 20
GROSS DOMESTIC PRODUCT ACCOUNTING

Chapter in a Nutshell

Gross domestic product was introduced in the previous chapter as a basic measure of macroeconomic performance. This chapter identifies the component parts of GDP and describes their significance — personal consumption expenditures, gross private domestic investment, government purchases, and net exports. The circular flow of goods, services, and resources and the circular flow of money are used to show how gross domestic product can be viewed as either flows of expenditure on newly produced final goods and services or as equivalent flows of money income to people who provide the resources used to produce goods and services. These two views of GDP are represented by the expenditure approach and the income approach to measuring GDP.

The expenditure approach focuses on four categories of expenditures. Personal consumption expenditures are made up of spending by households for durable goods, nondurable goods, and services. Gross private domestic investment consists of spending for new plant and equipment, residential housing, and inventory investment. Government spending is comprised of federal, state, and local governmental purchases of goods and services. Net exports are the difference between a country’s exports and imports. The 2006 GDP in the United States was over $13 trillion.

Although GDP is a comprehensive measure, certain types of goods and services are excluded from the calculations, including the value of housework, the value of leisure, and the underground economy. Also, changes in the quality of goods and services and the costs of environmental damage associated with production may not be accurately measured in the GDP accounts.

The income approach looks at the payments made to households that supply resources to the firms producing final goods and services. National income is the sum of all payments made to resource owners and includes the categories of employee’s compensation, rental income, corporate profit, net interest, and proprietors’ income. National income in 2006 was approximately $11.5 trillion, with about 63.8 percent representing payments to workers. When adjustments are made for capital depreciation and nonfactor charges, GDP and national income match, thus demonstrating the equivalence of the circular flows.

After studying this chapter, you should be able to:

- Explain the equivalence between the circular flow of money and the circular flow of goods, services, and resources.
- List the categories of spending on final goods and services used in the expenditure approach to measuring GDP.
- Distinguish between durable and nondurable consumer goods.
- Compare the relative magnitudes of the different components used in the expenditure approach to measuring GDP.
- Explain how economists bring GDP and national income into accord.
- Derive personal income and disposable personal income from national income.
- Explain why GDP is an imperfect measure of overall economic activity in a country.
Concept Check — See how you do on these multiple-choice questions.

Between which two groups are the flows occurring in the circular flow model?

1. The **circular flow of goods, services, and resources** shows how
   a. households and firms are independent from each other
   b. households supply their resources to firms in resource markets and demand goods and services in product markets
   c. the circular flow of money inaccurately measures real GDP
   d. households demand resources and firms demand goods and services
   e. too much spending on consumer goods can cause an economy to collapse

As you consider the answers to this question, think about why businesses keep inventories.

2. Changes in business inventories that are counted as **inventory investment** represent
   a. changes in the stocks of finished final goods, as well as stocks of resources used to produce those goods
   b. intended buildups of inventories
   c. the largest part of gross private domestic investment
   d. opportunities for firms to run inventory clearance sales
   e. accumulations of consumer durables

Which measure, GDP or GNP, emphasizes ownership and which emphasizes location?

3. The difference between **GDP** and **GNP** is that
   a. GDP measures what is produced and earned by a nation’s people and property and GNP measures what is produced and earned in the domestic economy
   b. GDP emphasizes ownership and GNP emphasizes location
   c. GDP measures what is produced and earned in the domestic economy and GNP measures what is produced and earned by a nation’s people and property
   d. GDP includes depreciation and GNP does not
   e. GDP is always larger than GNP

Are transfer payments an addition to GDP?

4. All of the following are examples of **transfer payments except**
   a. government retirement benefits
   b. unemployment insurance benefits
   c. Social Security benefits
   d. rental income
   e. subsidies to farmers

How would GDP change if activities in the underground economy were reported and included?

5. Because most economic activity in the **underground economy** goes unreported, GDP is
   a. overstated
   b. unaffected
   c. understated
   d. understated, but this is offset by the inclusion of the value of housework
   e. overstated, but this is offset by the exclusion of the value of housework
Am I on the Right Track?

Your answers to the questions above should be b, a, c, d, and c. There are two keys to your success in understanding the material in this chapter. First, make sure that you understand the circular flow of goods, services, and resources and the circular flow of money. These two circular flows are connected. Households supply flows of resources to firms in return for money payments — wages, interest, rent, and profit. Then the money payments to households for resources come back to firms as the expenditures on the final goods and services they have produced. The expenditure approach and the income approach to measuring GDP are embedded in these circular flow models. The second key to success with this chapter is to learn the key terms. As was true in the previous chapter, there are many new terms.

