ਜਗਤ ਗੁਰੂ ਨਾਨਕ ਦੇਵ
ਪੰਜਾਬ ਸਟੇਟ ਓਪਨ ਯੂਨੀਵਰਸਿਟੀ
ਪਟਿਆਲਾ

The Motto of Our University

(SEWA)

SKILL ENHANCEMENT

EMPLOYABILITY

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ACCESSIBILITY

SELF-INSTRUCTIONAL STUDY MATERIAL FOR JGND PSOU

JAGAT GURU NANAK DEV

PUNJAB STATE OPEN UNIVERSITY, PATIALA

(Established by Act No. 19 of 2019 of the Legislature of State of Punjab)

BACHELOR OF ARTS

CORE COURSE (CC): ECONOMICS

SEMESTER- II

BAB31201T: MACRO ECONOMICS

Head Quarter: C/28, The Lower Mall, Patiala-147001
Website: www.psou.ac.in

The Study Material has been prepared exclusively under the guidance of Jagat Guru Nanak Dev Punjab State Open University, Patiala, as per the syllabi prepared by Committee of Experts and approved by the Academic Council.

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JAGAT GURU NANAK DEV PUNJAB STATE OPEN UNIVERSITY, PATIALA

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PREFACE

Jagat Guru Nanak Dev Punjab State Open University, Patiala was established in December 2019 by Act 19 of the Legislature of State of Punjab. It is the first and only Open University of the State, entrusted with the responsibility of making higher education accessible to all, especially to those sections of society who do not have the means, time or opportunity to pursue regular education.

In keeping with the nature of an Open University, this University provides a flexible education system to suit every need. The time given to complete a programme is double the duration of a regular mode programme. Well-designed study material has been prepared in consultation with experts in their respective fields.

The University offers programmes which have been designed to provide relevant, skill-based and employability-enhancing education. The study material provided in this booklet is self-instructional, with self-assessment exercises, and recommendations for further readings. The syllabus has been divided in sections, and provided as units for simplification.

The University has a network of 110 Learner Support Centres/Study Centres, to enable students to make use of reading facilities, and for curriculum-based counselling and practicals. We, at the University, welcome you to be a part of this instituition of knowledge.

Prof. G.S.Batra
Dean Academic Affairs

BACHELOR OF ARTS

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SEMESTER-II

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MAX. MARKS: 100 **PASS: 40%**

INTERNAL: 30 **EXTERNAL: 70**

TOTAL CREDITS: 6

OBJECTIVE

After introducing the students with the issues related with an individual consumer, firm and market in the first semester, this course in the second semester throws light on the national economy as a whole. This course includes the basic theories of determination of income, consumption, investment, employment, money and interest, inflation, Monetary and Fiscal policies, and business cycles

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions each from the sections A, and B of the question paper, and any ten short answer questions from Section C. They have to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.

SECTION – A

Introduction to Macro Economics

National Income Accounting: Basic concepts of National Income and the methods of measurement.

Determination of Income, Output and Employment: Classical and Keynesian approaches

Consumption Function: Keynes' Psychological Law of Consumption, Determinants of Propensity to Consume.

SECTION – B

Investment Function: Types, Investment demand schedule and factors affecting investment decisions.

Marginal efficiency of capital: concept, operation and limitations of static and dynamic multiplier. Acceleration theory and its working.

Business Cycles: Meaning and Phases.Inflation: concept, causes and effects

Monetary Policy and Fiscal Policy: Meaning, Objectives and tools

RECOMMENDED READINGS:

1. Blanchard, O. (2018). Macroeconomics, 7th ed. Pearson Education.
2. Dornbusch, R., Fischer, S., Startz, R. (2018). Macroeconomics, 12th ed. McGraw-Hill.
3. Jones, C. (2016). Macroeconomics, 4th ed. W. W. Norton.
4. Mankiw, N. (2016). Macroeconomics, 9th ed. worth Publishers.

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BACHELOR OF ARTS

CORE COURSE (CC): ECONOMICS

SEMESTER -II

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COURSE COORDINATOR AND EDITOR: DR. PINKY

SECTION A

UNIT NO:	UNIT NAME
Unit 1	Introduction to Macro Economics
Unit 2	National income accounting: Basic concepts of National Income and the methods of measurement.
Unit 3	Determination of Income, Output and Employment: Classical and Keynesian approaches
Unit 4	Consumption Function: Keynes Psychological Law of Consumption, Determinants of Propensity to Consume.

SECTION B

UNIT NO:	UNIT NAME
Unit 5	Investment Function: Types, Investment demand schedule and factors affecting investment decisions
Unit 6	Marginal efficiency of capital: concept, operation and limitations of static and dynamic multiplier. Acceleration theory and its working.
Unit 7	Business Cycles: Meaning and Phases.Inflation: concept, causes and effects
Unit 8	Monetary Policy and Fiscal Policy : Meaning, Objectives and tools

BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 1: INTRODUCTION TO MACRO ECONOMICS: MEANING, NEED AND SCOPE

STRUCTURE

1.0 Learning Objectives

After completion of this unit, learner will be able to:

- Know the concepts in macroeconomics
- Develop Analytical skills
- Understand the economic activities and aggregates studied under Macro economics.
- Discuss the scope of Macro economics
- Clarify the differences between Micro and Macro economics.

1.1 Introduction

The term macro was first introduced in economics by the economist Ragnar Frisch in 1933. It is used to describe the study of aggregates and averages covering the economy as a whole such as total income, total employment, national income, aggregate demand, general Price level, total savings, wage level etc. It is that part of economic theory which studies the economy in its totality or as a whole. It studies not individual economic units like a household, a firm or an industry but the whole economic system. Macroeconomics is the study of aggregates and averages of the entire economy. Such aggregates are national income, total employment, aggregate savings and investment, aggregate demand, aggregate supply general price level, etc. In short, macroeconomics is the study of national aggregates or economy-wide aggregates. Main tools of its analysis are aggregate demand and aggregate supply. Macroeconomics is the basis of all plans of economic development of underdeveloped economies. Economists are now confidently exploring the possibilities and tools for maintaining economic growth and full employment. More than anything else, macroeconomic thought has enabled us to properly organize, collect and analyze the data about national income and coordinate international economic policies.

1.2 Meaning of Macro Economics

The word ‘Macro’ is derived from the Greek word ‘Makros’ which means large. Macro Economics refers to economy as a whole i.e economy of large dimensions. It is that branch of economics which studies the economic activities of the economy as a whole. The focus of macro economics is on macro economic variables like national income, general employment, general price level, aggregate demand, aggregate supply etc. To understand it more we will discuss some definition of Macro Economics given by various economists.

According to Boulding, "Macro economic theory is that part of economics which studies the overall averages and aggregates of the system."

According to Shapiro, "Macroeconomics deals with the functioning of the economy as a whole." According to Prof. Ackley “Macroeconomics deals with economic affairs “in the large”, it concerns the overall dimensions of economic life.”

John Maynard Keynes is the founding father of macroeconomics. Keynesian economics is a

macroeconomic theory of total spending in the economy and its effects on output, employment, and inflation. Keynes's theory was the first to sharply separate the study of economic behavior and markets based on individual incentives from the study of broad national economic aggregate variables and constructs. K.E. Boulding, "Macroeconomics deals not with individual quantities as such, but with aggregates of these quantities, not with individual income but with national income, not with individual price but with price level, not with individual output but with national output"

Keynes pioneered a new approach to macro economics. Prior to Keynes the problem of businesscycles was inevitable with no specific approach to solve these problems. The classical economists focused on only micro aspects of the economy. The Great depression of 1930s left many of these economists helpless. In this backdrop Keynes came up with a new approach to look at the economy. In his book, 'The General theory of Employment, Interest and Money' he talked about the possibility of high unemployment and underutilization of capacities in the market economy. He also argued that Govt. can play bigger role during economic depression by effective utilization of fiscal and monetary policies.

1.3 Need of Macro Economics

Macro economics has a greater role to play in our day-to-day life. The study of macro economics is of great importance due to the following main issues.

