Measuring Domestic Output, National Income, and the Price Level

The subject of Chapter 7 is **national income accounting.** The first measure that you will learn about in the chapter is the *gross domestic product* (GDP). The GDP is an important economic statistic because it provides the best estimate of the total market value of all final goods and services produced by our economy in one year. You will also discover why GDP is a monetary measure that counts only the value of final goods and services and excludes nonproductive transactions such as secondhand sales.

National income accounting involves estimating output, or income, for the nation's society as a whole, rather than for an individual business firm or family. Note that the terms *"output"* and *"income"* are interchangeable because the nation's domestic output and its income are identical. The value of the nation's output equals the total expenditures for this output, and these expenditures become the income of those who have produced this output. Consequently, there are two equally acceptable methods—expenditures or income—for determining GDP.

From an **expenditure** perspective, GDP is composed of four expenditure categories: personal consumption expenditures (*C*), gross private domestic investment (*I_g*), government purchases (*G*), and net exports (*X_n*). These expenditures become income for people when they are paid out in the form of employee compensation, rents, interest, proprietors' income, and corporate profits, with adjustments made for indirect business taxes, depreciation, and net foreign factor income earned in the United States. In national income accounting, the amount spent to purchase this year's total output is equal to money income derived from production of this year's output.

This chapter also explains the relationship of GDP to other national accounts. These accounts include *net domestic product* (NDP), *national income* (NI) as derived from NDP, *personal income* (PI), and *disposable income* (DI). The relationship between GDP, NDP, NI, PI, and DI is shown in Table 7.4 of the text. The circular flow using the expenditures and income approaches to GDP are illustrated in Figure 7.3 of the text.

By measuring the **price level,** economists are able to determine how much inflation (an increase in the price level) has occurred in the economy. This information is important because income–output measures are expressed in monetary units, so if accurate comparisons are to be made between years, these monetary measures must be adjusted to take account of changes in the price level. A simple example is presented to show how a GDP price

index, or deflator, is constructed. The index is used to adjust *nominal* GDP to determine *real* GDP for comparison purposes. The GDP price index and the consumer price index as measures of the rate of inflation will also be explained.

The last section of the chapter looks at the shortcomings of GDP as a measure of total output and economic well-being. You will learn about economic factors that are excluded from GDP measurement—nonmarket or illegal transactions, changes in leisure and product quality, differences in the composition and distribution of output, and the environmental effects of GDP production—and how their exclusion can lead to an under- or overstatement of economic well-being. Although national income accounts are not perfect measures of all economic conditions, they are still reasonably accurate and useful indicators of the performance of the national economy.

Chapter 7 is the essential background for Parts 2 and 3 of the text, which explain the history of and the factors that determine the level of domestic output and income in the economy. Chapter 7 is important because it explains the several methods used to measure the performance of the economy in a given year and to make the adjustments necessary to ensure accurate measurements of performance over time.

■ CHECKLIST

When you have studied this chapter you should be able to

☐ Identify three ways national income accounting can be used for economic decision making.
☐ Give a definition of the gross domestic product (GDP).
☐ Explain why GDP is a monetary measure.
☐ Describe how GDP measures value added and avoids multiple counting.
☐ Give examples of two types of nonproduction transactions that are excluded from GDP.
☐ Describe the relationship between the expenditures and income approaches to GDP accounting.
☐ List the three types of expenditures included in personal consumption expenditures (*C*).
☐ Identify three items included in gross private domestic investment (*I_g*).
☐ Explain why changes in inventories are an investment.
☐ Distinguish between gross and net investment.