Key Terms Quiz — Match the terms on the left with the definitions in the column on the right.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. circular flow of goods, services, and resources</td>
<td>a. the movement of income in the form of resource payments from firms to households, and of income in the form of revenue from households to firms</td>
</tr>
<tr>
<td>2. services</td>
<td>b. a method of calculating GDP by adding all the incomes earned in the production of final goods and services</td>
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<tr>
<td>3. circular flow of money</td>
<td>c. personal income minus personal taxes</td>
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<tr>
<td>4. inventory investment</td>
<td>d. the difference between the value of a good that a firm produces and the value of the goods the firm uses to produce it</td>
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<tr>
<td>5. final goods</td>
<td>e. the value of existing capital stock used up in the process of producing goods and services</td>
</tr>
<tr>
<td>6. income approach</td>
<td>f. the sum of all payments made to resource owners for the use of their resources</td>
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<tr>
<td>7. intermediate goods</td>
<td>g. all goods and services bought by households</td>
</tr>
<tr>
<td>8. national income</td>
<td>h. the movement of goods and services from firms to households, and of resources from households to firms</td>
</tr>
<tr>
<td>9. value added</td>
<td>i. the purchase by firms of plant, equipment, and inventory goods</td>
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<td>10. gross national product (GNP)</td>
<td>j. all goods and services bought by government</td>
</tr>
<tr>
<td>11. personal consumption expenditures</td>
<td>k. an economy’s exports to other economies, minus its imports from other economies</td>
</tr>
<tr>
<td>12. capital depreciation</td>
<td>l. stocks of finished goods and raw materials that firms keep in reserve to facilitate production and sales</td>
</tr>
<tr>
<td>13. gross private domestic investment</td>
<td>m. goods used to produce other goods</td>
</tr>
<tr>
<td>14. expenditure approach</td>
<td>n. goods expected to last less than one year</td>
</tr>
<tr>
<td>15. personal income</td>
<td>o. the market value of all final goods and services in an economy produced by resources owned by people of that economy, regardless of where the resources are located</td>
</tr>
<tr>
<td>16. government purchases</td>
<td>p. the unreported or illegal production of goods and services in the economy that is not counted in GDP</td>
</tr>
<tr>
<td>17. transfer payments</td>
<td>q. national income, plus income received but not earned, minus income earned but not received</td>
</tr>
</tbody>
</table>
18. net exports _____ r. productive activities that are instantaneously consumed
19. disposable personal income _____ s. goods expected to last at least a year
20. durable goods _____ t. income received but not earned
21. underground economy _____ u. a method of calculating GDP that adds all expenditures made for final goods and services by households, firms, and
22. nondurable goods _____ v. goods purchased for final use, not for resale

**True-False Questions** — If a statement is false, explain why.

1. The circular flow of goods, services, and resources and the circular flow of money show equivalent streams measured in dollars. (T/F)

2. Personal consumption expenditures comprise about 20 percent of GDP. (T/F)

3. A final good or service is produced for resale. (T/F)

4. Sales of previously owned automobiles are included in GDP. (T/F)

5. Gross private domestic investment includes government spending on the National Guard but excludes other military spending. (T/F)

6. An increase in net exports causes GDP to decrease. (T/F)

7. An estimate of the value of production in the underground economy is included in official GDP statistics that are compiled by the government. (T/F)

8. Disposable personal income is equal to personal income minus personal taxes. (T/F)

9. Durable goods are expected to last for at least one year. (T/F)

10. Transportation facilities are among the goods and services that the government purchases. (T/F)

11. The sum of the values of intermediate goods will be equal to GDP. (T/F)
12. National income measures the sum of all payments made to resource owners for the use of their resources. (T/F)

13. People who provide firms with capital receive interest income. (T/F)

14. Stockholders in corporations receive proprietors’ income. (T/F)

15. GDP and GNP are precisely equal to each other. (T/F)

**Multiple-Choice Questions**

1. One difference between GDP and GNP is that
   a. factor incomes to foreign-owned firms in the United States are included in GNP
   b. depreciation is excluded from GNP
   c. the corporate profits tax is excluded from GDP
   d. indirect business taxes are counted twice in GDP
   e. factor incomes to foreign-owned firms in the United States are included in GDP

2. The circular flow of goods, services, and resources shows the interdependence of
   a. the supplies of goods and the supplies of services
   b. firms and investment
   c. intermediate goods and final goods
   d. net imports and net exports
   e. households and firms