1. **To Understand the Economy as a Whole:** We need to study macro economics to analyze and study the economy as a whole. Whatever is true at micro level i.e., individual level may not be true at macro level. This is called macroeconomic paradox. According to Boulding it will be misleading to apply the rules of micro economics to macro economics expecting the same results. We can explain it with the help of an example. To solve the problem of unemployment at the time of great depression, A.C.Pigou, a neoclassical economist suggested all round wage cut to promoteemployment. From micro point of view if a firm or industry goes for wage cut, it can employ more labour. But it is not valid for the whole economy. Because cutting down wages brings down their income and it further brings down the overall demand in the economy which in turn will lead to fall in production and employment.

2. **It Studies Issues Related to Well-Being of the Society:** Macro economics deals with problems like unemployment, inflation, unequal distribution of income, imbalance inbalance of payment etc. Macro economics explains the causes of these problems and measures to solve them. It also suggests the policies to overcome these problems.

3. **Determination of National Income:** Calculation of aggregates of National Income like GNP at market price, factor income, interest on national debt etc. is measured under it.

4. **Determination and Acceleration of Economic Growth:** High economic growth is the goal of every developing economy. Economic growth helps raising the standard of living, curb poverty, reduce unequal distribution of income and generate employment. It suggests measures to achieve self-sustained growth.

5. **To Explain General Price Level and Inflation:** Fluctuations in price level and inflation remains the problem with many developing economies. Fall in value of money and persistent rise in general price level is called inflation. Macro economics helps developing measures to solve the problem of inflation with the help of monetary and fiscal policies. Macroeconomic models like Harrod-Domar and Solow explain the important factors determining economic growth.

6. **To Understand Business Cycles:** Significant developments have been made in macroeconomics to understand the causes of business cycles. Keynesian theory of effective demand along with the interaction of multiplier and accelerator gives adequate explanation of business cycles. On the basis of understanding of business cycles, macroeconomics helps us adopt proper monetary and fiscal policies to check business cycles.

7. **Formulating Macro Economic Policies:** Accurate and efficient macroeconomic policies play an important role in development of an economy. Policies related to employment generation, control of trade cycles, combating poverty, inflation etc. play a special role in developing economies.

1.4 Features of Macro Economics

Macroeconomics has following features:

1. **Short-run in Nature:** Macroeconomics is a short run study. Short run refers to that time period in which some factors are fixed and some are variable. Short run nature of

macroeconomics can be expressed as given below.

a) National output is assumed to be constant

b) Only labour is the variable factor in the short run

c) Consumption in the short run remains same more or less as habits of the people remain same in short run. Therefore, more stress is given in macroeconomics on investment as a factor to increase employment.

2. **Macroeconomics is Mainly Institutional:** Macroeconomics is more real. We can understand its real nature by examining the real factors like saving, investment, rate of interest and institutional factors influencing propensity to consume.

3. **Importance of State Intervention:** Macro economics lays great stress on the role of state intervention in balancing the economy. State plays an important role in dealing with business cycles through monetary policy, raises propensity to consumption by equitable distribution of income.

4. **Pivotal Role of Investment:** Investment has a pivotal role to play in macro economics. Effective demand depends on consumption and investment. Consumption remains samein the short period. It is change in investment which can bring increase in effective demand. Problem of unemployment and underproduction is mainly due to lack of investment.

5. **A Monetary Economics:** classical economists put stress on the medium of exchange function of money but macro economics acknowledged the role of store of value function of money. According to macroeconomics determination of income and employment is affected by demand and supply of money.

6. **Comparative Static Analysis:** Macro economics has an element of both static anddynamic analysis.

7. **A Theory of Shifting Equilibrium:** Macro economics lays great stress on underemployment and over employment equilibrium. Both the situations are morerealistic than full employment equilibrium. They explain the shifting equilibrium.

8. **Role of Expectations:** expectations basically mean expectations from profit. If the entrepreneur is optimistic, he expects more profit, he will invest more. Investment according to macro economics depends upon of Marginal efficiency of capital (MEC) and

MEC further is governed by expected profitability.

9. **Role of National Income and Consumption:** Macro economics recognizes the role of national income and consumption in solving economic problems of a country. Keynes explained how the analysis of national income helps solving the problem of unemployment. Also, through his psychological law of consumption he explained that consumption does not rise in same proportion as the increase in income. This leads to fallin effective demand and rise in unemployment.

1.5 Scope of Macro Economics

The scope of macro economics is multidimensional. It includes the problems, activities, issues and parameters related to macroeconomics. Following are the broad areas underlying the scope of macroeconomics.

1. **To Study the Working of the Economy:** it is impossible to understand the working of an economy without the study of macroeconomic variables. These macroeconomic variables are statistically measurable therefore making it easy to analyze. With the help of macro economics we can measure national income, output, employment, general price level etc. on the basis of which we understand the economic system.
2. **To Study the Theory of Employment:** High level of unemployment and underemployment is a common feature of developing economies. Macroeconomics studies problems related to unemployment. It studies factors determining employment like aggregate demand, aggregate supply, effective demand, aggregate consumption and saving etc.
3. **In Formulating Economic Policies:** Developing economies face innumerable national problems. Macro economics is extremely helpful in combating these problems by finding viable solutions. The main responsibility of the governments is to regulate and control the problems like overpopulation, unemployment, balance of payment and inflation etc.
4. **To Study the Theory of National Income:** Macro economics studies different concepts and components of National income and methods of measurement of national income and social accounting. National income data help in forecasting and policy making.
5. **To Study the Theory of Economic Growth and Development:** Boosting economic

growth remains an important goal of developing economies. Study of problems relating to economic growth, equal distribution of income and wealth, raising per capita income etc. comes under the scope of macro economics. On the basis of it, government frames and implements plan for the overall increase in national income, employment and output to increase development.

6. **In Study the Business Cycles**: business cycles refer to fluctuations in output and employment with altering periods of inflation and recession. Macro economics developed as an approach to solve the problem of Great depression of 1930's. it studies the causes of economic fluctuations and its remedies. Various theories of business cycles and monetary and fiscal policies to control business cycles are used under macro economics.

7. **To Study General Price level and Inflation:** Problem of inflation and rising prices is one of the major problems faced by both developed and developing countries. It studies and analyze the problem of inflation. It was Keynes who put forward demand pull theory of inflation. After Keynes many theories of inflation were developeddepending on various causes leading to price rise.

8. **Balance of Payments and Exchange Rate:** Balance of payment is a systematic record of economic transactions of the residents of a country with rest of the world during one accounting year. There may be deficit or surplus in balance of payments. Both are problematic. Transactions in balance of payments are created by exchange rate. Exchange rate is the rate at which a country's currency is exchanged for foreign currencies. Instability in exchange rate and balance of payment problem has been major problem of developing countries these.

Check Your Progress- I

Q1. What do you mean by Macro Economics?

Ans. .....

Q2. Explain any two features of Macro Economics.

Ans. .....

1.6 Importance or Uses of Macro Economics

1. **It Helps to Understand the Functioning of a Complicated Modern Economic System:** It describes how the economy as a whole function and how the level of national income and employment is determined on the basis of aggregate demand and aggregate supply.
2. **Issues of Vital Importance:** Macroeconomics deals with the issues of vital importance, suchas unemployment, inflation, instability of foreign exchange rates etc. which directly affect the well-being of the people.
3. **Helps in Measuring and Achieving Economic Growth:** It helps to achieve the goal of economic growth, higher level of GDP and higher level of employment. It analyses the determinants of economic growth of a country. Also explains measures to attain high economicgrowth and sustain it.
4. **Macro Economics**: It helps to bring stability in price level and analyses fluctuations in business activities. It suggests policy measures to control Inflation and deflation.
5. **Explains Balance of Payment:** it determines the factors affecting balance of payment, identifies causes of deficit in balance of payment and suggests remedial measures.
6. **For International Comparisons:** Macro economics helps in making international comparisons. It helps in making international comparisons of national income, per capita income, consumption and savings etc.
7. **To Understand Macroeconomic Paradoxes:** Macroeconomics explains the concepts thathold good for individuals but are not valid when applied to the society.
8. **Solve Economic Problems:** It helps to solve economic problems like poverty, unemployment,business cycles, etc., whose solution is possible at macro level only, i.e., at the level of whole economy.
9. **To Formulate Economic Policies:** With detailed knowledge of functioning of an economy at macro level, it has been possible to formulate correct economic policies and also coordinate international economic policies.
10. **Wider Scope than Micro Economics:** Macroeconomic theory has saved us from the dangersof application of microeconomic theory to the problems of the economy at large.

