Module 4

Measuring GDP and Economic Growth

This chapter introduces you to:

- **The measurement of Gross Domestic Product (GDP).**
- **The Circular Flow of Expenditure and Income.**
- **Measuring Economic Growth.**
- **Other Measures of Income.**

Gross Domestic Product (GDP)

- **Economists use macroeconomic data about the economy To assess the state of the economy. (whether the economy is doing well or poorly, expanding or whether is in a recession)**
- **One of The most important macroeconomic statistics are the Gross Domestic Product or GDP.**

The measurement of Gross Domestic Product (GDP)

- **Gross domestic product (GDP): is a measure of the income and expenditures of an economy.**

GDP measures the monetary value of final goods and services bought by the final user—produced in a country in a given period of time

- **Gross domestic product (GDP): "It is the total market value of all final goods and services produced within a country in a given period of time."**
  - **Market value: goods and services are valued at their market prices.**
  - **A final good (or service): is an item bought by its final user during a specified time period.**
  - **Production within a country: domestic production.**
  - **In a Given Time Period: during a specific time period, normally a year or a quarter of a year.**

Why do we measure output in pound value rather than actual physical units of output?

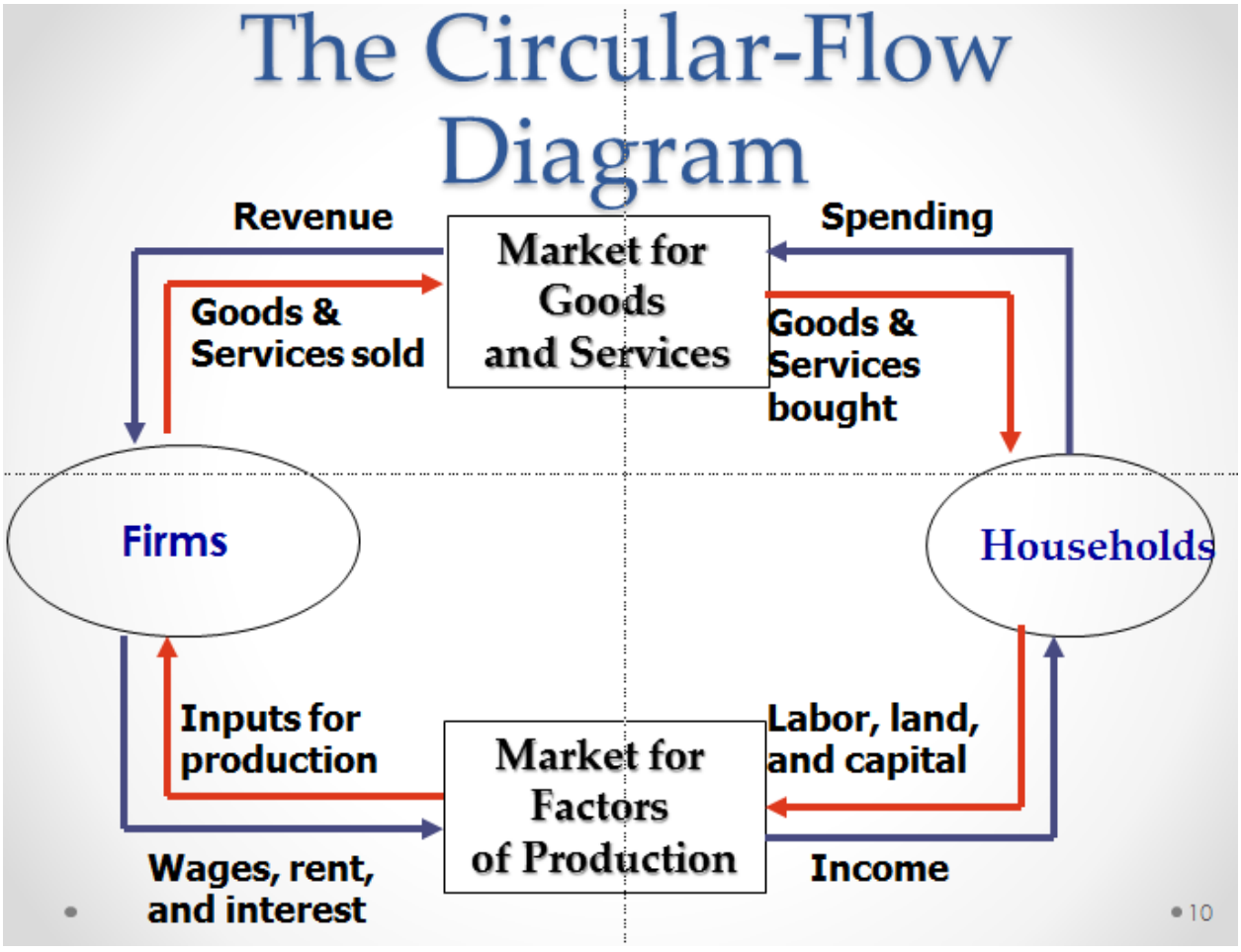
- **It's not very meaningful to add the production of 1,000 cars to the production of 10,000 dolls and say we produced 11,000 goods. But, if we take quantities times market prices, we can say we produced $20 million worth of cars and $100 thousand worth of dolls for total output of $20.1 million.**
- **Money value provides a common measure for combining dissimilar goods and services into an aggregate measure of output.**