3. The largest component of GDP measured by the expenditures approach is
   a. consumption
   b. investment
   c. government spending
   d. net exports
   e. compensation of employees

4. The expenditure approach to measuring GDP is the sum of expenditures in all of the following categories except
   a. gross private domestic investment
   b. personal consumption expenditures
   c. government spending on goods and services
   d. transfer payments by the government
   e. the difference between exports and imports

5. If \( C = $500, I = $200, G = $150, \) and \( X - M = -5, \) what is GDP?
   a. $850
   b. $855
   c. $845
   d. $755
   e. $745
6. If a large number of Egypt's citizens work overseas, then perhaps the best measure of the Egyptian people's economic well-being is:
   a. the GDP deflator
   b. real GNP
   c. real GDP
   d. nominal GNP
   e. nominal GDP

7. The income approach calculates GDP with all of the following except:
   a. interest
   b. wages
   c. rent
   d. investment
   e. profits

8. A decline in inventories shows up as:
   a. a decrease in gross private domestic investment
   b. increases in production
   c. an increase in gross private domestic investment
   d. a decrease in production
   e. decreases in services

9. In order to calculate disposable personal income:
   a. direct taxes are subtracted from national income
   b. transfer payments are added to national income
   c. transfer payments are subtracted from personal income
   d. direct taxes are subtracted from personal income
   e. direct taxes are added to personal income

10. In the circular flow model of goods, services, and resources, __________ flow(s) from firms to households:
    a. labor
    b. capital
    c. land
    d. profits
    e. goods

11. GDP understates the total value of all final goods and services produced for all the following reasons except:
    a. the costs of environmental problems are not included
    b. quality improvements in products are not included
    c. the value of leisure is not included
    d. the value of housework is not included
    e. the value of the underground economy is not included

12. All of the following are considered to be components of investment in calculating GDP except:
    a. new residential construction
    b. net increases in inventory
    c. new factories
    d. purchases of new equipment by firms
    e. financial investment
13. If depreciation of capital and nonfactor charges are zero, then
   a. GDP is the same as national income
   b. GDP will shrink over time
   c. gross investment exceeds depreciation
   d. inventory investment is positive
   e. the capital stock grows

14. It is necessary to subtract __________ from gross domestic product in order to compute national income.
   a. nonfactor charges
   b. capital depreciation
   c. transfer payments
   d. nonfactor charges and capital depreciation
   e. factor payments to the rest of the world

15. The largest share of national income is accounted for by
   a. corporate profit
   b. proprietors’ income
   c. compensation of employees
   d. consumption of nondurable goods
   e. income taxes

16. Personal income minus __________ is equal to disposable income.
   a. depreciation
   b. indirect business taxes
   c. GNP
   d. transfer payments
   e. direct taxes

17. All of the following are examples of transfer payments except
   a. Social Security benefits
   b. unemployment benefits
   c. the wages of government employees
   d. veterans’ benefits
   e. Temporary Assistance for Needy Families

18. The largest component of consumption expenditures is
   a. compensation to employees
   b. profits
   c. rents and royalties
   d. services
   e. proprietors’ income

19. The value-added approach to GDP computation involves
   a. problems with double counting
   b. subtracting income from expenditures
   c. summing the addition to value at each stage in production
   d. summing the price times quantity for all intermediate goods
   e. improving technology so that value is added at each stage
20. Because most economic activity in the underground economy goes unreported, GDP is
   a. overstated
   b. unaffected
   c. understated
   d. understated, but this is offset by the inclusion of the value of housework
   e. overstated, but this is offset by the exclusion of the value of housework

The following questions relate to the historical, theoretical, global, and applied perspectives in the text.

21. Adam Smith maintained that only the production of goods that promote economic growth should be included in GDP because
   a. services are less valuable than goods
   b. services are hard to measure
   c. goods sustain the physical well-being of people and contribute to the wealth of nations
   d. services are generated by people who lack a work ethic
   e. goods can be reproduced but services cannot

22. In the expanded version of the circular flow model, corresponding to the flows of goods, services, and resources, there is a
   a. percentage deduction from GDP because finite natural resources are consumed in production
   b. percentage deduction from GDP because some of these goods and services are exported
   c. percentage deduction from GDP because some of these goods and services are imported
   d. percentage increase added to GDP because some of these goods and services are exported
   e. counterbalancing money flow

23. Examination of the composition of GDP in the United States as well as for other industrialized market economies shows that ________________ is the largest category of expenditures.
   a. consumption
   b. investment
   c. government spending
   d. net exports
   e. compensation to employees

24. Among those who underreport their income on federal tax returns, the biggest offenders are
   a. drug dealers
   b. prostitutes
   c. corporations
   d. informal suppliers
   e. sole proprietorships

Fill in the Blanks

1. The expenditure approach to measuring GDP consists of the sum of ______________________,
   ______________________, ______________________, and ______________________.
   ______________________.
2. GDP has limitations as a measure of economic well-being because it excludes_____________________.
   ____________________, _________________________, ______________________, and
   ________________________.