11. **Measurement of Material Welfare:** macroeconomics helps in measuring aggregates like aggregate income, consumption, saving and investment. Hence helps in assessing material welfare.
12. **Decision Making:** Macroeconomics helps in policy making as it studies the economy as awhole. Hence on the basis of those individuals and businessmen are able to take right decisionstimely.
13. **Economic Planning:** On the basis of macroeconomic aggregates, countries formulate comprehensive economic plans to achieve economic goals.

1.7 Limitations of Macro Economics

Main limitations are given as follows.

1. **Contribution of Individual Units Ignored:** macro economics throws light on the function of aggregates only. It ignores the role of economic activities and the decisions taken by individual units.
2. **Excessive Generalization:** Generalization of individual observation may lead to inaccurateresults about the system as a whole.
3. **Heterogeneous Units:** We study heterogeneous units under macroeconomics. Heterogeneous units are the units which are different from each other. It is not possible to measure these units in uniform pattern. e.g. consumers are assumed to differ from each other. Under macroeconomics heterogeneous units are measured in terms of money which may not be the true measure of their value in use.
4. **Depends on Individual Units:** Whatever the fact correct for individual may not necessarily be correct for the whole economy. As a person starts saving in the form of money, but if everybody starts saving in terms of money then the aggregate demand will fall, which cause reduction in national income.
5. **Limited Application:** Macro economics has limited applications as it deals with aggregatesonly, that is not practical in real life.

1.8 Assumptions Of Macro Economics

Keynes propounded some assumptions of macroeconomics. These are given below.

1. **Short Period:** In short period it is not possible to change all the factors like technique of production, taste of the consumer, habits and fashion. Therefore, macro economics assumed all these factors to be constant. According to Lord Keynes the problem of unemployment in developed countries was a short-term problem because in long run period we are all dead.
2. **Perfect Competition:** In perfect competition situation of the market, no interference of other firms to determine the price of the product is to be assumed. Here, it assumes perfect competition into the market.
3. **No Government Interference:** It ignores the intervention of the government on aggregate demand. As per macro economics, aggregate demand is a function of consumption and investment only.
4. **Closed Economy:** A closed economy is that economy where there is no trade with any of the other country. There is no influence of trade on employment and level of income.
5. **Role of Money as a Store of Value:** It assumes that money is not used for medium of exchange only rather money used for store of value also. Therefor it is not necessary that the person spend all of their monetary income as he gets.
6. **Underemployment Equilibrium:** Macro economics assumes that the position of equilibrium can be achieved in full employment as well in the underemployment situation. Equilibrium is a situation where aggregate supply is equal to aggregate demand.
7. **No Time lags**: It assumes that there are no time lags in the variables. For example, the expenditure of person A on the day Friday depends upon the income he earns on Friday only. Therefore, present consumption depends on the present income only.
8. **Full Utilization of Resources**: It assumes that there is full utilization of resources that are available in the economy
9. **Diminishing Marginal Productivity**: It means that as more and more labour engaged for the process of production, the marginal productivity gained from the additional laborer goes diminishing. Macro economics assumes diminishing marginal productivity for additional laborer.

10. **Saving and Investment Function:** in Economics, saving is a function of income of the consumer. More the income of the person leads to more saving of the person.

11. **Labour is the Only Variable Factor of Production:** In short run period, it assumed that all other factors of productions like land and capital etc. are constant in nature and only the quantity of labour engaged on the process of production can be variable (i.e. increased or decreased the quantity of labour engaged as per requirement).

12. **Interest is a Monetary Phenomenon:** It assumes that interest is a monetary phenomenon only. Interest function is based on the demand and supply of money, here demand for money indicates to liquidity preference, which used for the purpose of transaction, precautionary and speculative motives.

1.9 Relation Between Microeconomics and Macroeconomics

Micro economics and macro economics are closely related to each other. Their relation is clearfrom the following analysis.

1.9.1 Inter-Relation Between Micro Economics and Macro Economics

1. **Study of Microeconomics is the Basis for The Study of Macroeconomics:** Macro economics is the study of aggregates and these aggregate results obtained from collection of individuals. To understand the functioning of whole economy it is essential to understand thebehavior of individual units. e.g collection of firms makes an industry and several industries form an economy.

2. **Study of Macroeconomics is the Necessary for Microeconomic Analysis:** To study a problem at micro/ individual level macroeconomic analysis becomes indispensable. The general trend seen on macro level influences the micro level results tosome extent. e.g. the sale of product of a firm not only depends on its price but also on the total supply of money in the economy.

1.9.2 Differences Between Microeconomics and Macro Economics

1) **Different Assumptions:** Micro economics is based on the assumption of full employment, fixed output and fixed expenditure. Whereas macro economics is based on the assumption of optimum allocation of resources in the country.

2) **Different Objectives:** Both these branches of economics have different objectives. Micro economics studies the principles, problems and policies related to optimum allocation of resources. Whereas macro economics studies the principles, problems and policies related to full employment and growth.

3) **Different Methods of Study:** We study partial equilibrium analysis under micro economics. We assume other things being equal under the principles of micro economics. Under the principles of macro economics we study quasi general equilibrium analysis. Here economic factors are divided into important aggregates like aggregate demand, aggregate supply, aggregate income and aggregate consumption etc.

4) **Different Importance to Price and Income:** The central determinant of the problem of micro economics is price and that of macro economics is income. Demand, supply, consumption etc. are taken on the basis of income. Under micro economics, consumers, producers etc. take decisions on the basis of price whereas under macro economics decisions regarding all aggregates like aggregate consumption, aggregate investment and aggregate saving etc. are taken on the basis of income.

5) **Difference Relating to Change:** Sometimes there are changes on individual basis i.e at micro level but these changes are not there at macro level and vice versa. e.g. if there is increase in demand in a particular sector, there may not be any change in the demand asa whole due to fall in demand in some other sector.

6) **Paradoxes:** In many activities advantages at individual level may prove detrimental tothe society or economy as a whole. Prof. Boulding has called such paradoxes as macroeconomic paradoxes. e.g., more savings of an individual may benefit the person who saves but if the whole society starts saving more, aggregate demand will short of aggregate supply leading to fall in national income.

7) **Differences in Degree of Aggregation:** Micro economics studies small units like a firm, group of firms etc. It studies aggregates like general output, total employment and national income etc.

Check Your Progress- II

Q1. Give any two assumptions of Macro Economics.

Ans. .....

Q2. Explain three limitations of Macro Economics.

Ans. .....

11.10 Summary

Macro Economics is the use of economic resources at the aggregate level i.e. national level. Macro economics studies the problems and issues related to the economy as a whole. For example, aggregate consumption, aggregate supply, aggregate savings, total employment, general price level and national income etc. macro economics not study the individual economic units as studies by micro economics, rather it studies the issues related to the collective society. Moreover, macro economics enabled the economist to organize, collect and analyze the data related to income and international economic policies. In other words, macro it deals with national income not the individual income, individual price level, individual utility etc. it also considers the sub aggregates of large aggregates related to the economy as a whole. However, macro economics is the study of aggregates, and these aggregate results obtained from the collection of data or behaviour of individuals. So, in order to understand the functioning of whole economy it is essential to understand the behaviour of an individual units.

11.11 Questions For Practice

A. Short Answer Type Questions

Q1. Define macroeconomics.

Q2. What are Macroeconomic paradoxes?

