



INTRODUCTORY MACROECONOMICS



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Unit 4	Functions of Money Ms. Priti Aggarwal, Assistant Professor, College of Vocational Studies, University of Delhi
Unit 5	Demand for Money
Unit 6	Monetary Policy
Block 3	Inflation
Unit 7	Inflation: Concept, Types and Measurement Dr. Gurleen Kaur, Assistant Professor, Sri Guru Govind Singh College of Commerce, University of Delhi
Unit 8	Causes and Effects of Inflation
Block 4	The Closed Economy in the Short-Run
Unit 9	Classical and Keynesian Systems Dr. Kaustuva Barik, IGNOU and Dr. Dr. Nidhi Tewathia, Assistant Professor, Gargi College, University of Delhi
Unit 10	Keynesian Model of Income Determination Dr. Nidhi Tewathia, Assistant Professor, Gargi College, University of Delhi
Unit 11	Fiscal Policy In Keynesian Model
Block 5	IS-LM Analysis
Unit 12	Equilibrium in the Real Sector Dr. Nidhi Tewathia, Assistant Professor, Gargi College, University of Delhi
Unit 13	Equilibrium in the Monetary Sector
Unit 14	Neoclassical Synthesis

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COURSE INTRODUCTION

Macroeconomics is the branch of economics that deals with the behaviour of aggregate variables such as output, income, money supply, saving, investment, exports and imports at the economy level. There is a need to study macroeconomics, separately from microeconomics, as the behaviour of the aggregates could be more complex than that of the components. Larger issues such as economic growth, inflation, unemployment, public debt and balance of payments could be studied only at the macroeconomic level. Thus macroeconomics helps us in three aspects, viz., (i) understanding the relationship among aggregate economic variables, (ii) evaluating the performance of the economy, and (iii) formulation of economic policy.

As the title of the course suggests, the course is introductory in nature. In-depth analysis of certain complex issues will be carried out in two subsequent courses, viz., BECC 106: Intermediate Macroeconomics-I, and BECC 109: Intermediate Macroeconomics-II. The present course is divided into five blocks.

Block 1 titled, **Issues in Macroeconomics and National Income Accounting**, begins with basic issues of macroeconomics and explains certain concepts used frequently in macroeconomics. It comprises three units. The objective of Unit 1 is to provide an overview of the subject matter and generate curiosity among learners. The subsequent two units, Unit 2 and Unit 3, deal with the concept of circular flow of income and measurement of national income.

Block 2 titled, **Money in a Modern Economy**, deals with the definition and functions of money (Unit 4), and measures of money supply (Unit 5). Subsequently, it discusses the relationship between money supply and price level, in the framework of the quantity theory of money (Unit 6).

Block 3 deals with an important issue in macroeconomics, that is, **inflation**. It begins with the types and measurement of inflation (Unit 7). In the next unit (Unit 8) it discusses the causes and effects of inflation.

Block 4 titled, **The Closed Economy in the Short-Run**, begins with a brief idea on the Classical and Keynesian systems (Unit 9). It highlights the contrast between both the schools of thought. Subsequently it deals with the Keynesian model of income determination (Unit 10) and its implications for fiscal policy (Unit 11).

Block 5 titled, **IS-LM Analysis**, deals with the equilibrium in the real sector and the monetary sector of the economy. The IS curve based on the equilibrium in the real sector (Unit 12), the LM curve based on the monetary sector (Unit 13), and the interaction of both the curves (Unit 14) are discussed in the block.

UNIT 1 ISSUES AND CONCEPTS*

Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Why Study Macroeconomics?
- 1.3 Certain Concepts
 - 1.3.1 Stocks and Flows
 - 1.3.2 Short-Run and Long-Run
 - 1.3.3 Economic Models
 - 1.3.4 Growth Rate
- 1.4 Production Possibility Curve
- 1.5 Importance of Economic Growth
- 1.6 Inflation and Unemployment
- 1.7 Business Cycle
- 1.8 Let Us Sum Up
- 1.9 Answers/Hints to Check Your Progress Exercises

1.0 OBJECTIVES

After going through this unit you should be in a position to

- distinguish between microeconomics and macroeconomics;
- appreciate the importance of macroeconomics;
- explain the concept of production possibility curve; and
- provide an overview of issues such as inflation, unemployment and business cycle.

1.1 INTRODUCTION

By now you are familiar with the term microeconomics, which deals with issues pertaining to economic agents such as households and firms. In the case of households, we deal with the issue of utility maximization subject to budget constraint. Similarly, in the case of firms, we deal with the issue of profit maximization (or its dual, cost minimization) subject to a resource constraint. Such issues related to maximization of utility by a household, and minimization of cost (or maximization of profit) by a firm are the subject matter of

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microeconomics. Through various diagrams you learnt how households make choices, what constraints they face, and how they reach their optimum levels of consumption. The optimization problem before a household can be explained through diagrams and can be solved by mathematical methods, particularly linear algebra. A similar treatment is made for analysis of the behavior of firms, where firms optimize their production level given the prices of inputs and resources available to them. Naturally a question comes to mind, “Does the same optimization problem applies to countries also?” The answer is yes; countries have certain objective functions, and they also face constraints. The objective function for a country could be maximization of growth in gross domestic product (GDP), minimization of poverty among households, maintaining a stable price level, reduction of inequality in distribution of income among individuals, and so on. In order to analyse these issues we need a different framework that is macroeconomics.

Macroeconomics is the branch of economics that studies the behavior of the economy as a whole. Thus it deals with aggregate variables such as national income, national consumption, national saving, national investment, exports, imports, etc. As you will come to know in later Units of this course, many of these variables are not simply the aggregation over microeconomic units.

1.2 WHY STUDY MACROECONOMICS?

In the early twentieth century, there was no such branch of economics as macroeconomics. According to Krugman and Wells, the term macroeconomics was coined by Ragnar Frisch in 1933. Theoretical developments in macroeconomics came into prominence with the publication of the book, ‘General Theory of Interest, Employment and Money’ by J M Keynes in 1936.

As mentioned earlier, macroeconomics concerns with the study of aggregate behavior in an economy. The need for a special branch of macroeconomics arises because what holds for the individual units may not hold good for the economy as a whole. For example, suppose a firm employs labour for production of output (say, cement). It can hire as many workers it requires at the ongoing wage rate. Thus increase in demand for labour by a single firm does not have any impact on the wage rate. However, if all firms increase their demand for labour (say due to economic boom and optimism in the country), there will be a shortage of labour and increase in wage rate. Further, the number of workers available for work in the country is limited; thus demand for labour beyond this limit will increase wage rate only, not the supply of labour.

Let us consider another example – saving by a household and total saving of the country. As you all will agree with me, saving by an individual is a virtue – we should not consume all our income and save certain part of it for the future.

In fact, if a person saves more, (s) he will receive interest on her savings, and her future income level will increase. There is a flip side to this issue however. Whenever a person saves certain part of income, her/his consumption

expenditure decreases by a similar amount. Consequently, her/his demand for goods and services on which the amount could have been spent (say, clothing) is decreased. Thus the sales of the trader from whom (s)he would have bought the clothing get reduced. As a result, the income (profits) of the trader gets reduced. If the income of the trader is reduced, the amount of money the trader would have spent on purchase of goods and services gets reduced. The ripple effect continues.

We should not forget however that when we consume, we generate demand for goods and services. Such demand for goods and services leads to production activities and creation of employment in the country. If there is no demand for goods and services, there will be no production, no employment and no income generation in the country. Thus it is in the interest of the country that there is a steady growth in household consumption. In view of the above, it is often said that saving is a private virtue but a social vice! This problem is termed as the *paradox of thrift*.

Often the difference between microeconomics and macroeconomics is explained by giving the example of trees and forest. There are varieties of trees in the forest and each one could be different. Microeconomics is like studying the trees in a forest – their species, dimensions, growth, age, etc. Macroeconomics is like studying the forest – its area, density, composition, and overall ecosystem. We cannot ignore the forest for the trees – macro aspects as important as the micro aspects. While microeconomics is useful for analyzing the behavior of firms and households, macroeconomics is helpful in policy formulation and policy evaluation. Issues such as economic growth, inflation, employment, national debt, balance of payments, business cycles, etc. are very important for an economy. These issues are part of macroeconomics and need to be analysed at the macro level.

Check Your Progress 1

1. Distinguish between microeconomics and macroeconomics.
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2. Explain why macroeconomics is important.
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1.3 CERTAIN CONCEPTS

We present certain concepts frequently used in macroeconomics.

1.3.1 Stocks and Flows

A stock is measured at a point of time. For example, the capital stock of a country includes machines, equipment, and buildings. It refers to the part of national wealth that is reproducible (i.e., man-made); it consists of resources that help in production of goods and services. The stock of capital can be measured at a particular date. Money supply, labour force and external debt are some other examples of stock.

Flows are measured over an interval of time; thus it is a rate. In microeconomics, as you would have observed, the output of a firm can be measured on per day or per month basis. Otherwise, production without a time dimension is ambiguous. Similarly, if I say that my income is Rs. 10000, it is ambiguous – is it for a day, for a week, or for a month? In macroeconomics, the same logic applies. The gross domestic product (GDP) of a country, for example, is a flow. It represents the value of final goods and services produced over a year. Income, expenditure, saving, investment, consumption, profits, borrowings, etc. are examples of flows. Stock gets accumulated over time through change in stock. The change in capital stock is given by investment. Mathematically, stock can be seen as integration of a flow variable over a period of time.

1.3.2 Short-Run and Long-Run

You should be familiar with the concepts of short run and long run in microeconomics – in the short run certain factors of production are fixed. For a firm capital and technology are assumed to be fixed in the short run; they can be varied in the long run only. Thus in the long run, there are no constraints for a firm and the firm can maximize its output when all factors of production are variable.

In macroeconomics the usage of the terms short run and long are somewhat different from that in microeconomics. In macroeconomics, we assume certain variables to be sticky in the short run, particularly price level and wage rate. As we will see in later Units, the classical economists assumed prices and wages to be fully flexible in the sense that they instantaneously adjust to changes in aggregate demand and aggregate supply and a new equilibrium is reached. According to Keynes these variables are sticky and they need time to adjust to their desired level. Thus prices and wages reach their equilibrium levels in the long run, not in the short run. Since policy makers are concerned with the short run also, they need to take into account rigidities in prices and wages in policy formulation.

The flow of capital input across various sectors of the economy takes time; it takes place in the long run, not in the short run. The movement of capital across countries is another variable which adjusts to its equilibrium level in the long run. The impact of such flows is spread over a period of time.

1.3.3 Economic Models

In economics we often use the term ‘model’. It refers to a simplified version of reality. It allows us to understand, analyse and predict economic behavior. An economic model can be for a microeconomic agent such as household or firm. In macroeconomics, it represents the behavior of the economy as a whole.

In macroeconomic models we identify relevant macroeconomic variables (such as income, output, expenditure, investment, saving, exports, etc.) and establish relationship among them. The relationships among these variables may be expressed through diagrams or mathematical equations. There could be macroeconomic models without mathematical expressions, but these may not be precise.

An economic model is based on certain assumptions. These assumptions are required so that minute details are ignored and essential elements are included. Let me illustrate the point through an example. In the case of a firm, we assume that there are two factors of production, viz., capital and labour. We club all types of labour into a homogeneous category – we do not distinguish between a manager and a worker in the field! Similarly, while describing an indifference curve we overlook the type of households – the behavior of a rich household would be different from that of a poor household; or the behavior of a household in a rural area would be different from that of a household in an urban area. We ignore such details because our objective is to analyse the behavior of households to changes in prices and income. If our objective is to identify the changes in consumption pattern across households, we would require a different model and consider such differences.

