ECONOMICS (20TH EDITION), McConnell, Brue, and Flynn

Chapter 25 Study Guide

The subject of Chapter 25 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 or the government when they are paid out in the form of employee compensation, rents, interest, proprietors' income, corporate profits, and taxes on production and imports. GDP can be calculated from national income by making adjustments to account for net foreign factor income, a statistical discrepancy, and depreciation. 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 income** 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 25.4 of the text. The circular flow using the expenditures and income approaches to GDP are illustrated in Figure 25.3 of the text.

The next to the last section of the chapter shows you how to calculate **real GDP** from **nominal GDP.** This adjustment is important because nominal GDP is measured in monetary units, so if accurate comparisons are to be made for GDP over time, 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 is constructed. The index is then used to adjust *nominal GDP* to obtain *real GDP* and make correct GDP comparisons from one year to the next. The text also provides data for the U.S. economy so you can see why the calculation of real GDP is necessary and how it is used.

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.

■ 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 how positive or negative changes in inventories affect investment.
- Distinguish between gross and net investment.
- Discuss how differences in the amount of net investment affect the production capacity of the economy.
- List the 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 six income items that make up U.S. national income.
- List three things that can happen to corporate profits.
- Explain why taxes on production and imports are included as part of national income.
- Describe the effect of net foreign factor income on national income accounts.
- Define consumption of fixed capital and discuss how it affects 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 25.3 in the text to describe the circular flow model for GDP.
- Distinguish between nominal and real GDP.
- Construct a price index when given 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.
- List seven shortcomings of GDP as a measure of total output and economic well-being.
- Identify some of the sources of data the Bureau of Economic Analysis uses to estimate consumption, investment, government purchases, and net exports (*Last Word*).

■ 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.
    a. The market value of all final goods and services produced in the domestic economy during the year is measured by the *gross domestic product (GDP).*
    b. GDP is a *monetary measure* that is calculated in dollar terms rather than in terms of physical units of output.
    c. GDP includes in its calculation only the value of *final goods* (consumption goods, capital goods, and services purchased by final users and that will not be resold or processed further during the *current* year).
        1. GDP excludes the value of *intermediate goods* (ones that are purchased for resale or further processing) because including both final goods and intermediate goods would result in *multiple counting* of the goods and overstate GDP.
        2. Another way to avoid multiple counting is to measure and add only the *value added* at each stage of the production process. Value added is the market value of a firm's output minus the value of the inputs the firm bought from others to produce the output.
    d. Nonproduction transactions are not included in GDP
        1. Purely financial transactions such as public transfer payments, private transfer payments, and stock market transactions are simply exchanges of money or paper assets and do not create output.
        2. Sales of secondhand or used goods are excluded because they were counted in past production and do not contribute to current production.
    e. Measurement of GDP can be accomplished by either the expenditures approach or the income approach, but the same result is obtained by the two methods.

2. 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 construction (buildings); and the changes in the inventories of business firms.
        1. An increase in inventories in a given year increases investment that year because it is part of the output of the economy that was produced but not sold that year; a decrease in inventories in a given year decreases investment that year because it was included as part of the output from a prior year.
        2. Investment does not include expenditures for stocks or bonds (a transfer of paper assets) or for used or secondhand capital goods (because they were counted as part of investment in the year they were new capital goods).
        3. Gross investment exceeds net investment by the value of the capital goods worn out during the year (depreciation). An economy in which net investment is positive is one with an expanding production capacity because the stock of capital goods increases.
        4. *Consider This* (Stocks versus Flows). A reservoir can be used as an analogy to explain the difference between stocks and flows as they relate to capital goods, gross investment, and depreciation. The volume or level of water in the reservoir would be similar to the existing stock of capital goods in an economy. The inflows of water to the reservoir would be similar to gross investment and the outflows would be similar to depreciation. If the inflow is greater than the outflow (gross investment > depreciation), then the level of water (amount of the capital goods) will rise in the economy. The opposite occurs if inflows are less than the outflows (gross investment < depreciation).
    c. *Government purchases (G)* are the expenditures made by all levels of governments (federal, state, and local) for final goods from businesses, and for the direct purchases of resources, including labor.
        1. The government purchases are made to provide public goods and services, and for spending on publicly owned capital (public goods with a long lifetime such as highways or schools).
        2. It should be noted that transfer payments made by the government to individuals, such as Social Security payments, are not included in government purchases because they simply transfer income to individuals and do not generate production.
    d. *Net exports (X_n)* in an economy are calculated as the difference between exports (*X*) and imports (*M*). It is equal to the expenditures made by foreigners for goods and services produced in the economy minus 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.**