Q3. What are the main assumptions of macroeconomics?

Q4. Give five salient features of macroeconomics

Q5. Give some differences of microeconomics and macroeconomics.

Q6.Explain some major limitations or criticisms of macro economics.

B. Long Answer Type Questions

Q1. What do you mean by Macro economics? Explain its scope.

Q2. Bring out the relationship that exists between micro and macro economics. Also

distinguish between micro and macro economics.

Q3. Discuss the importance of macro economics. Also give its limitations.

Q4. Define Macro Economics. Also discuss its salient features.

1.12 Suggested Readings

- Branson, W.H. (1979). *Macroeconomic Theory and Policy*. Harper and Row Publishers New York.
- Dwivedi, D.N. (2010). *Macroeconomic Theory and Policy*. Tata MCGraw Hill Education Private Limited.
- Mankiw, N.G. (2003) *Macroeconomics*. Worth publications.
- Krugman, P. & Wells, R.(2015). *Macroeconomics*. Worth Publishers.
- Sheehan, B. (2009).*Understanding Keynes' General Theory*, Palgrave Macmillan.

BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 2: NATIONAL INCOME ACCOUNTING: CONCEPTS AND METHODS OF MEASUREMENT

STRUCTURE

2.0 Learning Objectives

After completion of this, learner will be able to:

- Know the concepts of National Income
- Understand the related aggregates of National Income
- Know about methods of measuring National income
- Define the difficulties faced by underdeveloped countries in measuring National Income
- Understand the difference between various aggregates of National income.

2.1 Introduction

In an economy, the people are emerged in productive activities, whereby they earn income and spend their income on goods and services to satisfy their unlimited wants. The growth and progress of an economy can be estimated from how much they are able to produce and spend, i.e. the total output, income and expenditure during the specified period of time. These 'aggregates' of the economy are considered as different perspective to its national income national income is the income of a nation and the assessment of money value of all the goods and services provided by a nation during the specified period of time. Generally, it is taken by aggregate of income earned by all the individuals of a nation. National income helps the nation to determine the growth of that nation with respect to its basic requirement. National income can be defined as the total net value of all goods as well as services produced within a nation over the period of time.

In brief, national income is an important concept of macroeconomics. There are various aggregates or variants of national income. Each aggregate is composed of a specific meaning and measurement.

2.2 Meaning and Definition of National Income

The term national income can be interchangeably used with national output, national dividend and national expenditure. All the three terms are synonymous to the term national income as they provide the true picture of the condition of particular economy in terms of growth and development. Many economists have defined national income in different terms. It has two types of definitions as explained below:

1. Traditional Definition

This is provided by the classical economists like Marshall, Pigou and Fisher. All three had used different concepts to define national income and led to different conclusions. These concepts are explained as below:

A. Marshallian Definition

"The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend." Thus, the Marshallian definition defines the importance of the factors of production like labour and capital which uses natural resources of the country to produce goods and services which contribute to the value of the national income of that country. But this definition has some flaws such as it is not possible to correctly estimate the total goods and services produced in an economy in the present world as there are so many varieties available. Also, there is possibility of double counting in the economy.

B. Pigouvian Definition:

"National income is that part of objective income of the community, including income derived from abroad which can be measured in terms of money." Thus, Pigouvian definition is better that the Marshall's definition as it corrected the problem of double counting by included only the money value of the goods and services in the accounting. But this definition is not fully correct as it also has some defects inhabited in it. Some of them are that this includes only the money value of the goods and services which can be done in developed countries only. In under developed countries barter system still prevails in some sectors and also proper accounts are not maintained.

C. Fisher's Definition:

This definition included consumption as the criterion to calculate the national income of a particular economy. This definition is better than the other definitions on the part that it provides the estimation of the standard of living of the economy on the basis of the consumption pattern. But this definition is not without defects as it includes the value of the goods or services used in the particular year on the basis of their estimated shelf life. But, what will happen if the estimation may increase or decrease. This will lead to wrong conclusions and the national income accounting may go wrong. Thus, this definition is not completely perfect in defining national income.

2. Modern Definition

This definition includes the current time definition of the national income which is being practically used in all the economies to estimate. Some of the definitions are given below:

A. Simon Kuznet's Definition:

"National income is defined as the net output of commodities and services flowing during the year from the country's productive system in the hands of ultimate consumers."

This definition is the most acceptable definition as it includes the estimation of the value of goods and services which directly or indirectly reach the end users i.e. consumers in the monetary terms.

B. United Nations Definition:

"National income has been defined as national product, as addition to the shares of different factors and as net national expenditure in a country in a year's time"

This definition is also mostly acceptable as it involves the concept of national income as national product and national expenditure which are always equal while calculating and mostly used interchangeably.

Check Your Progress-I

Q1. Define Pigouvian definition of national income.

Ans. .....

Q2. Write Simon Kuznet's definition of national income.

Ans. .....

2.3 Basic Aggregates of National Income

Generally known, an economy produces various goods and services during a period of one year. These goods and services cannot be added together in terms of quantity. Thus, these are represented in terms of money. Basic aggregates of National Income are given below.

2.3.1 Gross Domestic Product at Market Price (GDP_{MP}) and Factor cost (GDP_{FC})

Gross Domestic Product at Market Price (GDP_{MP}):

It implies the gross market value of all final goods and services produced within a nation during one accounting year. It is the income earned by the nationals of the country within the domestic country and excludes the income earned from the foreign country. Dernburg defines

GDP at market price as "the market value of the output of final goods and services produced in the domestic territory of a country during an accounting year."

GDP_{MP} = Value of output in domestic territory-value of intermediate consumption

In the definition of GDP, some terms which are explained as:

- Gross in GDP_{MP} refers to include the depreciation.
- Domestic in GDP_{MP} implies that all goods and services produced within a nation.
- Product in GDP_{MP} underlines that only final goods and services are included.
- Market Price in GDP_{MP} underlines the amount of indirect taxes paid and excludes the amount of subsidy received.
- Final goods and services in the definition involve all the finished goods which are being produced in the country.

Gross Domestic Product at Factor Cost (GDP_{FC}):

It includes the gross money value of all the final goods and services produced within the boundary during a one period. It involves the income earned by all the factors of production like labour, capital, land and entrepreneur in a given year within the domestic territory of the country.

$GDP_{FC} = GDP_{MP}$ - Net Indirect Taxes Or

$GDP_{FC} = GDP_{MP}$ - Indirect Taxes + subsidies

This involves the factor income being earned by the factors of production in the economy which the producing sector provides to the household sector. The basic difference among GDP at market price and factor cost is that GDP_{FC} includes all the elements of GDP at market price except net direct taxes.

2.3.2 Net Domestic Product at Market Price (NDP_{MP}) and at Factor Cost (NDP_{FC})

Net Domestic Product at Market Price (NDP_{MP}):

According to Dernburg, "Net Domestic product at market price is the market value of net output of final goods and services produced in the domestic territory of a country by its normal residents and no-residents during an accounting year". The term net refers to the value of goods and serviced deducted after the wear and tear and some of the expenses made by the business house.

$NDP_{MP} = GDP_{MP}$ – Depreciation

Net Domestic Product at Factor Cost (NDP_{FC}):

It refers to net money value of all the goods and services produced within the country generally during one year. This also involves the factor prices provided by the business sector to the household sector but exclude the fixed capital consumption allowance (depreciation).

$NDP_{FC} = GDP_{MP}$ - Net Indirect Taxes Depreciation or

$NDP_{FC} = GDP_{FC}$ Depreciation or

$NDP_{FC} = NDP_{MP}$– Net Indirect Taxes

NDP_{FC} is also known as Domestic Income or Domestic Factor Income. It should be noted here that the entire component either domestic or net, mainly attributed output and services produced within the nation not outside the nation. Now we will consider the national level concepts.

2.3.3 Gross National Product at Market Price (GNP_{MP}) and Factor Cost (GNP_{FC})

Gross National Product at Market Price (GNP_{MP}):

According to Dernburg, "The GNP at market price is defined as the market value of all the final goods and services produced in an economy during an accounting year including net factor income from abroad". Therefore, it includes all the income earned by the nationals of the country both within the domestic boundary and outside it. The income earned from the foreign sector is known as the net factor income from abroad.