In the Keynesian model, to take an example from macroeconomics, we consider aggregate variables such as total consumption, total investment, government expenditure, and net exports. We determine equilibrium level of output for the economy as whole. We ignore the behavior of households and firms. Several growth models (such as Harrod-Domar model or Solow model) assume that the economy consists of just one sector – there is an aggregate production function, which gives the relationship between aggregate output (that is, total output) with aggregate inputs (that is, total capital and total labour). It may sound unrealistic, but the objective of these growth models is to analyse the equilibrium conditions for economic growth, saving ratio and population growth. These models ignore the details but the broad conclusions drawn are helpful in policy formulation. A question such as, ‘why growth rate differs across countries?’ can be addressed through these growth models.

1.3.4 Growth Rate

We use growth rate frequently in our day to day dealings. I am concerned with the rate at which my salary increased over the year, the rate of interest I get on my savings, and the rate of inflation which affect my purchasing power. At a broader level I may be interested in the rate at which India's population is growing or GDP is growing. The calculation of growth rate is the same in all the above cases. Annual growth rate of a variable is calculated as

$$\text{Growth rate} = \frac{\text{Value in current year} - \text{Value in previous year}}{\text{Value in previous year}} \times 100$$

Let us find out the growth rate of GDP

$$\text{Growth rate of GDP} = \frac{\text{GDP of current year} - \text{GDP of previous year}}{\text{GDP of previous year}} \times 100$$

We find that the GDP of India in financial year 2018-19 was Rs.190.10 lakh crore at *current prices* while it was Rs. 170.95 lakh crore at current prices in 2017-18. If we put these values in the above equation we obtain $\frac{190.10 - 170.95}{170.95} \times 100 = 11.20$ per cent. Thus the growth rate of GDP we calculate above is 11.20 per cent for the year 2018-19! As we see from official data and newspaper reports, the growth rate of GDP of India during 2018-19 is not this high; it is much lower. The error we commit is that we consider GDP at *current prices* which include increase in output and increase in prices. Our objective, however, is to obtain an estimate of the increase in output during the financial year 2018-19. We need to neutralise the effect of price rise – for this we consider the GDP at *constant prices*. In India, GDP at constant prices, as of 2019, is given at the *base year* 2011-12. The GDP of India in constant prices for the year 2018-19 is Rs. 140.78 lakh crore compared to Rs. 131.80 crore in 2017-18 (the base year considered is 2011-12; thus these values are in 2011-12 prices). If we put these values in the above equation we find real GDP growth rate in 2018-19 = $\frac{140.78 - 131.80}{131.80} \times 100 = 6.81$ per cent.

1.4 PRODUCTION POSSIBILITY CURVE

As mentioned earlier, achieving higher economic growth is one of the objectives of economic policy of most countries. Economic growth of a country however cannot be higher than certain limit. This limit depends on the availability of inputs such as land, labour, capital, raw material, energy and technical knowhow. Availability of certain resources is also limited. Even for countries where natural resources are available in abundance, financial resources required for exploitation of natural resources may be in short supply. Every year we are glued to the television set during the government budget presentation; because it informs us about the policy and thrust areas of the government. The budget indicates how much money will be spent on various sectors of the economy.

It is important because the resources allotted on various heads of expenditure are limited. In general, we notice that there are several constraints before a country – there may not be sufficient budget for carrying out the activities, there may be shortages in supply of certain strategic raw materials, there could be a long gestation period between initiation of a project and its completion, and so on.

In macroeconomics we present the constraints faced by a country through a production possibility curve (PPC). For simplicity, let us assume that the country produces only two commodities (say, one capital good and one consumer good). The PPC is concave to the origin (see Fig. 1.1) which indicates that more of one commodity can be produced only if the production of the other commodity is reduced. The boundary of the PPC shows the potential level of GDP given the amount of resources available. The combinations of goods and services that can be produced could be different. We have indicated two points (E and F) on the PPC in Fig. 1.1. Point E indicates more of consumer good and less of capital good while point F indicates more of capital good and less of consumer good. You can observe that there is a trade-off between both the goods. What combination of goods a country chooses to produce depends on the objectives and requirements of that country.

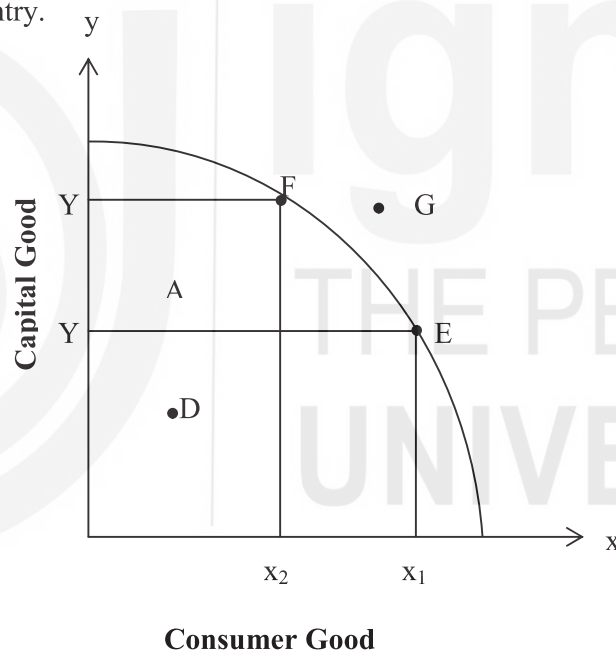


Fig. 4.1: Production Possibility Curve

You should note that the PPC shows the potential GDP of a country. What actually is being produced in the country may be different. For example, when production takes place on the PPC (see points E and F in Fig. 1.1), all resources are being utilized efficiently. If production takes place at a point inside the PPC (see points A and D), certain resources are under-utilised. A point outside the PPC, such as G in Fig. 1.1, is not attainable. If the country is operating at a point inside the PPC, then there is an ‘output gap’ as given below.

$$\text{Output Gap} = \text{Potential Output} - \text{Actual Output}$$

Potential GDP can grow overtime by two methods: technological progress and accumulation of more resources. In such cases the PPC shifts outwards to the

right. In case the PPC shifts sufficiently outward, point G (which was not attainable earlier) could be achieved. When a country's PPC shifts outward, the country observes economic growth.

Check Your Progress 2

1. Distinguish between the following concepts: (i) stock and flows; (ii) short run and long run.

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2. Explain the concept of production possibility curve through a diagram.

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1.5 IMPORTANCE OF ECONOMIC GROWTH

As mentioned above, growth rate of an economy is given by the growth rate of its real GDP. Maximisation of growth rate is one of the objectives of most countries. You might have noticed that growth rate differs across countries – while countries like China have witnessed more than 10 per cent per annum growth rate for decades, there are many African countries where growth has been negligible. Very high economic growth of Japan is said to be a miracle during the post World War period. In the past 20 years, however, there has been severe economic crisis in Japan – highly fluctuating economic growth, declining population size, and very high public debt. Argentina, a Latin American country, was richer than many countries such as Australia, Canada and France during the early twentieth century. Argentina is endowed with vast natural resources, particularly in the areas of agriculture and energy. In 1913 Argentina's per capita income was \$3797 compared to \$3452 of France and \$3134 of Germany. According to International Monetary Fund (IMF), in 2019, the per capita income of Argentina is \$9887 while that of France and Germany are \$41760 and \$46563 respectively. It indicates that per capita incomes of France and Germany have increased much faster over the past century than that of Argentina. Economists

ascribe this relative stagnation in growth rate of Argentina to several factors including political instability, lack of technological progress, adherence to the development strategy of import-substitution (instead of export promotion), and high inflation. In another example, we compare the per capita incomes of China and India; two major emerging economies of the world. Per capita GDP of India and China was almost at the same level till 1990 (in US Dollar terms, GDP per capita of India was \$367 in 1990 compared to \$318 of China). In the subsequent period, however, growth rate of China was much higher than that of India. In 2018, per capita GDP of India was about 20 per cent that of China (India's per capita GDP, in US Dollar terms in 2018, was \$2010 compared to China's \$9770). If we compare the per capita income of India and China in purchasing power parity (PPP) terms for the year 2018, however, India's per capita GDP was \$7762 compared to \$18236 of China (about 43 per cent). We can make such comparisons across countries and analyse the reasons for such differences in growth by undertaking macroeconomic analysis.

You should be aware of the 'rule of 70'. It indicates the number of years it takes to double your money. If you save Rs. 1000 in a bank and the rate of interest is 1 per cent per annum, your saving will take 70 years to double, i.e., to be Rs. 2000. If the rate of interest is 7 per cent, it takes only 10 years to double. The formula is

$$\text{Number of years to double the amount} = \frac{70}{\text{rate of interest}}$$

The same rule can be applied to GDP and per capita GDP of a country. If per capita GDP of a country is growing at the rate of 5 per cent, it takes 14 years (that is, $\frac{70}{5}=14$) for the country to double its per capita GDP. If growth rate in per capita GDP is 10 per cent per annum, it will double in 7 years. Let us compare between two countries, A and B, which have the same per capita GDP, say Rs. 1000. Let us assume that per capita GDP of country A is growing at 5 per cent per annum while that of country B is growing at 10 per cent per annum. If we consider a time span of 28 years, per capita GDP of country A will be Rs. 4000 after 28 years that of country B will be Rs. 8000! You can imagine how much difference a higher growth rate can bring to per capita GDP in the long run.

Economic growth is important because it leads to increase in income of people, which in turn leads to higher consumption and saving. Second, there is increase in tax revenue of the government due to higher income and output. Third, increase in GDP leads to fall in unemployment, as more workers get employed. Fourth, increased government expenditure leads to improved public services.

You should note that economic development is different from economic growth. While economic growth indicates increase in GDP, economic development is a much broader concept. Economic development includes improvement in basic facilities such as health, education, electricity, drinking water, absence of poverty, etc. Such improvement is possible if there is economic growth.

1.6 INFLATION AND UNEMPLOYMENT

We come across the terms inflation and unemployment often in newspapers and in our everyday conversation. Increase in either of these variables creates miseries in people's life and much concern for the policy makers. Inflation is defined as a *persistent* rise in the *general level of prices*. If price level goes up today but falls tomorrow then it may not imply inflation, but only short-term fluctuations in prices. The term 'general price level' is also important since, over a period of time, prices of some commodities may have gone up while that of some others may have actually fallen. As a result, on the whole, the average of these prices may remain constant or even go down. Similarly if the price of a group of commodities, which constitute a small fraction of the total value of output of the economy, would go up, then again it might not be inflationary as such. That is, the effect of rise in prices of such commodities might be too small so as to affect the average price level of all the commodities.

Thus we see that inflation is a macroeconomic phenomenon and is not concerned with the rise in the price of a particular commodity, or, a small group of commodities. When there is inflation, the purchasing power of people declines. Inflation has differential impact on various sections of society. While salaried groups (persons having fixed monthly income) are hit adversely, producers and traders stand to gain during periods of inflation. Very high inflation (often called hyper-inflation) puts everyone's budget in disorder.

Unemployment is another social evil. In economics when we refer to the term unemployment, we mean involuntary unemployment, that is, a person is looking for work but not able to find a job. A person who is not looking for a job cannot be considered as unemployed. There are periods when we quit a job and look for another. At any point of time, certain fraction of workers is between jobs – such unemployment is transitory. However, there are time periods when unemployment rate is quite high. Unemployment is bad on two counts, viz., (i) it results in loss of income for the unemployed, and (ii) there is wastage of valuable human resources.