☐ Discuss how differences in the amount of net investment affect the production capacity of the economy.
☐ List two components included in government purchases (G).
☐ Describe the meaning and calculation of net exports (X_n).
☐ Compute GDP using the expenditures approach when given national income accounting data.
☐ Identify the five income items that make up U.S. national income.
☐ List three things that can happen to corporate profits.
☐ Explain the adjustment of indirect business taxes to national income accounts.
☐ Define consumption of fixed capital and discuss how it affects national income accounts.
☐ Describe the effect of net foreign factor income on national income accounts.
☐ Compute GDP using the income approach when given national income accounting data.
☐ Define net domestic product (NDP).
☐ Show how to derive U.S. national income (NI) from net domestic product (NDP).
☐ Define personal income (PI) in national income accounts.
☐ Explain how to obtain disposable income (DI) from personal income (PI).
☐ Use Figure 7.3 in the text to describe the circular flow model for GDP.
☐ Distinguish between nominal and real GDP.
☐ Construct a price index when given the necessary price and quantity data.
☐ Obtain a price index when given data on nominal and real GDP.
☐ Discuss some real-world factors that affect the GDP price index.
☐ Distinguish between the GDP price index and the consumer price index (CPI).
☐ List eight shortcomings of GDP as a measure of total output and economic well-being.

■ CHAPTER OUTLINE

1. **National income accounting** consists of concepts that enable those who use them to measure the economy's output, to compare it with past outputs, to explain its size and the reasons for changes in its size, and to formulate policies designed to increase it.

2. The market value of all final goods and services produced in the economy during the year is measured by the **gross domestic product** (GDP).
   a. GDP is a *monetary measure* that is calculated in dollar terms rather than in terms of physical units of output.
   b. To avoid multiple counting, GDP includes only *final* goods and services (goods and services that will not be processed further during the *current* year).
   c. Nonproduction transactions are not included in GDP; purely financial transactions and secondhand sales are therefore excluded.

d. Measurement of GDP can be accomplished by either the expenditures or the income method, but the same result is obtained by the two methods.

3. Computation of the GDP by the **expenditures approach** requires the summation of the total amounts of the four types of spending for final goods and services.
   a. **Personal consumption expenditures (C)** are the expenditures of households for *durable goods* and *nondurable goods* and for *services*.
   b. **Gross private domestic investment (I_g)** is the sum of the spending by business firms for machinery, equipment, and tools; spending by firms and households for new buildings; and the changes in the inventories of business firms.
   (1) A change in inventories is included in investment because it is the part of the output of the economy that was not sold during the year.
   (2) Investment does not include expenditures for stocks or bonds or for secondhand capital goods.
   (3) Gross investment exceeds net investment by the value of the capital goods worn out during the year. An economy in which net investment is positive is one with an expanding production capacity.
   c. **Government purchases (G)** are the expenditures made by all governments in the economy for products produced by business firms and for resource services from households. They include expenditures the government makes for products and services to provide public services, and spending for social capital (goods with a long lifetime such as highways).
   d. **Net exports (X_n)** in an economy equal the expenditures made by foreigners for goods and services produced in the economy less the expenditures made by the consumers, governments, and investors of the economy for goods and services produced in foreign nations.
   e. In equation form, $C + I_g + G + X_n = GDP$

4. Computation of GDP by the **income approach** requires adding the income derived from the production and sales of final goods and services. The five income items are
   a. Compensation of employees (the sum of wages and salaries *and* wage and salary supplements).
   b. Rents.
   c. Interest (only the interest payments made by business firms are included, and interest payments made by government are excluded).
   d. Proprietors' income (the profits or net income of unincorporated firms).
   e. Corporate profits which are subdivided into
   (1) Corporate income taxes
   (2) Dividends
   (3) Undistributed corporate profits.
   f. Three additions are made to the income side to balance it with expenditures.
   (1) Indirect business taxes are added because they are initially income that later gets paid to government.
   (2) Depreciation, or the consumption of fixed capital, is added because it is initially income to businesses that later gets deducted in calculating profits.

(3) Net foreign factor income is added because it reflects income from all domestic output regardless of the foreign or domestic ownership of domestic resources.