$GNP_{MP} = GDP_{MP}$ + Net Factor Income from abroad (NFIA)

Gross National Product at Factor Cost (GNP_{FC}):

According to Peterson, "Gross national product at factor cost is the sum of factor cost of the gross product attribute to the factors of production supplied by the normal residents of the country during a year and net factor income from abroad".

$GNP_{FC} = GNP_{MP}$ - Net Indirect Taxes

2.3.4 Net National Product at Market Price (NNP_{MP}) and Factor Cost (NNP_{FC})

Net National Product at Market Price (NNP_{MP}):

It considers the net money value of all the final goods and services produced by the normal residents of a nation during one year. It is also known as National income at market price.

$NNP_{MP} = GNP_{MP}$ – Depreciation

Net National Product at Factor Cost (NNP_{FC}):

It refers to net money value of all the final goods and services produced by the normal residents of a country during a period of one year. It is known as the national income. It refers to the cost that the individuals of the economy face in terms of resources of the economy to produce the net output.

$NNP_{FC} = GNP_{MP}$ - Net Indirect Taxes – Depreciation

It should be noted here that production of only normal residents of the country is to be included even if they are outside the nation.

Check Your Progress-II

Q1. Define Gross Domestic Product at Factor Cost (GDP_{FC})

Ans. .....

Q2. Write the formula of Gross National Product at Market Price (GNP_{MP}).

Ans. .....

2.3.5 Net Value Added at Market Price (NVA_{MP}) and Factor Cost (NVA_{FC})

Net Value Added at Market Price (NVA_{MP}):

The term that is used to denote the net contribution made by a firm is called value added. It is the difference between the value of output and input or raw material or intermediate product at each stage of production. The net value added at market price refers to the net domestic product at market price which is the difference of gross value added and the depreciation.

$NVA_{MP} = GVA_{MP}$– Depreciation

Net Value Added at Factor Cost (NVA_{FC}):

It gives the net value added by all the productive enterprises of an industry or sector at factor cost. By adding up the net factor income from abroad to it there will be the total national income of the economy.

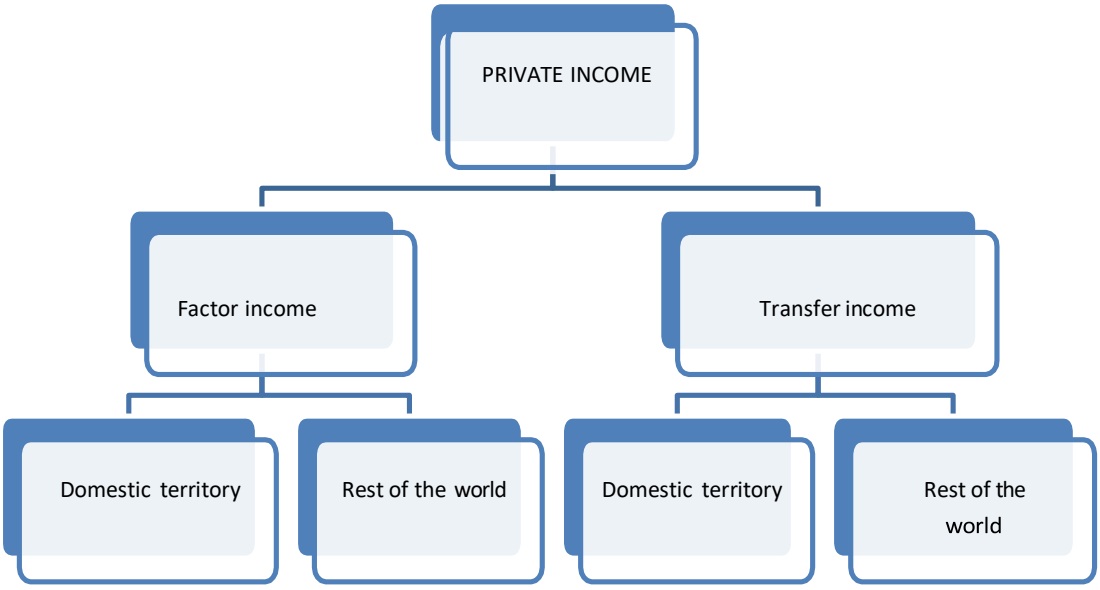
2.3.6 Private Income and Personal Income

It involves the income earned by the private sector of the economy from both the domestic and foreign market. This includes following two parts:

A. Factor income or the earned income

B. Transfer income or unearned income

Private Income = Income from domestic product of private sector + Net factor income from abroad + interest on National Debt + net transfer from government + transfer payments from the rest of the world



Personal income involves the income earned by the household sector of the economy from both the domestic and the foreign market from all the sources. It also includes factor income and transfer income.

Personal Income = Private income – corporate tax – saving of private enterprises (retained earnings of foreign companies)

2.3.7 Personal and National Disposable Income

This includes the income that is available to the household sector for consumption after the payment of taxes, fees and other miscellaneous receipts of the government.

Personal Disposable Income = Personal income – personal/direct taxes – miscellaneous receipts of the government

National disposable income includes the money income that is available to the whole economy for consumption purpose. This involves two terms, i.e.

A. Net National Disposable Income: It is the total income that is available to the whole economy for consumption or saving. It is written as NNDY.

NNDY = National consumption expenditure + National Savings or

NNDY = National Income + Net indirect taxes + Net current transfers from the rest of the world

B. Gross National Disposable Income: When depreciation is added to the net national disposable income, the result will be the gross national disposable income.

GNDY = Net National Disposable Income + Depreciation

2.3.8 Nominal GDP and Real GDP

This refers to the market value of all the final goods and services produced in the domestic territory of the country during an accounting year calculated on the basis of current year prices. It is also known as monetary GDP or GDP at current prices.

Real GDP refers to the market value of all the goods and services produced in an accounting year in the domestic territory of the country calculated on the basis of the base year prices. It is also known as GDP at constant prices.

2.3.9 GDP Deflator

It is the ratio of the nominal GDP and real GDP which shows the change in the value of the GDP due to the change in the prices of the economy.

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

2.4 Basic Differences Between the Domestic Income and National Income at Factor Cost

Basis	Domestic Income	National Income
Nature of Concept	It reflects the value of output and services produced within nation.	It is a national level concept represented the value of goods and services produced in the entire world.
Category of Producers	It is related to those producers that are associated to the goods and services within nation.	It relates to all producers who are normal residents of the nation.
Net Factor Income Abroad (NFIA)	It excludes the NFIA	It includes the NFIA

2.5 Basic Differences Between the GDP and National Income at Market Price

Basis	GDP at Market Price (GDP_{MP})	National Income NNP_{FC}
Nature of concept	It reflects the value of final goodsand services produced within nation.	It is associated to national concept involves the value of final goods and services produces in the entire world.
Category of producers	All the producers within nation.	All the producers who are normal residents of the nation.
Net Indirect Taxes	It is a market price i.e, it included net indirect taxes.	It is a factor cost, i.e, it excludes net indirect taxes.
Depreciation	Inclusive of depreciation	Exclusive of depreciation

2.6 Basic Difference between National Income and Private Income

Basis of Difference	National Income	Private Income
Public and private sector	It includes the income earned by both the public and private sector	It includes the income earned by only private sector
Factor and transfer income	It involves only the factor income	It involves the income earned in terms of both the factor and transfer Income
Public sector income	It includes the public sector income	It does not include the publicsector income
Interest on National Debt	It does not include interest on national debt while its calculation	It involves interest on debt incalculation

Check Your Progress-III

Q1. What are the basic differences between the domestic product and national income at market price?

Ans. .....

Q2. Define Private Income.

Ans. .....