It is generally observed that there is a trade-off between inflation and unemployment, at least in the short run. If the government wants to decrease the rate of unemployment, the economy has to tolerate a higher rate of inflation. Similarly, if the government wants to control inflation, the rate of unemployment may increase. There is considerable debate on the relationship between inflation and unemployment; and there is much difference among economists on the relationship between the two.

1.7 BUSINESS CYCLE

There are ups and downs in economic activities for any country – while growth rate is high in certain periods, it is low in other periods. It is generally observed that there are alternating phases of high and low growth rates. Such phases of growth are called business cycles.

There are four phases of a business cycle: expansion, recession, depression, and recovery. The duration of a business cycle can vary from two years to twelve years. Business cycles are *synchronic*. Depression or contraction occurs simultaneously in most industries or sectors of the economy. Recession passes from one industry to another and chain reaction continues till the whole economy is in the grip of recession. Similarly, prosperity spreads through various linkages of input-output relations or demand relations between industries or sectors. Business cycles can be distinguished from other fluctuations as they are usually *larger, longer, and widely diffused*.

In business cycles we observe that several inter-related variables move together. Fluctuations occur simultaneously in the level of output as well as employment, investment, consumption, rate of interest, price level, etc. The immediate impact of recession or expansion is on the inventories of goods. When recession sets in, inventories start accumulating beyond the desired level. In response, producers cut down on the level of production of goods. In contrast, when recovery starts, aggregate demand picks up and inventories go below the desired level. It encourages business houses to place more orders for goods which boosts production and stimulates investment.

Business cycle is international in character; once started in one country, it spreads to other countries through contagion effect. The downslide in financial markets, for example, in one country spreads rapidly to other countries as financial markets are linked globally through capital flows. Further, recession in one country, say the United States (US), can spread to other countries as the imports of the US will decline. Countries which are major exporters to the US will witness a decline in their exports and may witness recession.

The adverse impact of the Great Depression (1929-34) is well documented. It resulted in widespread unemployment, poverty and misery among a large section of society in many countries. In recent years, during 2007-09 (often it is referred to as the Great Recession) most countries witnessed a phase of severe recession. The world has overcome the adverse impact of the economic crisis of 2007-09 to some extent, but its memories are still fresh.

Check Your Progress 3

1. Explain why economic growth is important for a country.

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2. Distinguish between economic growth and economic development.

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3. Explain the concept of business cycle.

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1.8 LET US SUM UP

In this unit we distinguished between microeconomics and macroeconomics. Macroeconomics considers broader and aggregative aspects of the economy. It is helpful in policy formulation and policy evaluation.

We discussed how growth rate can be calculated. In addition, we described the importance of economic growth. Distinction between concepts such as stock and flows, and short-run and long run are presented in the Unit. Brief ideas on certain concepts such as inflation, unemployment and business cycle, which we come across in our everyday life, are also given in the Unit.

1.9 ANSWERS/ HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1. Go through Section 1.2 and answer.
2. Go through Section 1.2 and answer.

Check Your Progress 2

1. (i) Stocks are measured at a point of time while flows are measured per unit of time. Go through Section 1.2 for further details.
(ii) In the short run certain factors are fixed while in the long run all factors are variable. Go through Section 1.2 for further details.
2. Production possibility curve depicts the potential output of an economy. Explain Fig. 1.1 for your answer.

Check Your Progress 3

1. Go through Section 1.5 and answer.
2. Economic growth means the growth in the GDP of a country. Economic development is a multi-dimensional concept. In addition to per capita income, it includes various socio-economic variables. Go through Section 1.5 for further details.
3. Go through Section 1.7 and answer.

UNIT 2 CIRCULAR FLOW AND NATIONAL INCOME ACCOUNTING

Structure

- 2.0 Objectives
- 2.1 Introduction
- 2.2 Concept of Circular Flow
 - 2.2.1 Difference between Money Flows and Real Flows
 - 2.2.2 Flows between Enterprises and Households
 - 2.2.3 Flows between Enterprises, Households, Financial sector
 - 2.2.4 Flows between Enterprises, Households, Financial and Government Sectors
 - 2.2.5 Flows in an Open Economy
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 - 2.3.1 National Income as Flow of Goods and Services
 - 2.3.2 National Income as Flow of Factor Incomes
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 - 2.3.4 National Income viewed as Production, Income and Expenditure Flows
- 2.4 National Income Aggregates
 - 2.4.1 National Income and Various Related Concepts
 - 2.4.2 Interrelationships among Various Macro-economic Aggregates
- 2.5 Let Us Sum Up
- 2.6 Hints/Answers to Check Your Progress Exercises

2.0 OBJECTIVES

After going through the unit you would be able to

- explain the term ‘circular flows’;
- distinguish between money flows and real flows; and
- establish the relationship among various macro-economic aggregates.

2.1 INTRODUCTION

An economy operates with the help of economic agents such as producers, consumers, government and rest of the world. These categories perform various economic activities comprising production, consumption, income generation, addition to capital stock, and economic transactions with the rest of the world. In the process of performing such economic activities, goods and services flow from one group of agents to another and vice-versa. Corresponding to each such flow, there takes place a counter monetary flow. For example, if one person gets 2 kilograms of sugar from a firm, a commodity-flow from a firm to

a household is taking place. This flow is matched by a monetary flow, from the household to the firm. Such flows, if aggregated at various ends, can be summed up as national income, gross domestic product, etc.

The knowledge of these circular flows along with national income and various other related macroeconomic aggregates is essential for understanding macroeconomic theory which deals with the determination of levels of national income, employment and prices.

2.2 CONCEPT OF CIRCULAR FLOW

The concept of circular flow pertains to the flow of real transaction or money transaction from one economic agent to another. The flow is not one-sided; it is two-sided. Because of this feature it can be termed as circular flow. Suppose person A gives wheat to person B and person B in turn gives rice to person A, then this can be termed as circular flow which is shown below.

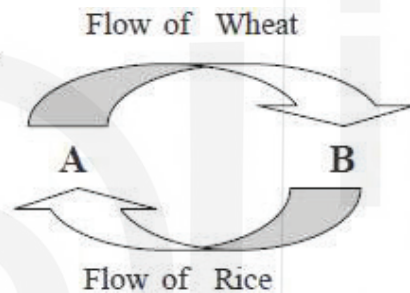


Fig. 2.1

In Fig. 2.1 the direction of the arrows shows the receiving agent. For example, B is receiving wheat from A and therefore, the arrow is pointing towards B. Similarly, A is receiving rice from B. Thus, the arrow is pointing towards A.

In the above example, goods have been exchanged so the flows can be referred to as real flows. Instead of goods, if money was exchanged, the flows could have been money flows. Note from the example that when B received wheat from A, money would be given by B to A. Similarly, A would have given money to B for the purchase of rice. These money flows can be shown as below.

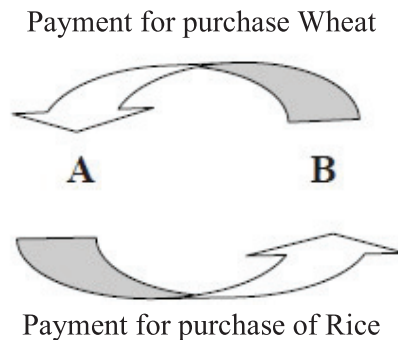


Fig. 2.2

Comparing Fig. 2.1 and Fig. 2.2, we would notice that real flows take clockwise movement, i.e., from left to right. On the other hand, money flows take anti-clockwise movement, i.e., from right to left.

2.2.1 Difference between Money Flows and Real Flows

The distinction between money flows and real flows should be clearly understood. Real flows are the flows of goods from one economic agent to another and vice-versa. Similarly, real flows can be flows of services from one economic agent to another and vice-versa. Real flows are difficult to measure as they comprise bundles of goods or services, expressed in different units and it is impossible to aggregate these economic agent or flows. It is precisely because of this reason that we measure money flows.

Money flows, as the name suggests, show the flow of money from one economic agent to another. Suppose economic agent A supplies goods to transactor B. That is a real flow. The transactor B, in turn must have paid for these goods to transactor A, which is a money flow. Similarly, transactor B may have supplied labour services or services of land to transactor A which is a real flow. Transactor A, in turn, must have paid for these factor services in the form of wages to transactor B that would be money flow.

The distinction between money and real flows and their interaction can be very well shown with the help of a diagram such as Fig. 2.3, where transactor A is represented as a producer and transactor B as a household.

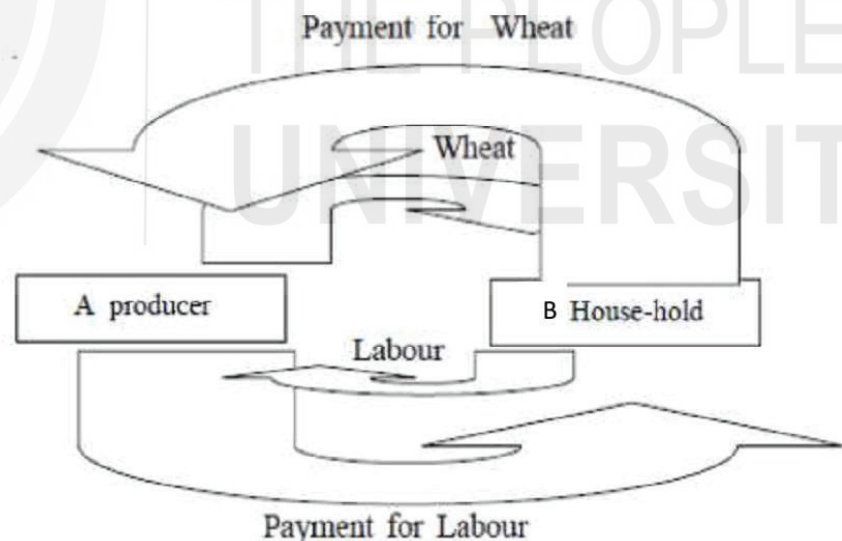


Fig. 2.3

In Fig. 2.3, a producer supplies wheat to a household. The direction of the arrow indicates who receives the goods. Similarly, the household supplies factor services to a producer as shown by the arrow. Note that clock-wise direction of the arrow indicates real flows.

Corresponding to real flows we can also see money flows taking place in the opposite direction or in an anti-clock-wise direction. For instance, for the goods supplied by the producer to a consumer, the consumer has paid for these goods in money terms, which can be called consumption expenditure. Similarly, the producer has paid for these factor services. We can call these factor payments. Remember that anti-clock-wise arrows indicate money flows.

It is important to realize that a barter economy where goods/services are exchanged for goods/services will have only real flows. On the other hand, in an economy where goods/services are exchanged for money and then money is exchanged for goods we will have real as well as money flows. It is also possible that in a modern economy we may have only money flows taking place without any corresponding real flows. For instance, if a father gives pocket money to his son, money flow may take place from father to son. But son, in turn, has not supplied anything in return and thus the circular money flow is not complete. Can we think of some cases where the circular money flows may complete circular movement?

2.2.2 Flows between Enterprises and Households

Various transactions taking place among transactors or economic agents can be better understood when put it in the form of flows.

An enterprise is an economic agent, which employs factor services supplied by households. It creates goods and services, which may either be supplied to other firms in the form of raw materials, or produce consumer goods meant for the final consumption. It may produce machines/plants to help in the creation of more goods and services.

Similarly, we can define a household, which, by definition, supplies the factor services such as land, labour, capital and entrepreneurship to enterprises. Further, it consumes consumer goods and services produced by enterprises.

The distinction between households and producers is not always mutually exclusive. A person can be a household as well as a producer. To take an illustration, a teacher is a producer when she produces teaching services and will be a household when she buys or consumes the goods and services produced by other producers. Thus, the distinction is not personal, but functional in nature.