3. Computation of GDP by the ***income approach*** requires adding the income derived from the production and sales of final goods and services. The six income items are:

   a. *Compensation of employees* (the sum of wages and salaries *and* wage and salary supplements, such as social insurance and private pension or health funds for workers).

   b. *Rents* (the income received by property owners). This rent is a net measure of the difference between gross rent and property depreciation.

   c. *Interest* (only the interest payments made by financial institutions or business firms are included; interest payments made by government are excluded).

   d. *Proprietors' income* (the profits or net income of sole proprietors or unincorporated business firms).

   e. *Corporate profits* (the earnings of corporations). They are allocated in the following three ways: as corporate income taxes, dividends paid to stockholders, and undistributed corporate profits retained by corporations.

   f. ***Taxes on production and imports*** are added because they are initially income for households that later gets paid to government in the form of taxes. This category includes general sales taxes, excise taxes, business property taxes, license fees, and custom duties.

   g. The sum of all of the above six categories equals national income (employee compensation, rents, interest, proprietors' income, corporate profits, and taxes on production and imports). To obtain GDP from national income, three adjustments must be made.

      1. Net foreign factor income is subtracted from national income because it reflects income earned from production outside the United States. Net foreign factor income is income earned by American-owned resources abroad minus income earned by foreign-owned resources in the United States.

      2. The ***consumption of fixed capital*** is added to national income to get to GDP because it is a cost of production that does not add to anyone's income. It covers depreciation of private capital goods and publicly owned capital goods such as roads or bridges.

      3. A statistical discrepancy is added to national income to make the income approach match the expenditures approach.

4. Four other national accounts 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. ***Net domestic product (NDP)*** is the annual output of final goods and services over and above the privately and publicly owned capital goods worn out during the year. It is equal to the GDP minus depreciation (consumption of fixed capital).

b. ***National income (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 *plus* taxes on production and imports. It equals NDP *minus* a statistical discrepancy and plus net foreign factor income.

c. ***Personal income (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 taking national income and *adding* transfer payments, and then *subtracting* taxes on production and imports, Social Security contributions, corporate income taxes, and undistributed corporate profits.

d. ***Disposable income (DI)*** is the total income available to households after the payment of personal taxes. It is calculated by taking personal income and then *subtracting* personal taxes. It is also equal to personal consumption expenditures plus personal saving.

e. The relationships among the five income-output measures are summarized in Table 25.4.

f. Figure 25.3 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.

5. ***Nominal GDP*** is the total output of final goods and services produced by an economy in 1 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 price 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. The base year is a reference year for a price index series. The price index in the base year is set at 100. If the market basket of goods in the base year was $10 and the market basket of the same goods in the next year was $15, then the price index would be 150 [$15y10 × 100].

2. To obtain real GDP, divide nominal GDP by the price index expressed in hundredths. If nominal GDP was $16,244.6 billion and the price index was 104.5, then real GDP would be $15,547.0 billion [$16,244.6 billiony1.045].

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 GDP to real GDP for that year. If

nominal GDP was $16,244.6 billion and real GDP was $15,547.0 billion, then the GDP index would be 1.045 [$16,244.6 billion/$15,547.0 billion].

    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 base year is arbitrarily set at 100. For GDP, 2009 is currently used as the base year.

        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.

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

    a. It excludes the value of nonmarket final goods and services that are not bought and sold in the markets, such as the unpaid work done by people on their houses.

    b. It excludes the amount of increased leisure enjoyed by the participants in the economy.

    c. It does not fully account for the value of 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 because that income and activity are not reported.

    e. It does not record the pollution or environmental costs of producing final goods and services.

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

    g. It does not measure noneconomic sources of wellbeing such as a reduction in crime, drug or alcohol abuse, or better relationships among people and nations.

7. *Last Word* (Magical Mystery Tour). The Bureau of Economic Analysis (BEA) is a unit of the Department of Commerce that is responsible for compiling the National Income and Product Accounts. It obtains data from multiple sources to estimate consumption, investment, government purchases, and net exports for the calculation of GDP.

■ **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 25.1 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
gross domestic product (GDP)
final goods
intermediate goods
multiple counting
value added
expenditures approach
personal consumption expenditures (C)
durable goods
nondurable goods
services
gross private domestic investment (I_g)
net private domestic investment
government purchases (G)
net exports (X_n)
income approach
taxes on production and imports

consumption of fixed capital (depreciation)
net domestic product (NDP)
national income (NI)
personal income (PI)
disposable income (DI)
nominal GDP
real GDP
price index
base year