2.7 Methods to Measure National Income

National income is the most important measure to compute the performance of the economy. The Calculation of the national income is very complicated and it reveals that because of the ways of the flow of resources the national income can be computed in three ways. These are termed as:

A. Product method
B. Income method
C. Expenditure method

These can be explained in detail as follows:

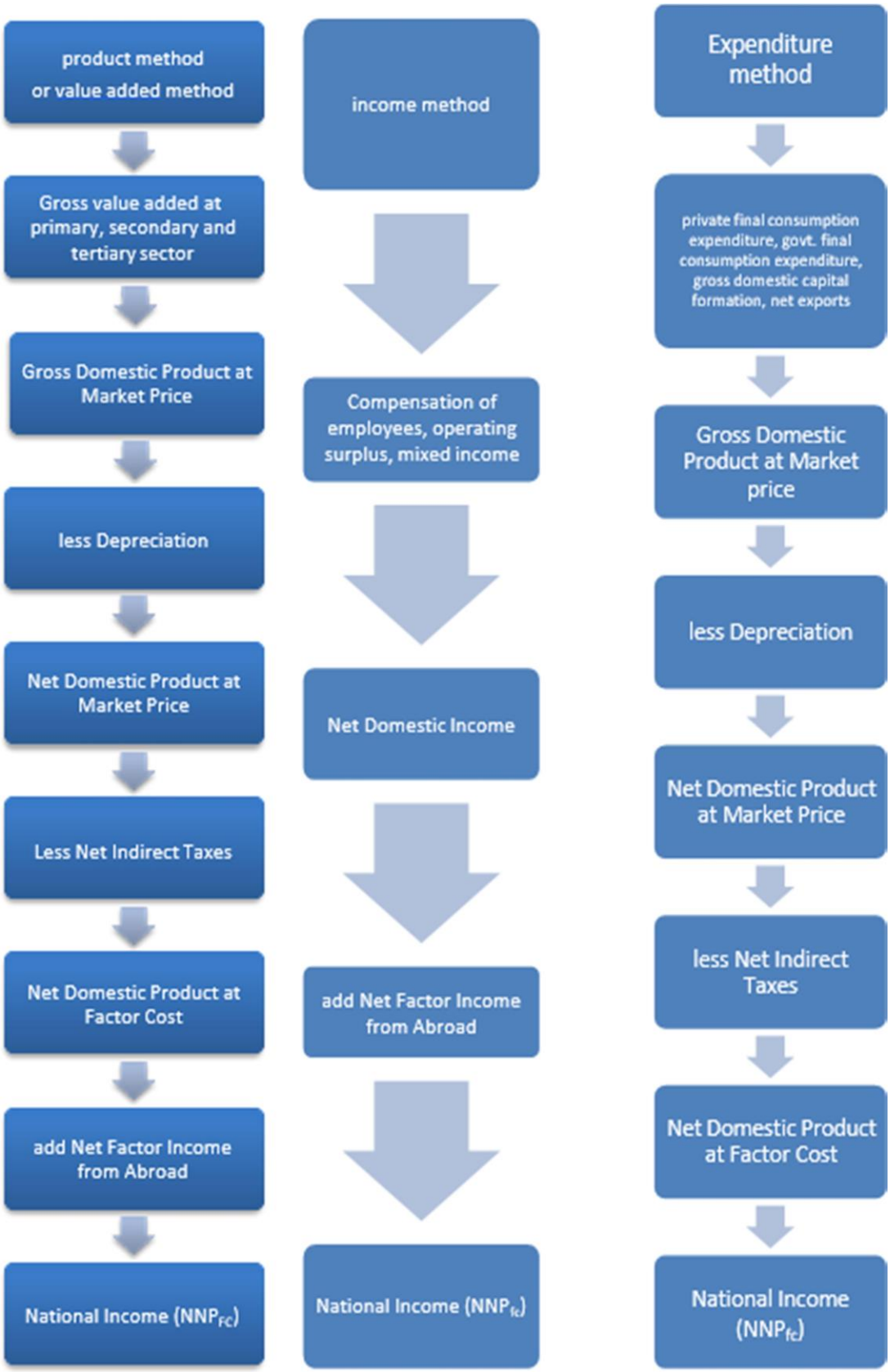
2.7.1 Product Method

This method measures the value of national income in terms of the products being produced in the economy in an accounting year. This method is also known as value added method or output method. Value added is defined as the difference between the final goods as they are being produced and the cost of goods that entered that stage.

I) Steps to Measure National Income Under Value Added Method

1. Identification of the Productive Units: firstly, to calculate the national income there is need to identify the producing sectors of the economy. There are mainly three sectors of the economy which are being contributing to the production of the economy. These are:

A. Primary sector: It involves the agricultural sector of the economy. Along with agriculture there are also allied activities like animal husbandry, horticulture, bee- keeping, etc. are being involved. Thus, the goods and services produced by them are included in the calculation of national income.


product method
or value added method
Gross value added at primary, secondary and tertiary sector
Gross Domestic Product at Market Price
less Depreciation
Net Domestic Product at Market Price
Less Net Indirect Taxes
Net Domestic Product at Factor Cost
add Net Factor Income from Abroad
National Income (NNPFC)
income method
Compensation of employees, operating surplus, mixed income
Net Domestic Income
add Net Factor Income from Abroad
National Income (NNPfc)
Expenditure method
private final consumption expenditure, govt. final consumption expenditure, gross domestic capital formation, net exports
Gross Domestic Product at Market price
less Depreciation
Net Domestic Product at Market Price
less Net Indirect Taxes
Net Domestic Product at Factor Cost
National Income (NNPfc)

B. Secondary sector: It involves the goods and services produced by the industrial sector of the economy. Along with industrial sector it also includes the construction, manufacturing etc. Here the products are being produced with the help of men, machine, material etc.

C. Tertiary sector: It involves the services provided to the other sectors of the economy. It includes transportation, banking, real estate, information technology, etc.

2. Calculation of the Value Added: The value added of the economy can be calculated by added the value of output being produced by all the sectors and the subtracting the intermediate consumption from it. It is also known as GDP at market price.

Value Added = Value of output (Primary + Secondary + Tertiary) – Intermediate goods

3. Calculation of the national income: For calculation of the national income, the depreciation and net indirect taxes are to be subtracted from the value added and then net factor income from abroad is added to this.

National Income (NDP_{FC}) = GDP_{MP} – Depreciation – Net Indirect Taxes + Net Factor Income from Abroad

II) Precautions of Product Method

A. Double counting should be avoided.

B. Production for self-consumption should be included.

C. Sale of second-hand goods is not to be included.

D. Production from illegal activities should not to be included.

E. Value of services rendered by housewives/family members should not be included.

2.7.2 Income Method

Under this method, the factor incomes being earned by all the factors of production are calculated and added to derive at national income. This method is also known as factor income method or income consumption method.

I) Steps Involved in Calculation of National Income:

1. Compensation of Employees: it involves the income being paid by the employers to the workers or employees in the business house. It involves following points:

A. Wages and salary in cash: it includes the money income being paid by the employers to the workers for the work being done by them in the production of the commodity.

B. Wages and salary in kind: it includes non-monetary benefits provided to the workers to stay in the business house, such as free cab service, free houses, educational facilities to their child, etc.
C. Employer's contribution to social security scheme: it includes the contribution made by the employer for the benefit of the workers.

2. Operating Surplus: it involves the income earned by the factors other than labour for their contribution in the production of the commodity. It involves following points:

A. Rent and Royalty: rent is provided on the land privately used by the entrepreneur for the business purpose. It is the payment made for the use of land. Royalty is the amount paid for the leasing of the sub-soil land to the government officials.
B. Interest: it is the payment made by the government on public debt or by one firm to the other on the funds provided for the productive purposes.
C. Profit: it is the reward provided to the entrepreneur for incurring risk in the production of goods and services. It is used by the entrepreneur for mainly three purposes, i.e., to pay corporate tax, to pay dividend and to retain earnings for business purposes.

3. Mixed Income: it involves the imputed value of the self-employed work being done by the normal resident of the economy. It includes the value of rent from owned land, wages of owned work, etc. e.g., Farmers, retail traders, etc. it involves a service of doctor running his clinic at the residence.