The flows between enterprises and households can be shown with the help of Fig. 2.4.

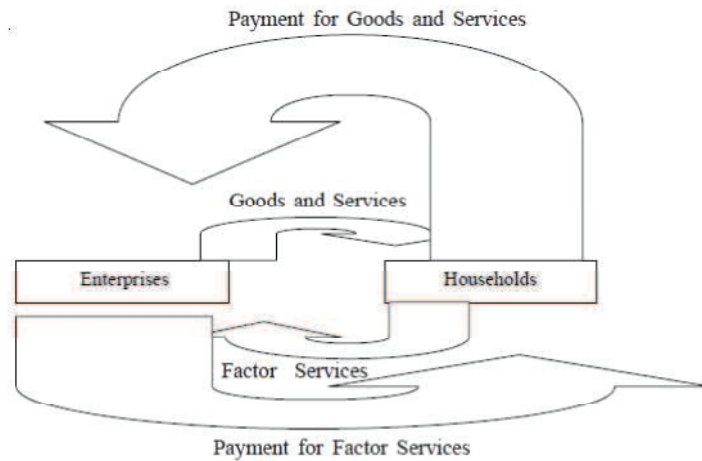


Fig. 2.4

In Fig. 2.4 both real and money flows are shown. The flow of consumer goods and services from enterprises to households and of factor services from households to enterprises constitute real flows. Similarly, flows taking place from consumers to producers in the form of consumption expenditure and from enterprises to households in the form of factor incomes relate to money flows. It would not be out of place to state that money flows are the counterparts of real flows. Note that Fig. 2.4 is not much different from Fig. 2.3. In Fig. 2.3 we had shown transaction between one firm and one household only, now all the producers and consumers have been added together to make two groups.

2.2.3 Flows between Enterprises, Households and Financial sector

So far we have discussed flows in a situation where there is no saving and investment. To introduce saving and investment we have to include financial sector along with enterprises and households.

Financial sector collects savings of various sectors and lends these to enterprises for investment. The introduction of financial sector along with enterprises and households is illustrated in Fig. 2.5.

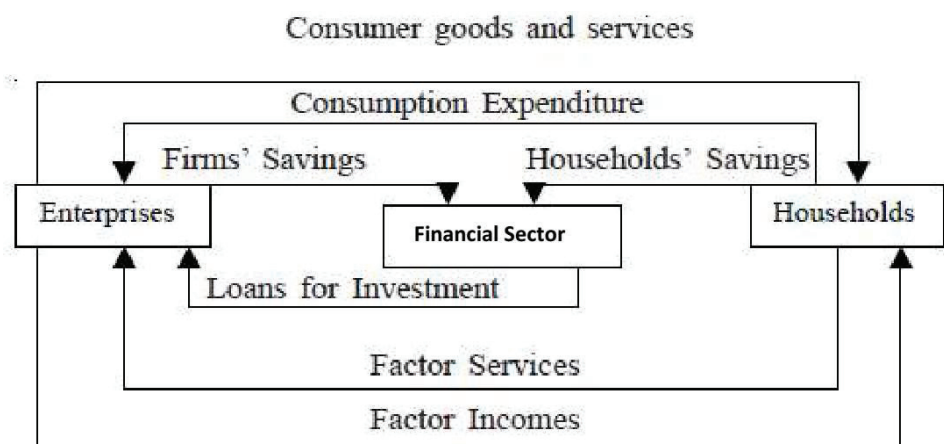


Fig. 2.5

In Fig. 2.5, the flows between enterprises and households are shown as in Fig. 2.4. The additional flows shown here are between (i) households and financial sector, and (ii) enterprises and financial sector. The factor income received by households need not be fully used for final consumption expenditure; a part of the incomes may be saved in banks or funds used for buying shares, or buying, say, an insurance policy, which are all considered as part of the financial sector. Thus, the arrow from households towards financial sector is indicative of the savings flowing from household sector to financial sector. These savings are collected by financial sector from households along with savings of the enterprises in the form of undistributed profits, accumulated for expansion purposes, and depreciation fund used for replacement investment purposes. The savings of the financial sector are used to finance gross investment of the economy, which is shown, with the help of an arrow from the financial sector towards the enterprises.

The investment activity of the economy is undertaken by the enterprises, which produce capital goods for net accumulation of capital stock, or for replacing the worn-out capital. Saving in national income accounting is so defined as to be equal to investment.

2.2.4 Flows between Enterprises, Households, Financial and Government Sectors

Flows between enterprises, households and financial sector were shown in Fig. 2.5 above. Let us now introduce the government sector.

The government sector can be viewed in two ways: First, the government can act as a producer or enterprise meaning thereby that it can contribute to total production activity along with the private sector. Second, the government can act as a redistributors of incomes, i.e., tax a particular sector of the economy and subsidies another either by giving cash help to the enterprises or offering transfer incomes in the form of old-age pensions or unemployment benefits to households. The government production activity can be categorized as, 'General Government' where the government produces primarily services which are collectively consumed. These can take the form of police, or defense services, which are ordinarily not available for sale; instead they are consumed collectively and are financed from the tax revenue raised by the government.

The government has undertaken departmental and non-departmental enterprises, which produce goods and services for sale in the market, are grouped in the category of enterprises. Therefore, General Government is only an activity of the government as redistributors of income or producer of services, which is meant for collective consumption.

In Fig 2.6 we introduce the government sector in the circular flows. We are introducing a change in our presentation here: Now onwards, we will show only the monetary flows without the corresponding real flows. This is being done to keep the diagrams simple in appearance.

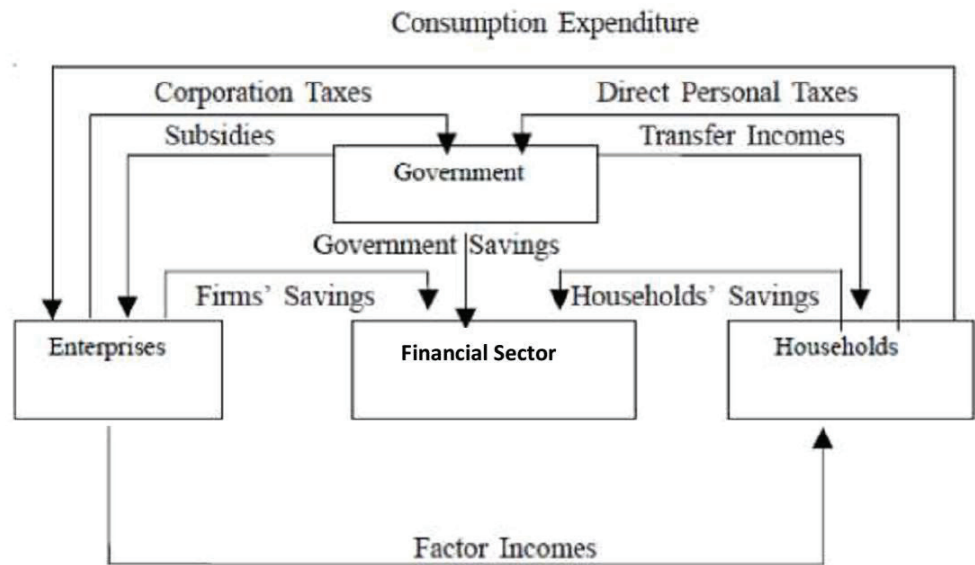


Fig. 2.6

In Fig. 2.6, the flows between enterprises, households and financial sector are the same as shown in Fig. 2.5. However, Fig. 2.6 has an additional flow; namely, a part of the saving may come from government sector to the financial sector. These savings may be positive or negative. If the government expenditure on transfer incomes, subsidies or maintenance of collective services is more than the tax revenue raised in the form of direct personal tax, indirect taxes and corporation tax, savings is negative. On the other hand, if government expenditure were less than tax revenue, government saving contributed by the government sector would be positive.

The income received by households for the supply of factor services to the government sector need not be spent only on the purchase of consumer goods produced by enterprises. A part of the factor income may be passed on to the government in the form of direct personal taxes as indicated by the arrow towards government from households. On the other hand, the government can give transfer incomes to households as shown by arrow facing households from government. Similarly, the incomes received by enterprises from the sale of consumer goods to households or for meeting collective consumption of government, may get leaked to government in the form of indirect taxes and corporation taxes as shown by the arrow facing government originating from enterprises. The government may also use tax revenue to subsidise production of goods and services by enterprises. This is shown by the arrow facing enterprises starting from government.

2.2.5 Flows in an Open Economy

So far we have shown the flows in a closed economy, i.e., an economy that does not have any transactions in the form of exports and imports.

Now, we introduce transactions of an economy with the other countries of the world (referred to as rest of the world). When an economy is opened up, the following variables have to be incorporated in the flows of an economy:

- 1) A part of the output produced by enterprises of the economy may be retained for consumption or investment purposes within the economy and the rest may be exported to the rest of the world. The payment for such exports is made by rest of the world to enterprises of the domestic economy.
- 2) Consumption expenditure of households may be not only on goods and services produced within the economy but also on those imported from the rest of the world.
- 3) Households may earn factor incomes not only from domestic enterprises but also from normal residents of an economy who are temporarily, up to one year, stationed in other countries. Similarly the normal residents of the rest of the world may temporarily be stationed within the economy in question and therefore factor income earned by them is a part of the national income of the country of which they are the normal residents. This together gives us the variable called 'net factor income from abroad' which can be positive or negative. It is positive if factor income earned by the normal residents of an economy in the rest of the world is more than factor income earned by the normal residents of the rest of the world stationed in the economy.
- 4) Another factor to be considered is the fact that savings accumulated in the financial sector may not originate from household's enterprises or the government. A part of the saving may flow from the rest of the world which is termed as 'net capital inflow from the rest of the world,' which may be positive or negative. It is positive when borrowings from rest of the world are more than lending to rest of the world and negative when lending exceeds borrowing.
- 5) Another factor is that savings generated within the economy and from the rest of the world may be used not only for generating gross domestic capital formation (replacement investment plus net domestic capital formation) but also for the purposes of net investment abroad, which can be positive or negative. It is positive when investment made by the economy in the rest of the world is more than investment made by the rest of the world in the economy in question and negative in case of a reverse situation.
- 5) Lastly, just like there can be unilateral transfers (which do not have quid-pro-quo) within the economy there can be unilateral transfers from the rest of the world to the economy and vice-versa. The variable is termed as 'net current transfers from the rest of the world', which can be positive or negative. It is positive when current transfers from the rest of the world to the economy in question are more than current transfers by the economy to the rest of the world are and negative when the reverse is true.

In Fig. 2.6, the flows in a closed economy were shown. The corresponding flows in an open economy are shown in Fig. 2.7. The incorporation of variables arising because of opening up of the economy would bring in quite a difference to the flows of a closed economy shown in Fig. 2.6.

Enterprises receive money not only through consumption expenditure of households but also by net exports of goods and services of enterprises. Net exports are the difference between exports and imports. It can be positive or negative. It is positive when exports are more than imports and negative when reverse is true. In the figure, the arrow originating from the rest of the world to enterprises indicates exports whereas the arrow originating from enterprises to the rest of the world indicates imports.

Similarly, 'Net Factor Income from Aboard' (NFIA) is shown with the help of an arrow pointing towards households from the rest of the world. The same is true of 'net current transfers from abroad' where arrow is pointing towards households from 'Rest of the World'.