5. In addition to GDP, *four other national income measures* are important in evaluating the performance of the economy. Each has a distinct definition and can be computed by making additions to or deductions from another measure.

   a. NDP is the annual output of final goods and services over and above the capital goods worn out during the year. It is equal to the GDP minus depreciation (consumption of fixed capital).

   b. NI is the total income *earned* by U.S. owners of land and capital and by the U.S. suppliers of labor and entrepreneurial ability during the year. It equals NDP *minus* net foreign factor income earned in the United States and *minus* indirect business taxes.

   c. PI is the total income *received*—whether it is earned or unearned—by the households of the economy before the payment of personal taxes. It is found by *adding* transfer payments to and *subtracting* social security contributions, corporate income taxes, and undistributed corporate profits from the NI.

   d. DI is the total income available to households after the payment of personal taxes. It is equal to PI less personal taxes and also equal to personal consumption expenditures plus personal saving.

   e. The relations among the five income–output measures are summarized in Table 7.4.

   f. Figure 7.3 is a more realistic and complex circular flow diagram that shows the flows of expenditures and incomes among the households, business firms, and governments in the economy.

6. *Nominal GDP* is the total output of final goods and services produced by an economy in one year multiplied by the market prices when they were produced. Prices, however, change each year. To compare total output over time, nominal GDP is converted to *real GDP* to account for these price changes.

   a. There are two methods for deriving *real GDP* from *nominal GDP.* The first method involves computing a *price index.*

   (1) This index is a ratio of the price of a market basket in a given year to the price of the same market basket in a base year, with the ratio multiplied by 100.

   (2) To obtain real GDP, divide nominal GDP by the price index expressed in hundredths.

   b. In the second method, nominal GDP is broken down into prices and quantities for each year. Real GDP is found by using base-year prices and multiplying them by each year's physical quantities. The GDP price index for a particular year is the ratio of nominal to real GDP for that year.

   c. In the real world, complex methods are used to calculate the GDP price index. The price index is useful for calculating real GDP. The price index number for a reference period is arbitrarily set at 100.

   (1) For years when the price index is below 100, dividing nominal GDP by the price index (in hundredths) inflates nominal GDP to obtain real GDP.

   (2) For years when the price index is greater than 100, dividing nominal GDP by the price index (in hundredths) deflates nominal GDP to obtain real GDP.

   d. The consumer price index (CPI) is a fixed-weight price index that measures the ratio of the current price of a fixed, base-period market basket to the base-period price of the same market basket, multiplied by 100. It is designed to measure the cost of goods and services purchased by a typical urban consumer.

7. GDP has shortcomings as a measure of total output and economic well-being.

   a. It excludes the value of final goods and services not bought and sold in the markets of the economy.

   b. It excludes the amount of leisure the citizens of the economy are able to have.

   c. It does not record the improvements in the quality of products that occur over the years.

   d. It does not measure the market value of the final goods and services produced in the underground sector of the economy.

   e. It does not record the pollution costs to the environment of producing final goods and services.

   f. It does not measure changes in the composition and the distribution of the domestic output.

   g. It is not a measure of per capita output because it does not take into account changes in the size of the economy's population.

   h. It does not measure noneconomic sources of well-being.

■ **HINTS AND TIPS**

1. Read through the chapter several times. A careful reading will enable you to avoid the necessity of memorizing. Begin by making sure you know precisely what GDP means and what is included in and excluded from its measurement.

2. Accounting is essentially an adding-up process. This chapter explains in detail and lists the items that must be added to obtain GDP by the *expenditures approach* or *income approach.* It is up to you to learn what to add on the expenditure side and what to add on the income side. Figure 7.1 is an important accounting reference for this task.

3. Changes in the price level have a significant effect on the measurement of GDP. Practice converting nominal GDP to real GDP using a price index. Problems 4 and 5 in this *Study Guide* should help you understand nominal and real GDP and the conversion process.

4. GDP is a good measure of the market value of the output of final goods and services that are produced in an economy in 1 year; however, the measure is not perfect, so you should be aware of its limitations, which are noted at the end of the chapter.

■ IMPORTANT TERMS

national income accounting

price level

gross domestic product
(GDP)

intermediate goods

final goods

gross private domestic
investment

net private domestic
investment

government purchases

net exports

national income (NI)

indirect business taxes

consumption of fixed
capital (depreciation)

multiple counting

value added

expenditures approach

income approach

personal consumption
expenditures

net domestic product
(NDP)

personal income (PI)

disposable income (DI)

nominal GDP

price index

real GDP

consumer price index