4. Net Factor Income from Abroad: the net factor income from abroad involves the income earned by factors of production by working outside of the domestic territory. It involves the net value of the payment made to the foreign world and receipts from them to the domestic economy.

NFIA = Net income earned from abroad – Net income paid to abroad

Now, the National income can be calculated by adding all the four parts of the income method,

i.e. NDP fc = Compensation of employees + Operating Surplus + Mixed income + Net factor income from abroad.

II) Precautions Regarding Income Method:

1) Transfer payments like old age pension, unemployment allowance are not included in estimating national income.

2) Imputed rent of self-occupied houses and imputed value of production of goods for self-consumption are to be included in calculating national income. But value of self-consumed services is not to be included.
3) Illegal money through smuggling, theft etc. is not included in national income.
4) Windfall gains are not included in this method.
5) Death duties, gift tax, tax on lotteries etc. are paid from past saving or wealth are not a part of current income. So, they should not be treated as a part of national income of that year.
6) The receipts from sale of second-hand goods should not be treated as a part of national income because second-hand goods do not create new flows of goods and services in the current year.
7) Sales proceeds of second-hand goods are not included in national income.
8) Indirect taxes are not included while estimating national income at factor cost.

2.7.3 Expenditure Method

It is a method of computing GDP that measures the amount spent on all final goods during a given period. Expenditure method is the method which measures final expenditure on gross domestic product at market price during an accounting year. Final expenditure refers to expenditure on final goods and services in an accounting year. The main problem is to find out whether the expenditure is on final good or intermediate good. Only final expenditure is added in this method. If goods and services are purchased for final consumption or capital formation, the expenditure on them is final expenditure.

I) Steps Involved in the Calculation of The National Income:

1. Consumption Expenditure: It involves the expenditure being incurred on the purchase of goods and services. There are many types of goods being available in the economy. Some of these types are as follows:

A. Durable/Non-perishable goods: refrigerators, air conditioner, cooler, furniture, etc.
B. Semi-durable goods: Clothes, food items like sugar, salt, etc.
C. Non-durable/Perishable good: vegetables, fruits, etc.

The expenditure is being done by both the government officials (government final consumption expenditure) and private individuals (private final consumption expenditure) on the purchase of these goods.

2. Investment Expenditure: it involves the expenditure being done by the individuals or the government in the use of funds for further capital formation.

A. Gross Private domestic investment: This is also known as business investment as it is done by the business houses for their capital formation. This investment is done mainly in the purchase of plant/machinery, furniture, land etc. for business purposes.
B. Government investment: it is also known as development expenditure as the investment done by the government is mainly for the purpose of the development of the economy. This involves the expenditure being incurred on the construction of roads, dams, bridges, etc.

3. Net Exports: Net exports the difference between exports and imports of the country duringone year.

$$\text{Net Exports} = \text{Exports} - \text{Imports}$$

Exports refer to goods and non-factor services from one country to rest of the world, and Imports refer to purchase of goods and non-factor services of one country to rest of the world.

Now, the calculation of national income can be done by adding all these items which lead to the calculation of GDP_{MP} and then subtracting depreciation and net indirect taxes from it with adding net factor income from abroad.

$$GDP_{MP} = C + I + G + (X - M)$$

National Income = GDP_{MP}– Depreciation – Net indirect taxes + Net factor income from abroad

II) Precautions Regarding Income Method

1) Since the production value of final goods is included, the expenses for any intermediate goods are not considered. Otherwise, a single expense will be counted twice, causing the national income to inflate inaccurately.
2) The transfer payments do not add value to the economy of a nation; hence, they should not be included.
3) The purchase of second-hand goods is not included since they do not affect the total value of produced goods and services.
4) Buying and selling of bonds and shares signifies a change in ownership and does not affect the value of goods and services. These transactions are not included in national income. However, the brokerage paid for the transfer of shares is considered while using the expenditure method.

5) Services provided by the government and non-profit organizations and the expenses incurred for the production of any good that is used for self-consumption are considered in the national income calculation.

Identity Among National Product, National Income and National Expenditure

In the economy, there are final goods and services which are being produced in the accounting year and also the income earned by the factors of production which are being producing these goods and the expenditure incurred on them are identical. Value of final goods is equal to the factor cost which is identical to the expenditure on the final product. Thus, it can be concluded that the national income calculated with the help of product method, income method and expenditure method are all equal.

National Product = National income = National Expenditure

2.8 Difference Between Final Goods and Intermediate Goods

Basis of Difference	Final Goods	Intermediate Goods
Definition	Those goods which are produced to be directly consumed by the consumer are known as final goods	Those goods which are used for producing other goods are known as intermediate goods
Nature	These are finished goods	These can be semi-finished or non-finished goods
Processing needed	There is no need of further processing as they are ready to be consumed.	There is need of further processing as they are refined to make goods for final consumption
Impact on National Income	These goods form the part of national income	These goods do not form part of national income
Demand for goods	These goods have inherent or direct demand	These goods do not have natural demand as they are based on the preferences of the users and have derived demand

2.9 Difficulties Faced by Underdeveloped Countries in Measuring National Income:

1) **Value of Goods Not Included:** In underdeveloped countries, when the transactions are mainly in the form of barter system, they are not included in national income calculation. Also, many of the goods are for self-consumption and are not properly measured in monetary terms. It creates problem in calculation of national income.
2) **Illiteracy:** underdeveloped countries have massive illiteracy and backwardness. Most of the entrepreneurs are illiterate in the economy and does not maintain proper accounts for the goods and services which mislead the calculation of national income.
3) **Little Specialization:** There is no or very little specialization in the underdeveloped economies due to which products are not of good quality and do not have proper industrial base.
4) **Statistical Availability:** There is no proper availability of the reliable statistical data in underdeveloped countries.
5) **Method to Calculate:** Because of lack of proper and reliable availability of the data, the method to calculate national income is not proper. There is combined method being used to calculate national income in many countries which lead to misleading results.
6) **Economic Stage:** The most important problem in the calculation of national income here is at what economic stage is the income being included. If the aim of the computation is the progress of the economy, then the production is to be included. But, if the aim is to compute the welfare of the economy, then the consumption stage is more effective.

Check Your Progress- IV

Q1. Mention the names of methods to measure national income.

Ans. .....

Q2. What do you mean by consumer expenditure?

Ans. .....

2.10 Summary

In general, national income means the value of goods and services produced by a country during the financial period. It is concerned with the economic activities of a country during a particular year. National income useful to estimate the growth of the nation with respect to the basic requirement. According to "National income is defined as the net output of commodities and services flowing during the year from the country's productive system in the hands of

ultimate consumers." There are various concepts or aggregates available related to national income. These are gross domestic product, gross national product, net national product, net domestic product (are at market price and factor cost). Personal and disposable income and private income.

There are three methods available to measure the national income. These are income method, expenditure method and value-added method. Income method is based on income generated by the production factors (i.e., land and labour). However, expenditure method is based on investment and consumption of a country. Value-added method consists of value added of product during the period of manufacturing process.

2.11 Questions for Practice

A. Short Answer Type Questions

Q1. Define gross domestic product at market price.

Q2. What is meant by gross national product?

Q3. Define net domestic product at market price

Q4. Define net domestic product at factor cost

Q5. What do you mean by Private income?

Q6. What do you mean by Private income?

Q7. What do you mean by Personal income?

Q8. What do you mean by Disposable income?

Q9. What is consumption of fixed capital or depreciation?

Q10. Explain the difference between personal income and personal disposable income.

B. Long Answer Type Questions

Q1.Explain the concept of domestic product. Distinguish between gross domestic product and gross national product

Q2.Explain the various aggregates related to national income. Explain the inter-relationship between them with the help of equations and chart.

Q3.Explain the concepts of

a) National disposable income and national income
b) Factor income and transfer income
c) Private income and personal income

Q4.Distinguish between the following concepts of national income

a) Gross domestic product and gross national product

b) Net national product at market price and net national product at factor cost

Q5.Define national income. Explain the different methods of measuring national income.