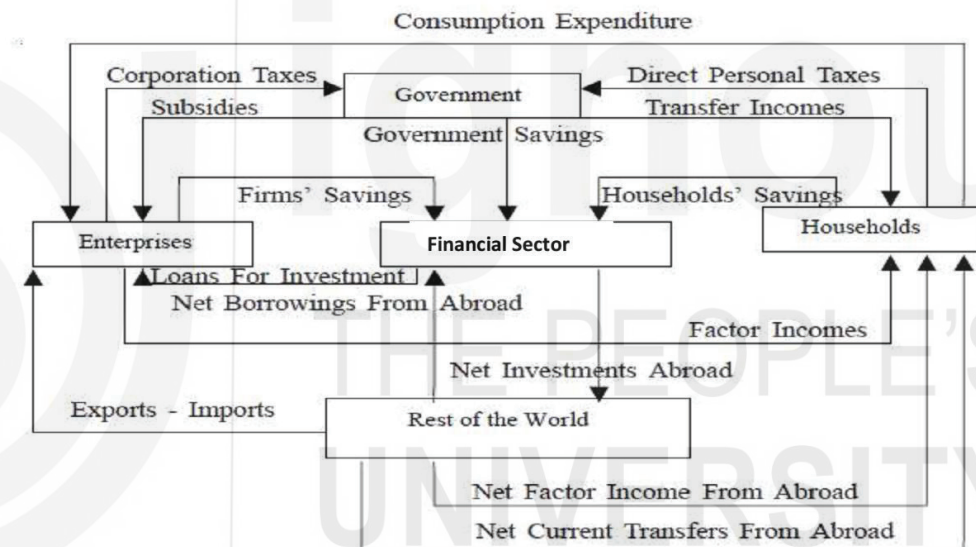


Fig. 2.7

Net borrowings from the rest of the world are indicated by an arrow pointing towards financial sector starting from the rest of the world. Finally, net foreign investment is shown with the help of an arrow pointing towards the rest of the world from financial sector.

Thus, Fig. 2.7 presents a full picture of the flows taking place in an economy, which has enterprises, households, government, financial sector and the rest of the world sector as the main players.

The situation gets more complicated if each of the sectors is sub-divided into smaller units. For instance, enterprises sector is to be divided into a number of enterprises; household sector into individual households; the financial sector into banks, insurance, share market, etc.; government into Central Government, State

Governments, Local Governments; and the Rest of the World into a number of countries. The situation will get complicated because inter-unit transactions of a sector are also to be accounted for.

Check Your Progress 1

- 1) Distinguish between money flows and real flows with the help of suitable illustrations.

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- 2) State various economic transactions, which are used to study circular flow of an economy.

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- 3) How does circular flow get complicated when financial sector is introduced along with enterprises and household sectors?

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2.3 CIRCULAR FLOWS AND NATIONAL INCOME

The circular flows presented in Section 2.2 are essential for the purposes of visualizing the working of an economy. By studying these flows it is possible to derive various macro-economic aggregates. Some of these aggregates are gross domestic product (GDP), net domestic product (NDP), gross national product (GNP), net national product (NNP) and national income (NY). In the following sub-sections we try to derive these aggregates from circular flows.

We would employ Fig. 2.7 to arrive at national income (NY) in three phases, viz., (i) as flow of goods and services, (ii) as flow of factor incomes, and (iii) as flow of final expenditures.

2.3.1 National Income as Flow of Goods and Services

Taking a fresh look at Fig. 2.7, we can try to view NY aggregate at the enterprises end. If we add up the money value of the flow of goods and services produced over a year without duplication, after deducting the production of capital goods meant for replacing worn out capital stock and adding with this the net factor income from abroad, it would be possible to get a figure of NY of an economy. To spell out further, enterprises produce consumer goods (C) and take up net domestic capital formation (I). Add with this the net factor income from abroad to get NY of an economy. Thus we can say $Y = C + I + NFIA$ where Y is NY. In this definition it may be kept in mind that the value of goods and services have to be computed at factor cost (FC) and not at market price (MP), where $value\ at\ MP = Value\ at\ FC + NIT$. NIT is net indirect taxes i.e., indirect taxes minus subsidies. Moreover, it is also to be seen that those goods and services which are produced by enterprises meant for the purposes of intermediate consumption (raw materials bought by one enterprises from another are not to be added along with goods and services meant either for final consumption on the part of households or for adding to the total capital stock of the economy. This needs to be done to avoid *double counting*. To give an example, if we take the total production of wheat along with total production of bread we would indulge in duplication since bread also includes wheat in the form of flour.

This way of calculating NY is known as the production method, or the product method. Production method as we will see later is also known as the value added method.

2.3.2 National Income as Flow of Factor Incomes

Again, going back to Fig. 2.7, let us view NY aggregate, at the households' end. Households supply factor services to enterprises to produce goods and services. These factor services can be supplied by four factors of production, viz., labour, land; capital and enterprise are to be remunerated in the form of wages, rent, interest and profits, respectively.

Thus, by adding up wages, rent, interest and profits along with net factor income from abroad we get NY of an economy. Or, $Y = W + R + In + P + NFIA$, where Y is national income which is equal to the sum of wages (W), rent (R), interest (In), profits (P) and net factor income from abroad (NFIA). What we have done is to add up all the factor incomes received by households for supplying factor services to enterprises. By definition, national income viewed, as flow of final goods and services is identical to the one viewed as flow of factor income generated in the process of production.

Sometimes factor incomes instead of being categorized into W, R, In, and P are put differently. In this new way of categorization of factor incomes we have the groups, viz., compensation of employees (CE), operating surplus (OS) and *mixed income of self-employed* (MY) so that $Y = CE + OS + MY$

+ NFIA, where CE is compensation given to labour for rendering labour services, OS is factor income generated by the ownership and to distinguish between CE and OS and NFIA is net factor income from abroad (already defined). While CE and OS are easy to understand, MY requires a little explanation. The MY arises in the case of self-employed. For example, if we ask a shopkeeper, running a shop at her own place of residence using her own capital,

Herself working as labourer or manager and herself undertaking the risk of running the business out of the income of such an enterprise, how much is rent, interest, wages and profits? It would not be possible for her to categorise her income under various heads. Such factor incomes instead can be put under the label mixed income of self-employed.

2.3.3 National Income as Flow of Final Expenditures

Making use of Fig. 2.7 national income can also be viewed as sum of final expenditures of various transactors of an economy. In other words, this time we look at not the production of final goods and services but how they are disposed of. The various heads of final expenditures can originate from either households in the form of private final consumption expenditure (C_h) or from government in the form of public final consumption expenditure (C_g) or from firms in the form of purchase of net domestic capital goods (NDKF) and change in inventories (K) or from the rest of the world in the form of payments towards net exports (NE).

Change in inventories is defined as stocks of finished goods or raw materials/semi-finished products at the end of the year minus the stocks of these goods at the beginning of the year. Change in stocks is positive if closing stocks are more than opening stocks and negative in the reverse situation.

We are now in a position to arrive at NY viewed as flow of final expenditures, which is equal to

$$Y = C_h + C_g + \text{NDKF} + \text{NE}.$$

Since NY is defined as NNP at FC, it is important to make final adjustment in the above equation by deducting 'net indirect taxes' (NIT); since C_h , C_g , NDKF and NE are normally presented at market price, in order to convert these figures at factor cost, NIT has to be deducted.

In the final reckoning the equation of national income as flow of final expenditure will be

$$Y = C_h + C_g + \text{NDKF} + \text{NE} - \text{NIT}.$$

2.3.4 National Income viewed as Production, Income and Expenditure Flows

We are in a position to state now that in Sub-Sections 2.3.1, 2.3.2 and 2.3.3 the national income aggregate is arrived at considering circular flows from production, income and expenditure respectively. Since production of goods and services requires factor services.

And factor incomes are generated and such incomes are disposed of for financing final consumption expenditure or saved. Savings, in turn, are used to finance capital formation activity within the economy or for financing net foreign investment

These three ways of measurement will give us the same magnitude of national income, provided full statistical data required are available. In reality, the requisite information may not be available because of which we are forced to employ a combination of these three methods to measure national income of an economy.

The first step to measure national income of an economy is to divide the economy into a number of industrial sectors like agriculture, mining, logging, manufacturing, construction, real estate, government services, transport services, commercial services etc. Then depending on the availability of data we decide which method to employ. For example, in agriculture and manufacturing sectors production figures may be more readily available and thus we find out the contribution of these sectors by employing production or value added method; for construction sector expenditure figures may be more easily available and its contribution to national income can be estimated by using expenditure method. Finally, for services sector, figures of incomes generated during a year are more easily available which necessitates the employment of income method.

Check Your Progress 2

- 1) Show how Production Flow, Income Flow and Expenditure Flow in an economy are related to each other.

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2) State the main components of National Income as flow of:

(i) Currently produced goods and services.

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(ii) Currently generated factor incomes.

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3) Why does India employ a combination of production, income and expenditure methods to measure its national income?

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2.4 NATIONAL INCOME AGGREGATES

National income is a macro-economic aggregate, which is indicative of economic progress of an economy. There are a number of other related concepts which are equally important and we should clearly understand the inter-relationship among various macro-economic aggregates.

2.4.1 National Income and various Related Concepts

Some of the important related concepts of national income are as follows:

1) **Gross National Product at Market Price (GNP_{MP}):** It is the sum of the values of currently produced goods and services without duplication, over a year, by the normal residents of an economy, gross of depreciation, where goods and services are valued at the market prices.

- 2) **Gross National Product at Factor Cost (GNP_{FC})**: It is the sum of the value of currently produced goods and services, over a year, by the normal residents of an economy, gross of depreciation, when goods and services are valued at factor cost (market price minus net indirect taxes).
- 2) **Net National Product at Market Price (NNP_{MP})**: It is the sum of value of currently produced goods and services without duplication, over a year, by the normal residents of an economy, net of depreciation, where goods and services are valued at market price.
- 4) **Net National Product at Factor Cost (NNP_{FC})**: It is the sum of value of currently produced goods and services without duplication, over a year, by the normal residents of an economy, net of depreciation, where goods and services are valued at factor cost (market price minus net indirect taxes).
- 5) **National Income (NY)**: It is the same as the NNP_{FC} .
- 6) **Gross Domestic Product at Market Price (GDP_{MP})**: It is the sum of value of currently produced goods and services without duplication, over a year, within the domestic territory of an economy, gross of depreciation, valued at market price.
- 7) **Gross Domestic Product at Factor Cost (GDP_{FC})**: It is the sum of the value of currently produced goods and services without duplication, over a year, within the domestic territory of an economy, gross of depreciation, where goods and services are valued at factor cost (market price minus net indirect taxes).
- 8) **Net Domestic Product at Market Price (NDP_{MP})**: It is the sum of value of currently produced goods and services without duplication, over a year, within the domestic territory of an economy, net of depreciation, where goods and services are valued at market price.
- 9) **Net Domestic Product at Factor Cost (NDP_{FC})**: It is the sum of value of currently produced goods and services without duplication, over a year, within the domestic territory of an economy, net of depreciation, where goods and services are valued at factor cost (market price minus net indirect taxes).
- 10) **Net National Disposable Income (NNDY)**: It is the factor and transfer incomes earned or enjoyed by the normal residents of an economy, over a year, inclusive of net indirect taxes. It is identical to $NNP_{MP} + \text{Net Current Transfers from Rest of the World}$.
- 11) **Income from Domestic Product Accruing to Private Sector (Z)**: It is the factor income enjoyed by households and private corporate sector in an economy, over a year.