3. National income is the sum of__________________________, ___________________________,
   _________________________, ________________________, and
   ________________________.

4. One of the driving forces behind the underground economy is ____________________________.

5. Gross national product is GDP ________________ receipts of factor income from the rest of the world,
   ____________ payments of factor income to the rest of the world.

**Discussion Questions**

1. How do the expenditure approach and the income approach to measuring GDP relate to the circular flow model?

2. Approximately what percentage of GDP is represented in each of the four categories of expenditure?

3. Why are inventories counted as part of investment?

4. Approximately what percentage of national income is represented in each of its categories?
5. If you were studying living standards in a country, which measure would you find more informative, national income or personal income? Why?

Problems

1. Use the following data to calculate GDP, GNP, national income, personal income, and disposable personal income.

   | Personal Consumption Expenditures | 1,000 |
   | Interest                         | 80    |
   | Corporate Profit                 | 200   |
   | Government Purchases             | 400   |
   | Capital Depreciation             | 100   |
   | Rent                             | 300   |
   | Gross Private Domestic Investment| 400   |
   | Compensation of Employees        | 750   |
   | Exports                          | 100   |
   | Imports                          | 180   |
   | Nonfactor Charges                | 70    |
   | Proprietors’ Income              | 220   |
   | Income Tax                       | 200   |
   | Income Earned but not Received   | 110   |
   | Income Received but not Earned   | 200   |
   | Receipt of Factor Incomes from the Rest of the World | 80 |
   | Payment of Factor Incomes to the Rest of the World | 70 |
2. Suppose that in the following year, economic activity for Problem 1 undergoes the changes that are listed in
the table below. How does GDP change?

<table>
<thead>
<tr>
<th>Item</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate Profits</td>
<td>-100</td>
</tr>
<tr>
<td>Capital Depreciation</td>
<td>+50</td>
</tr>
<tr>
<td>Exports</td>
<td>+80</td>
</tr>
<tr>
<td>Income Earned but not Received</td>
<td>+10</td>
</tr>
</tbody>
</table>

**Everyday Applications**

Think of some specific examples of the underground economy. Do you know anyone who has worked in the
underground economy? How would a lowering of tax rates affect the underground economy and measured
GDP? What would be the impact of legalizing marijuana?

**Economics Online**

One of the earliest groups that devoted itself to the collection of economic data like that included in the GDP
accounts is the National Bureau of Economic Research (NBER). The NBER was founded in 1920 and
continues to promote a better understanding of the economy through the research it supports. Visit the NBER
Web site (http://www.nber.org/).

**Answers to Questions**

**Key Terms Quiz**

| a. 3 | f. 8 | k. 18 | p. 21 | u. 14 |
| b. 6 | g. 11| l. 4  | q. 15 | v. 5  |
| c. 19| h. 1 | m. 7  | r. 2  |       |
| d. 9 | i. 13| n. 22 | s. 20 |       |
| e. 12| j. 16| o. 10 | t. 17 |       |

**True-False Questions**

1. True
2. False. Personal consumption expenditures account for approximately two-thirds of GDP.
3. False. A final good is produced for final use.
4. False. A used car has already been counted as part of a previous year’s GDP.
5. False. Expenditures on the National Guard and other military expenditures are part of government
6. False. An increase in net exports causes GDP to increase.
7. False. The underground economy is left out of GDP calculations.
8. True
9. True
10. True
11. False. The sum of the value added for intermediate goods will equal GDP.
12. True
13. True
15. False. GNP is equal to GDP plus factor income to Americans producing overseas minus factor income to foreigners producing in the United States.