GDP and The Circular Flow of Expenditure and Income

- **GDP measures the value of production, which also equals total expenditure on final goods and total income.**

- **For an economy as a whole, income must equal expenditure because:**
  - **Every transaction has a buyer and a seller.**
  - **Every pound of spending by some buyer is a pound of income for some seller.**

- **This process can be seen using a Circular Flow Diagram.**



It Shows how money flow through markets among households and firms.

- **Decision makers**

1. **Firms: Produce goods and services - Use factors of production / inputs**
2. **Households: Own factors of production - Consume goods and services**

- **Markets**

1. **For goods and services: Firms – sellers**
   Households – buyers
2. **For factors of production: Firms – buyers**
   Households - sellers

Households sell the services of labor, capital, and land in factor markets.

For these factor services, firms pay:

- **income to households: wages for labor services,**
- **interest for the use of capital,**
- **and rent for the use of land,**
- **entrepreneurship, receives profit.**

Households buy consumer goods and services in the Goods market.

The Components of GDP

GDP (Y) is the sum of the following:

- **Consumption (C)**
- **Investment (I)**
- **Government Purchases (G)**
- **Net Exports (NX)**

$$Y = C + I + G + NX$$

- **Consumption expenditure, C is the total payment for all goods and services bought by households.**

Includes:

1. **durable goods: last a long time**
2. **nondurable goods: last a short time**
3. **Services: work done for consumers**
   - **investment, I.**

Firms buy and sell new capital equipment in the goods market and put unsold output into inventory.

The purchase of new plant, equipment, and buildings and the additions to inventories.

- **Governments, G**

- **Governments buy goods and services from firms and their expenditure on goods and services is called government expenditure.**
- **Governments finance their expenditure with taxes and pay financial transfers to households, such as unemployment benefits, and pay subsidies to firms.**
- **These financial transfers are not part of the circular flow of expenditure and income (because they do not represent spending on goods and services).**

- **Net Exports, NX**

- **Country sell goods and services to the rest of the world—exports (domestically produced but sold abroad)**
  —and buy goods and services from the rest of the world—imports (produced abroad but purchased for use in the domestic economy).
- **The value of exports (X) minus the value of imports (M) is called net exports, (X – M).**
- **If net exports are positive, the net flow of goods and services is from that country to the rest of the world.**
- **If net exports are negative, the net flow of goods and services is from the rest of the world to that country.**

The circular flow shows two ways of measuring GDP:

- **The expenditure approach (adds up the value of purchases made by final users)**
- **The income approach (sums the incomes generated by production)**
- **Total expenditure on final goods and services :**
- **GDP = C + I + G + X – M.**

- **Aggregate income equals the total amount paid for the use of factors of production: wages, interest, rent, and profit. (The incomes that firms pay households for the factors of production they hire: wages for labor, interest for capital, rent for land, and profit for entrepreneurship)**
- **Firms pay out all their receipts from the sale of final goods, so income equals expenditure,**

$$Y = C + I + G + (X - M).$$

Investment and Saving and the Circular Flow

- **Total output and households' income do not equal households' spending.**
- **Households save the difference between their income and their spending.**
- **The rest spending is made by the firms on investment.**
- **Saving is money that does not get cycled from household to firms.(leakage from the circular flow).**
- **Investment is money that flows to firms without being cycled through households. (Injection to the circular flow).**
- **If national income, GDP, is denoted by Y which also equals the value of households incomes,**
- **C denotes household spending on consumption and**
- **S is saving (unspent income) therefore total income**
- $$Y = C + S$$
- **Since GDP is also defined by total expenditure on final consumer and investment goods , Y = C+ I Therefore ,**

$$C+ S = C+ I$$

- **and that results:**

$$S = I, \qquad S = Y- C \quad \text{and} \quad I = Y- C$$

In the absence of the government and the foreign sectors,

saving = investment

- **The households spending on goods and services returns to households as income and investment spending by firms is equal to an income flow to households in excessing of their consumption.**

  The linkage between household saving and firms' investment arises because households save and lend their savings to firms to invest.

  In a market economy, financial institutions and financial markets channel household saving to firms.