- 12) **Private Income (PY):** It is the factor income and current transfers within the economy along with net current transfers from the rest of the world enjoyed by the normal residents of an economy, over a year.
- 13) **Personal Income (Personal Y):** It is factor income and current transfers within the economy along with net current transfers from the rest of the world enjoyed by households of normal residents of an economy, over a year.
- 14) **Personal Disposable Income (PDY):** It is factor income and current transfers within the economy along with net current transfers from the rest of the world, net of personal direct taxes and other administrative payments, at the disposal of households of normal residents of an economy, over a year.
- 15) **Personal Consumption Expenditure (C_h):** It is personal disposable income minus personal savings (i.e., savings of households), over a year.

2.4.2 Interrelationships among various Macro-economic Aggregates

In Sub-Section 2.4.1 various national income and related concepts were introduced. In this section, we will discuss the interrelationships among these aggregates.

$$\text{GNP}_{\text{MP}} - \text{Net Indirect Taxes (NIT)} = \text{GNP}_{\text{FC}}$$

$$\text{GNP}_{\text{FC}} - \text{Depreciation (D)} = \text{NNP}_{\text{FC}}$$

$$\text{NNP}_{\text{FC}} - \text{Net Factor Income from Abroad (NFIA)} = \text{NDP}_{\text{FC}}$$

$$\text{NDP}_{\text{FC}} + \text{NIT} + \text{NFIA} + \text{net current transfers from Rest of the World (NCT from RoW)} = \text{NNDY}$$

$$\text{NNDY} - X - \text{NCT from RoW} - \text{NIT} = \text{NDP}_{\text{FC}}$$

$$\text{NDP}_{\text{FC}} - \text{Income from domestic product accruing to Government administrative departments} - \text{savings of non-departmental enterprises} = \text{income from domestic product accruing to private sector (Z)}.$$

$$Z + \text{NFIA} + \text{national debt interest} + \text{transfer payments by government administrative departments} + \text{Net current Transfers from RoW} = \text{Private Income}$$

$$\text{Private Income (PY)} - \text{undistributed profits of private corporate sector} - \text{corporation tax} = \text{Personal Y}.$$

Personal Y – direct personal taxes – miscellaneous receipts of government administrative departments = PDY

PDY – Personal Consumption Expenditure = Household Saving.

Household Saving + Private Corporate Saving + Government Saving
+ Depreciation = Gross Domestic Saving

$$\frac{\text{Gross Domestic Saving}}{\text{GDP}_{\text{MP}}} \times 100 = \text{Rate of Gross Domestic Saving}$$

Gross Domestic Capital Formation (GDCF) = Depreciation + Net Domestic Fixed Capital Formation + Change in Stocks.

$$\frac{\text{Gross Domestic Capital Formation}}{\text{GDP}_{\text{MP}}} \times 100 = \text{Rate of GDCF}$$

Gross Domestic Saving – Depreciation = Net Domestic Saving

$$\frac{\text{Net Domestic Saving}}{\text{NDP}_{\text{MP}}} \times 100 = \text{Rate of Net Domestic Saving}$$

Gross Domestic Capital Formation – Depreciation = Net Domestic Capital Formation

$$\frac{\text{Net Domestic Capital Formation}}{\text{NDP}_{\text{MP}}} \times 100 = \text{Rate of Net Domestic Capital Formation}$$

Rate of Gross Domestic Capital Formation – Rate of Gross Domestic Saving = Rate of Net Foreign Capital Inflow = Rate of Net Domestic Capital Formation – Rate of Net Domestic Saving

Check Your Progress 3

1) Starting from Personal Consumption Expenditure arrive at GDP_{FC} .

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2) State the relationship between NNDY and PDY.

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3) Identity the factors, that result in the distinction between

- i) GDP and NDP
- ii) GNP and GDP
- iii) NY and NNDY
- iv) GDP_{MP} and GDP_{FC}
- v) NNP_{MP} and NNDY
- vi) Personal Y and PDY

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2.5 LET US SUM UP

In this unit, we have given you an idea of the concept of circular flows and how national income of an economy can be derived by studying the working of circular flows. The concept of circular flow relates to the flow of real transactions or money transactions from one group of economic agents to another. Flow of real transactions gives us real flows and the flow of money from one group of economic agents to another gives us money flows.

Real or money flows can be studied between firms or enterprises and households. Their study can be extended in an economy, which has enterprises, households and financial sector as the transactors. Similarly, we can extend this study further by incorporating Government sector and the rest of the world sector. Once enterprises, households, financial sector, government sector and the rest of the world sector are introduced we study the flows of an open economy.

National income can be studied in its three ways, viz., as flow of goods and services or as flow of factor incomes or as flow of final expenditures: National income looked at in either of the three ways gives us the same total. Finally, in the last section of this unit we have gone into the discussion of national income and various related concepts and also introduced the inter-relationships among the related concepts.

The main concepts introduced are GNP_{MP} , NNP_{MP} , NNP_{FC} , NNDY, income from domestic product accruing to private sector, private income, personal income, personal disposable income, personal savings, and rate of gross and net domestic capital formation, rate of gross and net domestic savings and rate of net foreign capital inflow. An attempt is also made to discuss the relationship among these concepts.

2.6 ANSWERS/ HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) Money flows take place between one transactor and another or between one group of transactors to another. For example, producers produce goods and services and pass these on to households for which payments are made by them to producers. In return households supply factor services to producers and producers make factor payment to households. Real flows, on the other hand, are the flows of goods and services from producers to households. Supply of factor services by households to producers, also constitute real flows.
- 2) Economic transactions can be grouped into various categories such as production, income generation, addition to capital stock and the Rest of the World transactions. Economic transactors can also be divided into various sectors such as enterprises, households, government, financial sector and the rest of the world.
- 3) When financial sector is introduced along with enterprises and households sectors the circular flow gets complicated. Complication arises from the fact that households buy consumer goods and services produced by enterprises and they need not use the whole of factor income. The leakage takes place in the form of households saving, which get transferred to financial sector.

Similarly, the enterprises may save a part of their revenue (which they get by selling consumer goods and services) in the form of depreciation fund and undistributed profits.

These savings of households and enterprises which the financial sector accumulates are lent to enterprises for investment or creation of capital goods (fixed capital goods or change in inventories). Thus, it is the saving and the investment, which need to be introduced in the circular flow besides other flows.

Check Your Progress 2

- 1) Production flow is the goods and services produced in an economy over a year. Production of goods and services requires factor inputs, which are supplied by households.

Employment of factors of production leads to generation of factor incomes or income flows. The incomes received by households for supplying factor inputs to producers can be used to either buy consumer

goods and services produced by enterprises or save. Whatever is saved is, in turn, used for the purposes of addition to capital stock (or investment of an economy).

Thus, production flow or flow of addition to capital stock. The process continues once again by consumption expenditure and capital expenditure going to enterprises and once again the process gets initiated.

- 2) i) currently produced goods and services can be divided into consumer goods and services and capital or investment goods. Goods or services produced can also be of the nature of intermediate goods but they are not included in other two categories because otherwise there would be duplication in the computation of GDP of an economy.
 - ii) Factor incomes generated over a year can be classified into compensation of employees, operating surplus and mixed income of self-employed. Operating surplus is constituted of rent, interest and profits. Mixed income of self-employed (MY) is that category of factor incomes where it is not possible to distinguish between compensation of employees and operating surplus. Net Factor Income from Abroad has also to be added to domestically generated factor incomes to arrive at national income of an economy.
 - iii) Expenditures currently generated can be divided into (a) Private Final Consumption Expenditure; (b) Government Final Consumption Expenditure; (c) Gross Domestic Capital Formation; and (d) Net Exports to Rest of the World.
From the sum of (a), (b), (c) and (d) we have to deduct net indirect taxes, depreciation and add with this net factor income from abroad to arrive at national income of an economy.
- 2) Production, income and expenditure are three ways of measuring national income of an economy. National income measured by any of the three methods gives us the same total. In the case of India we use combination of three methods to measure national income of India. For agriculture, manufacturing, etc., we use production method, while for services sector we use income method. For the construction sector, expenditure method is used because expenditure data are more readily available for this sector leads to income flow and income flow leads to flow of expenditures.

Check Your Progress 3

- 1) $\text{Personal Consumption Expenditure} + \text{Personal Saving} = \text{Personal Disposable Income}$. $\text{Personal Disposable Income} + \text{direct personal taxes} + \text{miscellaneous receipts of government administration departments} = \text{Personal Income}$.

$\text{Personal Income} + \text{Undistributed Profits of Private Corporations} + \text{Corporation Tax} = \text{Private Income}$.

$\text{Private income} - \text{net factor income from abroad} - \text{net current transfers from abroad} - \text{national debt interest} - \text{transfers from government} = \text{Income from domestic production accruing to private sector}$.

$\text{Income from domestic product accruing to private sector} + \text{savings of non-departmental enterprises} + \text{income from domestic product accruing to government administrative departments} = \text{NDP at FC}$.

$\text{NDP at FC} + \text{Depreciation} = \text{GDP at FC}$.

- 2) $\text{NNDY} - \text{net indirect taxes} - \text{income from domestic product accruing to government administrative departments} - \text{savings of non-departmental enterprises} + \text{national debt interest} + \text{current transfers from government} - \text{undistributed profits} - \text{corporation taxes} - \text{direct personal taxes} - \text{Miscellaneous receipts of government administrative departments} = \text{Personal Disposable Income}$.
- 3) (i) Depreciation
(ii) Net Factor Income from Abroad
(iii) Net indirect taxes + net current transfers from abroad
(iv) Net indirect taxes
(v) Net current transfers from abroad
(vi) Direct or Personal Taxes + Miscellaneous receipts of government administrative departments

UNIT 3 MEASURING ECONOMIC PERFORMANCE*

Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Methods of Measuring National Income
 - 3.2.1 Expenditure Method
 - 3.2.2 Income Method
 - 3.2.3 Value Added Method
- 3.3 Measures of Aggregates: Saving and Wealth
- 3.4 Real and Nominal GDP
- 3.5 Limitations of GDP
- 3.6 Balance of Payments
 - 3.6.1 Current Account
 - 3.6.2 Capital Account
- 3.7 Let Us Sum Up
- 3.8 Answers/ Hints to Check Your Progress Exercises

3.0 OBJECTIVES

After going through this unit you will be able to

- explain various methods of measurement of national income;
- differentiate between saving and wealth;
- distinguish between real income and nominal income; and
- explain the concept of balance of payments of an economy.

3.1 INTRODUCTION

In the previous Unit we discussed various concepts of national income accounting. In this Unit we discuss the methods of measuring national income. Measurement of national income is carried out in an accounting framework, in the sense that there is an economic activity attached to each and every item included in the national income. Thus national income is a flow and it is measured for a particular period of time, usually a year. In recent times, some of the aggregates, such as gross domestic product (GDP) are measured on a quarterly basis.

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National income is measured in terms of

1. the amount of spending by purchasing final output by the economic agents (the expenditure approach)
2. the incomes received by the factors of production (the income approach)
3. the amount of final output produced (the product approach)

The three methods give three different angles of looking at the economic activity but they give identical measure of the current economic activity in an economy.

3.2 METHODS OF MEASURING NATIONAL INCOME

As pointed out above, there are three methods of measuring national income. We describe each method in detail below.

3.2.1 Expenditure Method

The amount of economic activity occurring during a given period of time can be measured in terms of the amount of spending on final goods and services. You should note that expenditure on goods purchased for re-selling (i.e., intermediate goods) is not included in this method. According to this method, final expenditure on GDP at market prices is considered to represent the economic activity. Under this method, the components of GDP are the private consumption expenditure (C), private investment expenditure (I), government expenditure (G), and net foreign expenditure or net export (NX). Hence, in this method, expenditure incurred by various sectors, viz., household, business, government, and rest of the world are added together to get final expenditure of the economy.