Multiple-Choice Questions

1. e
2. e
3. a
4. d
5. c
6. b
7. d
8. a
9. d
10. e
11. a
12. e
13. a
14. d
15. c
16. e
17. c
18. d
19. c
20. c
21. c
22. e
23. a
24. e

Fill in the Blanks

1. personal consumption expenditures; gross private domestic investment; government purchases; net exports
2. the value of housework; the underground economy; leisure; improvement in the quality of goods and services; the cost of environmental damage
3. compensation of employees; rental income; corporate profits; net interest; proprietors’ income
4. tax avoidance
5. plus; minus

Discussion Questions

1. The expenditure approach corresponds to the money flow from households, businesses, government, and the international sector purchasing final goods and services. The income approach corresponds to the money flow from buyers of resources to the households that supply those resources for use in production. The two money flows are equivalent.

2. Consumption is by far the largest category of expenditure. Consumption accounted for some 69.7 percent of GDP in 2006. Government spending accounted for approximately 19 percent of 2006 GDP, investment accounted for another 17.4 percent, and net exports were negative. As a percentage of GDP, the difference between exports and imports was about 6 percent.

3. Inventories are unsold output. Firms keep stocks of finished final goods, as well as stocks of resources used to produce those goods, in reserve in order to promote efficiency in production and sales. A firm can’t expect to sell or to produce if it doesn’t have a stock of goods to sell or raw materials to use in production.

4. Compensation of employees dwarfs all the other categories with about 63.7 percent of the total in 2006. Rental income was only 0.6 percent of the total in 2006. Corporate profit, net interest, and proprietors’ income were 13.8 percent, 4.7 percent, and 8.5 percent of national income, respectively, in 2006.

5. Personal income is probably more useful. This is because personal income shows the income that households actually receive, including transfer payments. Also, certain taxes that are withheld from income,
like Social Security taxes, are accounted for by personal income. Personal income minus direct taxes gives disposable personal income.

**Problems**

1. GDP = Consumption + Investment + Government Purchases + Exports - Imports  
   \[= 1,000 + 400 + 400 + 100 - 180 = $1,720\]

   GNP = GDP + Factor Incomes from the Rest of the World - Factor Incomes to the Rest of the World  
   \[= 1,720 + 80 - 70 = $1,730\]

   National Income = GDP - Capital Depreciation - Nonfactor Charges = 1,720 - 100 - 70 = $1,550

   Personal Income = National Income - Income Earned but not Received + Income Received but not Earned  
   \[= 1,550 - 110 + 200 = $1,640\]

   Personal Income - Direct Taxes = 1,640 - 200 = $1,440

2. GDP will decrease by $20 to $1,700 because the $100 drop in corporate profits is partly offset by an $80 increase in exports. Changes in capital depreciation and income earned but not received have no effect on GDP.
Homework Questions

True-False Questions — If a statement is false, explain why.

1. The United States GDP measures the dollar value of all final output by United States citizens while the GNP measures the dollar value of all final output produced in the United States. (T/F)

2. The circular flow of goods, services, and resources suggests causes for the business cycle. (T/F)

3. A trade deficit (imports greater than exports) causes GDP to decrease. (T/F)

4. Including the underground economy in GDP calculations would decrease GDP because most of these activities are harmful. (T/F)

5. An increase in transfer payments by government causes GDP to decrease. (T/F)

Multiple-Choice Questions

1. Personal income minus direct taxes is equal to
   a. disposable income
   b. consumption
   c. saving
   d. investment
   e. the deficit

2. If all American firms operating overseas decided to relocate within the United States, then
   a. GNP would increase
   b. GNP would be unchanged but GDP would increase
   c. both GNP and GDP would decrease
   d. GNP and GDP would be unchanged
   e. GNP would decrease and GDP would increase

3. The largest component of GDP is
   a. compensation to employees
   b. rent
   c. interest
   d. government spending
   e. consumption
4. One difference between Adam Smith’s conception of GDP and the modern conception of GDP is that
   a. modern economists only count goods in GDP and not services
   b. modern economists count both intermediate and final goods and services in order to inflate GDP
      statistics while Smith only counted final goods and services
   c. Smith excluded services from his calculation of GDP while modern economists include services
   d. Smith counted only agricultural production in GDP while modern economists include all types of
      production
   e. Smith included the value of activities in the underground economy in GDP while modern economists do
      not

5. Unsold goods that add to a firm’s inventories are counted in GDP accounts as
   a. depreciation
   b. consumption since they are intended for consumption
   c. government spending since they can be deducted from taxes and cause the deficit to increase
   d. part of gross private domestic investment
   e. a decrease in exports if the goods were intended for export and a decrease in consumption otherwise

**Discussion Questions/Problems**

1. If capital depreciation is greater than gross private domestic investment year after year, how will GDP be
   affected over time? Explain.

2. Describe three ways that the calculation of GDP might be improved.