Rules of Computing GDP

- **The rules for computing GDP are:**
  - Adding the Values of goods and services: using market prices because these prices reflect how much people are willing to pay for a good or service

  - The sale of used goods: The sale of used goods is not included as part of GDP because it is not an addition to the economy's income, it is only reflects the transfer of an asset.
  - The treatment of inventories: when a firm increases its inventories of goods, this is considered as an investment and counted as expenditure. The addition to inventories increases GDP just as much as production for finale sale.

  A sale out of inventory does not influence GDP .This treatment ensures that GDP reflects the economy's current production of goods and services.

  - Intermediate Goods and value added: GDP includes only the value of final goods.

  Excluding the value of intermediate goods and services avoids counting the same value more than once. One way to compute the value of all final goods and services is to sum the value added at each stage of production.

  Value added: is the value of its output minus the value of the intermediate goods the firm used to produce that output. = SALES – COST

- Housing Services and other Imputations: Some goods are not sold at the market and therefore do not have market prices. To include the value of these goods and services into GDP, we must use an estimate of their values. Such an estimate is called an imputed value.

Real GDP

There's one significant problem in measuring any economic aggregate in monetary (money) terms. Prices change.

For example, if we produced $1 billion worth of cars last year, and $1.1 billion dollars' worth of cars this year, did the number of cars produced increase? Not necessarily.

If the average price of cars increased by more than 10%, then actual physical (real) output declined, even though the total money (nominal) value of output increased.

We can (approximately) decompose changes in nominal economic aggregates (e.g., GDP, income, consumption expenditures, investment, net imports, etc. measured in monetary terms) into that part due to changes in prices and that part due to changes in quantities.

One way to eliminate the effect of price changes is to measure the total value of output in each period by using prices from some base year. Then any change in the total value of output (using base year prices) might be attributed to changes in quantities and not changes in prices.

- **Nominal GDP values the production of goods and services at current prices.**
- **Real GDP values the production of goods and services at constant prices.(using the prices of a base year.)**
- **Nominal GDP is just a more precise name for GDP**

Measuring Economic Growth

- **We use real GDP to calculate the economic growth rate.**
- **The economic growth rate is the percentage change in the quantity of goods and services produced from one year to the next.**

A growth rate is the percentage change in a variable

$$\text{Growth rate} = \frac{x_t - x_{t-1}}{x_{t-1}}(100)$$

$$\text{GDP growth rate} = \frac{\$9.5 \text{ trillion} - \$9 \text{ trillion}}{\$9 \text{ trillion}}(100) = 5.6\%$$

The growth rate of real GDP is often used as an indicator of the general health of the economy. In broad terms, an increase in real GDP is interpreted as a sign that the economy is doing well.

When real GDP is growing strongly, employment is likely to be increasing as companies hire more workers for their factories and people have more money in their pockets.

When GDP is shrinking employment often declines.

In some cases, GDP may be growing, but not fast enough to create a sufficient number of jobs for those seeking them.

- **Economists use estimates of real GDP for two main purposes:**
  - **To compare the standard of living over time**
  - **To compare the standard of living across countries**

The Standard of Living Over Time

- **Real GDP per person is real GDP divided by the population.**
- **Real GDP per person tells us the value of goods and services that the average person can consume.**
- **By using real GDP, we remove any influence that rising prices and a rising cost of living might have had on our comparison.**

The Standard of Living Across Countries

- **Two problems arise in using real GDP to compare living standards across countries:**
  1. **The real GDP of one country must be converted into the same currency units as the real GDP of the other country.**

2. **The goods and services in both countries must be valued at the same prices.**

- **Using the exchange rate to compare GDP in one country with GDP in another country is problematic because prices of particular products in one country may be much less or much more than in the other country.**

GDP Deflator Vs. The Consumer Price Index

- **GDP deflator (implicit price deflator) measures the price of output relative to its price in the base year.**

  GDP Deflator = Nominal GDP/Real GDP * 100

- **The consumer price index (CPI) turns the prices of many goods and services into a single index measuring the overall level of prices.**

- **It is computed by weighting the prices of a basket of goods and services purchased by the typical consumer relative to the weighted prices of the same basket in some base year. The weights are the quantity consumed in the comparative or the base year.**

Although at first glance it may seem that CPI and GDP Deflator measure the same thing, The GDP deflator and the CPI give somewhat different information about changes in the overall level of prices in the economy:

- **GDP Deflator includes only domestic goods and not anything that is imported.**

- **CPI includes anything bought by consumers including foreign goods.**

- **GDP Deflator is a measure of the prices of all goods and services**

- **CPI is a measure of only goods bought by consumers.**

- **The CPI is an index with a fixed basket .**

- **The GDP deflator is a price index with changing basket .**