According to this method, GDP at market prices (Y) is the aggregate of all the final expenditure in an economy during a financial year which is presented by the following Income- Expenditure Identity:

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

The procedure of obtaining various macroeconomic aggregates from GDP is discussed in Unit 2. We elaborate on the components of GDP below.

1. Consumption

Consumption expenditure is incurred by the household sector. It includes expenditure incurred on goods and services sold to the final users during the financial year. It captures both durable goods like car, furniture etc., non-durable goods like food, fuel, etc. and services like banking, healthcare, etc.

2. Investment

Investment expenditure is incurred by business firms in inputs for production of goods and services. It includes business fixed investment, residential investment, and inventory investment (or, change in stock).

3. Government Expenditure

It includes expenditure incurred by local, state and central level governments. Government pays salaries to their employees, spends on social security benefits like medical benefits, unemployment allowance, etc.

4. Net Exports

Net exports are defined as exports minus imports. Exports can be seen as spending by foreigners on domestically produced goods and services whereas imports are spending on foreign goods and services by domestic residents. When value of exports is greater than value of imports, net exports are positive and vice versa.

Precautions involved in the Expenditure Method

1. To avoid the problem of 'double counting', only the value of final goods and services are included in the national income.
2. The sale and purchase of second hand goods are not included in national income. Because these goods have already been included in national income at the time they were produced. But commission and brokerage paid to facilitate the sale of such goods is a fresh activity and should be included.
3. Imputed value of owner-occupied houses is included.
4. Value of own-account production of fixed assets by enterprises, household and government are included.

Example 3.1: Calculate GDP from the following data.

Items	Value (in Rs. crore)
1. Personal consumption expenditure	45000
2. Govt. consumption expenditure	5000
3. Gross domestic fixed investment	5000
4. Increase in inventories	1000
5. Exports of goods and services	6000
6. Imports of goods of services	7000
7. Net Indirect Taxes	3500
8. Depreciation	4500

Solution:

$$\begin{aligned}
 \text{GDP} &= 1 + 2 + 3 + 4 + 5 - 6 \\
 &= 45000 + 5000 + 5000 + 1000 + 6000 - 7000 \\
 &= \text{Rs. } 55,000 \text{ crore.}
 \end{aligned}$$

3.2.2 Income Method

The value of product is equal to the payments made to the factors of production. In general, there are four factors of production, viz., land, labour, capital and entrepreneurship which are compensated through rent, wages, interest and profit,

respectively. According to this method, national income is measured in terms of payments made to all factors of production. Hence, based on this approach, the GDP at market prices is the sum of the compensation of employees, gross operating surplus, mixed income and net indirect taxes, which are taxes on production and imports less subsidies on production. The income-side approach shows how various factors contribute to the GDP in the production process.

1. **Compensation of Employees:** This comprises wages, salaries, employee benefits such as employers' contribution to pension plans, social security, etc. It is the total remuneration, in cash or in kind, paid by an employer to an employee for the labour during the accounting period. It is composed of wages and salaries (in cash and in kind), and employers' social contributions.
2. **Gross Operating Surplus:** It is net business income during the production process from property and enterprises in the form of rent, interest, royalty and profit. Profit includes dividends, corporate taxes and retained earnings. The Central Statistical Office (CSO) defines operating surplus as "the value of gross output less the sum of intermediate consumption, compensation of employees (including labour income of self-employed), consumption of fixed capital and net indirect taxes." Thus,
$$\begin{aligned}\text{Gross Operating Surplus} &= \text{Rent} + \text{Interest} + \text{Royalty} + \text{Profit} \\ &= \text{Value of Gross Output at Market Price} - \text{Intermediate Consumption} \\ &\quad - \text{Compensation of Employees} - \text{consumption of Fixed Capital} - \text{Net Indirect Taxes}\end{aligned}$$
3. **Income of Self Employed:** This is the remuneration for the work carried out by the owner or by owner's family of an unincorporated enterprise, which is also called 'mixed income'. Income of a proprietor (owners of capital, land, and skills) earn mixed income in the form of mix of capital income, labour income and profits. The income of this group is referred to as mixed income because it is not clear what proportion of their income is equivalent to wage or profit. Mixed income is different from the operating surplus in the sense that the former is available to the self employed, while the latter accrues to corporate and semi-corporate enterprises.
4. **Taxes on production and imports less subsidies on production:** The former consist of compulsory, non-refundable payments to or from general government or institutions in India, in respect of the production or import of goods and services, the employment of labour, and the ownership or use of land, buildings or other assets used in production. The latter consist of all the subsidies except those subsidies on products which resident producer units may receive as a consequence of engaging in the production process.
5. **Precautions involved in the Income Method:** To estimate correct national income by income method the following precautions have to be taken.

1. Transfer payments are not included.
2. Windfall gains, such as income from lotteries, are not part of national income.
3. Income earned from illegal activities (such as theft, smuggling, etc.) are excluded.
4. The income earned through sale and purchase of second hand goods is not included in national income. But commission and brokerage paid to facilitate the sale of such goods should be included.
5. Since wealth tax, estate duties, gift tax are paid out of current income, these are excluded from national income.
6. Imputed rent of self occupied houses is included.
7. Value of production for self consumption is included.

Check Your Progress 1

1. Outline the steps involved in the estimation of national income by expenditure method.

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2. Explain how expenditure method is different from the income method in estimation of national income.

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3.2.3 Value Added Method

This method is also known as ‘Output Method’ or ‘Product Method’. It measures the contribution made by each producing enterprise in the production process in the domestic territory of the economy in a financial year. The method measures economic activity by adding the market values of goods and services produced, excluding any goods and services used up in the intermediate production stages. Under this method, we aggregate the value added by the various sectors of production of goods and services to get GDP_{MP} . Each firm’s value added is ‘the

value of its output minus the value of the intermediate goods it purchased from other firms'. In other words, it is the addition of value in final product to the intermediate goods at different stages of production.

You should note that

Gross Value added = Gross output – Intermediate Consumption

and,

Net Value Added = Gross Output – Intermediate Consumption – Depreciation.

Further,

Net Value added at FC = NVA_{FC} = Gross Output – Intermediate Consumption – Depreciation – Net Indirect Taxes.

By adding 'net factor income from abroad' to domestic income (NVA_{FC}), we obtain

Net National Product (NNP_{FC}). Thus, National Income or NNP_{FC} = Gross Output – Intermediate Consumption – Depreciation – Net Indirect Taxes + Net Factor Income from Aboard

The Value Added method measures national income in different stages. The main advantage of the value added method is that it avoids the problem of 'double counting'.

National income estimated by the above three methods, viz., income method, expenditure method, and value added method are identical. Thus, National Income $\equiv$ National Product $\equiv$ National Expenditure (where the symbol $\equiv$ denotes identical).

Estimation of Value Added

The term value added refers to the addition of value by a production unit to intermediate inputs used in production. Value added is the difference between the value of output and the cost of intermediate inputs.

Lets us illustrate the concept of value added with an example. Suppose a textile firm purchased raw materials worth Rs. 40000 and hired labour worth Rs. 10000 to manufacture clothes. The intermediate inputs purchased is Rs. 50000. The textile firm sold its output (clothes) for Rs. 55000. Thus, the value added by the textile firm is Rs. 5000.

Precautions involved in the Product Method

Measuring Economic Performance

For correct computation of national income by income method, following precautions need to be taken.

1. Only factor incomes which are earned by rendering productive services are included. All the transfer incomes are excluded.
2. Income earned from illegal sources (such as smuggling, theft, etc.) should be excluded.
3. The income earned through sale and purchase of second hand goods should not be included in national income.

But commission and brokerage paid to facilitate the sale of such goods should be included.

4. Imputed rent of self occupied building should be included. It does not make any difference whether a house is rented or self-occupied.
5. Value of production for self consumption should be included. For example, a farmer retains part of his produce for self consumption. It does not enter the market, but it contributes to output.
6. Household work by family members (say cooking of food by a home maker) are not included in national income. On the other hand, the same food, if cooked by a domestic help (who is paid for doing the work) is included in GDP.

Example 3.2: Calculate NDP_{FC} from the following data.

Items	In Rupees crore
Purchase of raw material	300
Depreciation	120
Sales	2000
Excise Tax	200
Opening Stock	150
Intermediate Consumption	480
Closing Stock	100

Solution:

Value of Output = sales + changes in stock

Change in stock = closing stock – opening stock
 $= 100 - 150 = -50$

Therefore, Value of Output = $2000 + (-50) = \text{Rs.}1950$ crore

Gross value added = Value of output – Intermediate Consumption
 $= 1950 - 480 = \text{Rs.}1470$ crore

NDP_{FC} = Gross Value Added – Net Indirect Taxes
 $= 1470 - 200 = \text{Rs.}1270$ crore

Example 3.3: A firm makes and sells jam using fruit it buys from another firm for 80,000 rupees. The firm pays its workers 50,000 rupees; pays 20,000 rupees in taxes and has profits of 40,000 rupees. What is its value added?

Solution:

Fruits bought from other firms	80,000
Wages paid to workers	50,000
Taxes paid	20,000
Profit	40,000

Profit = Sales revenue – wages paid – Taxes – Intermediate Consumption

40,000 = Sales revenue – 50,000 – 20,000 – 80,000

Sales revenue = 40000 + 50000 + 20000 + 80000

= Rs. 1,90,000

Value Added = Sales – Intermediate Consumption

= 190000 – 80000 = Rs. 110000

Hence, Value Added = Rs. 1,10,000 crore

Check Your Progress 2

1. Explain the problem of double counting in measuring national income.

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2. What are the precautions taken while calculating national income by Value Added method?

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3.3 MEASURES OF AGGREGATE SAVING AND WEALTH

Saving and wealth are closely related with each other; but they are not the same. Saving is that part of income which is not spent. In other words, saving is the current income minus its spending on current needs.

When we divide total saving of a country by its national income then we obtain saving ratio. On the other hand, wealth is calculated as asset minus liability. Saving is a flow concept (measured per unit of time) whereas wealth is a stock concept (measured at a point of time).

Saving takes the form of an accumulation of assets or a reduction in liabilities; therefore, saving is the addition to wealth. The following are the three important measures of saving:

1. **Private Saving (S_{pvt}):** It is the saving by the private sector. Private saving is the private disposable income minus consumption. Symbolically,

$$S_{pvt} = \text{Private Disposable Income} - \text{Consumption} \\ = (Y + NFPA - T + TR + INT) - C$$

where,

$$Y = \text{GDP}$$

$$NFPA = \text{Net factor payments from abroad}$$

$$T = \text{Taxes}$$

$$TR = \text{Transfer earnings received from government}$$

$$INT = \text{Interest income}$$

$$\text{Private Saving Ratio} = \text{Private Saving} / \text{Private Disposable Income}$$

2. **Government Saving ($S_{govt.}$):** It is net government or budget surplus. It is government income minus government purchases of goods and services, i.e.,

$$S_{govt} = \text{Government Income} - \text{Government Purchases of Goods and Services}$$

$$S_{govt} = (T - TR - INT) - G$$

where,

$$T = \text{Tax}$$

$$TR = \text{Transfer payments}$$

$$INT = \text{Interest payments}$$

$$G = \text{Government Purchases of Goods and Services}$$

3. **National Saving (S):** National saving is the saving of the economy as a whole. It is the sum of private saving and government saving.

$$S = S_{pvt} + S_{govt.}$$

$$S = [Y + NFPA - T + TR + INT - C] + [T - TR - INT - G]$$

$$= Y + NFPA - C - G$$

$$= GNP - C - G$$

The above equation shows that national savings is equal to GNP *minus* current needs of private and government sectors.

We know that

$$\text{GNP or } Y = C + I + G + NX$$

Substituting the value of Y in national saving equation, we get

$$S = [C + I + G + NX] + NFPA - C - G$$

$$S = I + NX + NFPA$$

$$S = I + CA$$

where $CA = NX + NFPA$, i.e., current account balance.

Also,

$$S = S_{pvt} + S_{govt.}$$

$$\text{And } S_{pvt} = S - S_{govt.}$$

$$= I + CA - S_{govt.} \quad (\text{where } S = I + CA)$$

Hence, private saving can be used in three ways, as given below.

1. To fund new capital investment (I)
2. To provide the money to finance government budget deficit ($S_{govt.}$)
3. To acquire assets from or to lend to foreigners.

3.4 REAL AND NOMINAL GDP

Nominal variables are valued at their current market price and real variables are nominal variables adjusted for inflation or deflation; valued at some base year. The base year or constant year should be carefully selected. A change in nominal variable reflects the combined effects of changes in quantities and changes in prices whereas real variable provides correct picture of a variable change or change in quantity.

Nominal GDP: It is also termed as ‘monetary national income’. It is defined as the value of goods and services at current year prices. It is a poor indicator of measuring economic growth. It is obtained by multiplying goods and services produced in a current year with the current year prices.

Real GDP: It is also termed as GDP at constant prices. It measures the actual growth of the economy. It is obtained by multiplying goods and services produced in a current year with the base year prices. Increase in real GDP means over time indicates improvement in performance of the economy. It reflects changes in quantities.

$$\text{GDP at constant price} = \frac{\text{GDP at current prices}}{\text{price index for current year}} \times \text{base year price index}$$

where, base year = Price index of base year is always taken to be 100

Example 3.4: Convert nominal GDP into real GDP in the following cases.

**Measuring Economic
Performance**

- i) GDP at current year prices is Rs. 2,50,000 and price index for the current year is Rs. 250
- ii) GDP at current year prices is Rs. 4,00,000 and current year price index is Rs. 400

Solution:

- i) GDP at constant prices = $\frac{2,50,000}{250} \times 100 = \text{Rs. } 1,00,000$
- ii) GDP at constant prices = $\frac{4,00,000}{400} \times 100 = \text{Rs. } 1,00,000$

3.4.1 Price Indexes

A price index is a measure of the average level of price for particular goods and services, relative to base year prices. In other words, it is a measure of the current price level relative to base year. There are mainly two types of price indexes, viz.,

1. GDP Deflator
2. Consumer Price Index (CPI)

GDP Deflator

The GDP deflator measures the average level of prices of goods and services that are included in GDP. It can be used to convert nominal GDP to real GDP. It eliminates the effect of price increases and determines the real change in physical output. It is the ratio of nominal GDP in a given year to real GDP. In other words, it is a price index with changing basket. Symbolically,

$$\text{GDP Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

Example 3.5:

If nominal GDP is Rs. 21,100 crore and real GDP is Rs. 20,000 crore, calculate the GDP Deflator.

Solution:

$$\text{GDP Deflator} = \frac{21,100}{20,000} \times 100 = 105.5$$

We can convert the nominal GDP into Real GDP by using GDP deflator, i.e.,

$$\text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP Deflator}} \times 100$$

Consumer Price Index (CPI)

Consumer Price Index (CPI) measures prices of buying fixed basket of consumer goods and services. The basket have fixed list of goods and services like food, clothing, fuel and housing. CPI is calculated on monthly bases. While, GDP deflator is a price index with changing basket. CPI is calculated by dividing of current cost of the basket of consumer items by the cost of the same basket of items in the base period. CPI is the single index which can be used to measure prices of various goods and services prevailing in an economy.

$$\text{CPI} = \frac{\text{Price of basket in current year}}{\text{Price of basket in base year}} \times 100$$

Inflation Rate

The inflation rate is the rate at which the general level of prices increases per period. Price indices can be used to measure inflation rate. It is measured as the percentage change in any of the price indices during a time period. It is calculated as follows:

$$\text{Inflation rate} = \frac{P_2 - P_1}{P_1} \times 100$$

where P_1 is the value of the price index in the previous period and P_2 is the value of the price index in the current period.

If GDP deflator rises from 100 in the previous period to 112 in the current period then inflation rate is calculated as:

$$\text{Inflation Rate} = \frac{112 - 100}{100} \times 100 = 12 \%$$

3.5 LIMITATIONS OF GDP

GDP is a useful measure of economic progress but not economic welfare. But there are certain limitations of GDP as a measure of economic progress. The main limitations are as follows:

1. **Composition of GDP:** If GDP increases because of increase in production of war products (e.g., tanks, bombs, weapons, etc.) then there may not be an improvement in economic welfare.
2. **Population effects are ignored:** A country may have high national income but the country may have a large population. Thus per capita income is more representative of economic progress compared to GDP.
3. **Large contribution by few:** The country may have very steep inequality. The GDP may be high, but it may be contributed by very few.

Therefore, if a small section of the population owns a large share in the GDP leaving a smaller percentage of GDP to be shared by a greater number of people, economic growth will not reach the poorest sections of an economy.

4. GDP ignores quality of environment: There may be increase in output with an increase in environmental degradation. Having higher GDP does not mean that people have better quality of life if water, air etc. are more polluted.
5. Only Legal products are included: GDP includes goods and services produced and sold in legal markets. It also ignores certain productive activities that does not have market transaction.

For example, services of a home maker, caring for her children and other family members, are excluded from GDP.

In view above, GDP may not be an adequate index of social and economic welfare. GDP and welfare may not be positively related. In many cases, an increase in GDP does not bring about corresponding increase in economic welfare.

Check Your Progress 3

1. What are the components of saving?

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2. Explain the difference between Real and Nominal GDP.

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3.6 BALANCE OF PAYMENTS: NATIONAL INCOME ACCOUNTING FOR OPEN ECONOMY

The Balance of Payments (BoP) of a country records all economic transactions between the residents of the country and the rest of world in a particular period of time, usually over a year or a quarter of a year. The BOP is a summary of all monetary transactions between a country and rest of the world, which are made by individuals, firms and government bodies. Thus, the BoP records all external visible and non-visible transactions.

The BOP is an account of (i) what residents of a country receives from rest of the world in a particular period on account of sale of goods and services and other invisible items, (ii) capital transfers from other countries, (iii) what these residents have paid to the other countries on account of purchases of all these items, and (iv) transfers of capital from the domestic residents to rest of the world.

These transactions have both credit entry and debit entries. It records the payments for the country's exports and imports of goods, services and financial capital, and financial transfers. All the receipts from 'rest of the world' are recorded as credit, while all the payments made to 'rest of the world' are recorded as debit. You should note that 'the BoP account is always balanced' as it is maintained by 'double entry book keeping system'.

The *sources of funds* for a country, viz., exports or the receipts of loans and investments, are entered as credit items, while *uses of funds*, viz., imports or investment in foreign countries, are entered as debit items. The BoP account comprises two parts, viz., current account and capital account.

3.6.1 Current Account

The current account of BOP includes all transactions related to exchange of goods and services and unilateral transfers. It deals with payment of currently produced goods and services. Hence, balance of current account can be estimated as the sum total of balance of trade, balance of services and balance of unilateral transfers.

Items in the Current Account are as follows:

1. **Balance of Trade:** It includes export and import of visible goods only. Therefore, it is also known as visible trade. Difference between export and import gives trade balance.
2. **Balance of Services:** It includes all invisible transactions such as services (travel, insurance, banking, news agency services, etc.), aid, transfers, etc.
3. **Unilateral Transfers:** These transactions are done by one country to another without purchases of goods and services, e.g., aid, gifts, etc.

3.6.2 Capital Account

It records all the transactions which cause a change in the assets or liability of a country. It includes all capital transfers such as loans and investment, commercial borrowings between the one country and rest of the world. It includes the following:

1. **Foreign Investment:** Foreign investment is of two types, viz.,

- a. **Foreign Direct Investment (FDI):** It means purchase of assets by foreign nationals or institutions and at the same time acquiring control of it, e.g., acquisition of a firm in one country by a firm in another country.
 - b. **Portfolio Investment:** it is the acquisition of an asset that does not give the purchaser control over assets, e.g., purchase of shares or bonds in foreign country.
2. **Loans:** It includes short term credit, long term loans (external assistance), and external commercial borrowings (ECB).
 3. **Banking Capital:** It includes foreign currency deposits by foreign nationals.

The overall BOP is obtained by adding current account balance and capital account balance. A country may have deficit in the current account. Such deficit is compensated by surplus in capital account or depletion of foreign exchange reserve of the country. Similarly, surplus in the current account is compensated by deficit in capital account or accumulation of foreign exchange reserve. Thus, in accounting sense, BoP always balances.

Structure of India's BoP

In the following table we present India's BoP entries for the year 2018-9 so that you get an idea of the various components.

Items	2018-19(in US \$ million)
I Current Account	
1. Imports	517519
2. Exports	337237
3. Trade Balance (1-2)	- 180283
4. Invisibles (net)	123026
5. Current Account Balance	- 257256
II Capital Account	
1. Capital Account	
a) External Assistance (net)	3413
b) External Commercial Borrowings (net)	10416
c) Short-Term Credit	2021
d) Banking Capital (net)	7433
e) Foreign Investment (net)	30094
f) Other Flows (net)	1026
Capital Account Balance (a+b+c+d+e+f)	54403
III Errors and Omission	- 486
IV Overall Balance	- 3339
V Change in Foreign Exchange Reserve [Increase(-)/ Decrease (+)]	- 3339

Source: Economic Survey 2019-20, Vol. 2, Page 104

Check Your Progress 4

1. What are the items included in the current account of BOP?
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2. Explain the difference between balance of trade and balance of payments.
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3.7 LET US SUM UP

In this unit we learnt that there are mainly three methods of measuring national income, viz., income method, expenditure method, and output or value-added method. In income method, sum total of all factor incomes is taken into consideration for measurement of national income. Expenditure method deals with expenditure on final goods and services produced during a period. In the value-added method, we find the sum of total value added by all the sectors of an economy. Value of national income is identical whether it is calculated by income method or expenditure method or value added method.

We also discussed that saving is the part of income which is not consumed at the present time; rather it is kept aside for future consumption. There are three important measures of saving: private saving, government saving, and national saving. For the measurement of the economic performance, we prefer real GDP instead of the nominal GDP, as the former controls for the increase in prices.

Subsequently we discussed BOP, which is a systematic record of all economic transactions that takes place between one country and rest of the world. There are two components of BOP, current account and capital account. Current account deals with export and imports of all goods and services between the nations, whereas capital account shows inflow and outflow of capital.

3.8 Answers/ Hints of Check Your Progress Exercises

Check Your Progress 1

1. Refer to Sub-Section 3.2.1 and answer.
2. Income method accounts the factor income of the factors of the production whereas expenditure method deals with expenditure made on final goods and services. Refer to Sub-Sections 3.2.1 and 3.2.2.

Check Your Progress 2

1. Problem of double counting arises when a transaction is counted more than once. Refer to Sub-Section 3.2.3.
2. Refer to Sub-Section 3.2.3 under the heading **Precautions**.

Check Your Progress 3

1. Three measures of saving are public saving, private saving, and national saving. Refer to Section 3.3.
2. Real GDP is based on constant prices or base year prices whereas nominal GDP is based on current prices. Refer to Section 3.4.

Check Your Progress 4

1. The current account of BOP includes balance of trade, balance of services, and unilateral payments. Refer to Sub-Section 3.6.1.
2. Balance of trade includes the trade of visible goods whereas BOP includes both visible and invisible items. Refer to Section 3.6.