Q6.Explain income method of measuring the national income

Q7.Explain expenditure method of measuring the national income

Q8.Explain the precautions to be taken while measuring the national income by expenditure method.

Q9.Explain the precautions to be taken while measuring the national income by income method.

2.12 Suggested Readings

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BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 3: DETERMINATION OF INCOME, OUTPUT AND EMPLOYMENT (CLASSICAL AND KEYNESIAN APPROACHES)

STRUCTURE

3.0 Learning Objectives

After studying this unit, learner will be able to:

- Know the basic features of Classical and Keynesian school of thought.
- Understand the Determination of the income, output and employment.
- Differentiate between Classical and Keynesian ideas.

3.1 Introduction

The task of economists is to build theories and apply them to understand the working of economy. In Macroeconomics, there have been two primary groups known as Classical Economists and Keynesians. The term "Classical Approach" was used by John Maynard Keynes for the ideas of economists like Adam Smith, David Ricardo, Thomas Malthus and J.S. Mill. Although classical economists had not propounded any coherent theory of macroeconomics but it should not be taken as classical economists had not given any views on output or employment determination. Classical economists had made certain assumptions about the working of economy and their ideas were dominating the macroeconomic theory till early 1900s. In 1936, John Maynard Keynes published his book *The General Theory of Employment, Interest and Money*. He challenged the view of classical economists because thoughts of classical economists were failed to explain the reasons behind unemployment during Great Depression of 1930. The basic difference between classical and Keynesian perspectives is whether market economies, if left to themselves, adjust to full employment or not.

In this unit, we will discuss classical views, criticism of classical views by Keynesians and Keynesian views regarding determination of income, output and employment.

3.2 Basic Concepts

A. **Aggregate Demand (AD):** Aggregate demand is the quantity demanded by households, businesses, the government and rest of the world at the aggregate price level.
B. **Aggregate Supply (AS):** Aggregate Supply is the quantity of aggregate output supplied in the economy at aggregate price level.
C. **Aggregate Expenditure:** Aggregate expenditure is the sum of all expenditures undertaken by the households, business firms and government during a specific time period.

D. **Effective Demand:** Effective demand is the willingness and ability of consumers to purchase goods at different prices.

E. **Real Wages:** Real wage is nominal wage divided by price level.

3.3 Determination of Income, Output and Employment: Classical Approach

Let's start with the classical school of thought. The classical school of thought believed that wages and prices adjust quickly to changes in supply and demand. The economy is self-regulating i.e. if the economy is not at full employment then it can move itself to this position. Let us begin with a brief review of the classical postulates.

3.2.1 Assumptions

The classical system is based on certain assumptions. Let's now discuss about what these assumptions are. These are as follows:

1) **Laissez-faire**: The classical assumed that economy works on the principles of laissez-faire. It means there is no government intervention (except to ensure free competition) and there is perfect competition in the market.
2) **Full Employment**: The classical economists assumed that there is full employment in the economy. If economy is not at full employment there, then there is a tendency towards full employment if government does not intervene. However, there is possibility of frictional and voluntary unemployment in the state of full employment.
3) **Say's Law**: A firm hires factors of production (land, labor, capital, and entrepreneur) to produce goods and services and the production of goods and services creates income for owners of these inputs, which in turn creates a demand for goods. Thus supply of goods and services itself generates sufficient income to generate a demand equal to the supply of goods. This is what is known as Say's Law, stated by French economist J.B. Says as "supply creates its own demand." This law is regarded as the central part of 'classical' macroeconomic thought.
4) **Stable Equilibrium**: According to Say's law, the owners of inputs, who earn income through the process of production, spend their entire income on purchase of goods and services. Thus, the entire output of goods and services is sold out. There is no general overproduction and underproduction over a period of production and the economy remains in stable equilibrium.

5) **Money as Medium of Exchange**: The classical economists focus on medium of exchange function of money. According to classical approach, money is used only to facilitate the transactions and it does not play any significant role in determining the output and employment. The classical economists emphasized the role of real factors in output and employment determination.

We can understand the classical views on income, output and employment determination by studying the working of product market, labour market and credit market. The classical views on all three markets can be derived from Say's law of market, wage price flexibility and interest rate flexibility.

3.3.2 Say's Law

According to Say's law, in market economy whatever produced is sold out. It means that production of goods and services requires factors of production. These factors of production get income (rent, wages, interest and profits) in return. This income is further spent on purchase of goods and services and demand for goods and services is created. Thus, supply of goods and services creates its own demand.

Production of goods and services → generates income → generates demand

Therefore, in classical system, since value of output or income is equal to expenditure, there is equality between demand and supply hence aggregate demand (AD) equals to aggregate supply (AS). The classical economists believe that output level is maximum at full employment level. The classical economists did not differentiate between long-run and short-run supply curve. The only aggregate supply curve in classical system is long-run aggregate supply curve which is vertical.

A. **Aggregate Supply (AS)**: In the classical system, there is state of full employment and output is maximum. Therefore, aggregate supply does not change with change in price level and aggregate supply curve is vertical line (parallel to Y-axis) as in figure 1.
B. **Aggregate Demand (AD):** The relationship between aggregate demand and price level is usual inverse relationship. Therefore, aggregate demand curve slopes downwards from left to right as in figure 2.

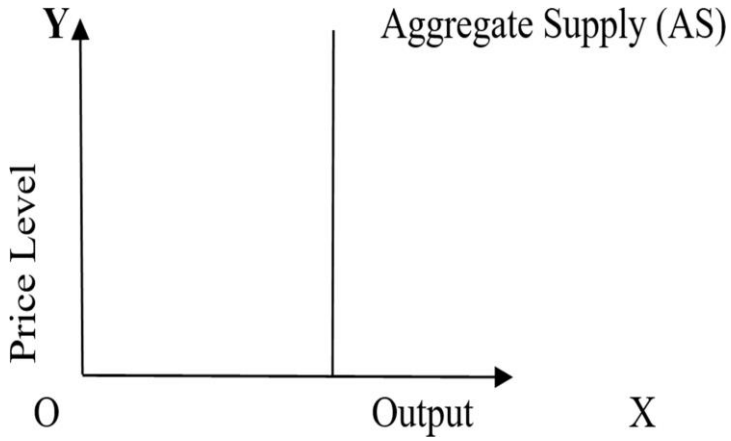

Figure 1

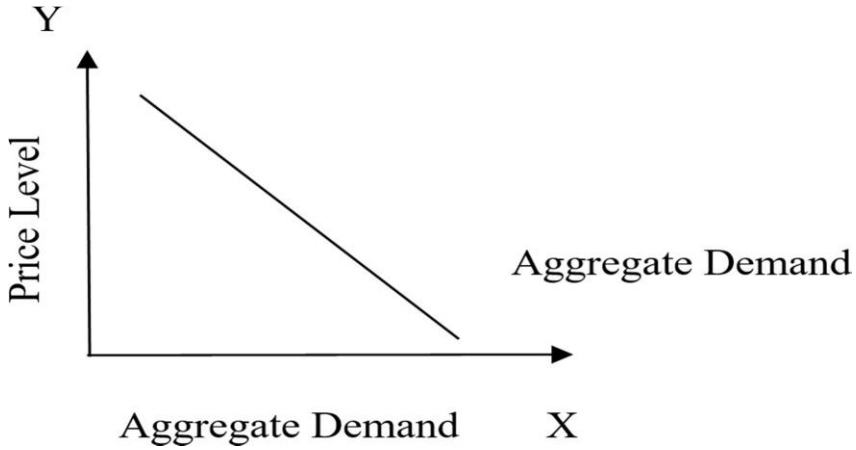

Figure 2

C. **Equilibrium Level of Output:** In the classical system focuses on full employment and based on Say's law of market. Thus, classical economists assumed that prices are flexible and determined by market forces of demand and supply, hence aggregate demand equals to aggregate supply. Therefore, output produced at full employment is equilibrium level of output. In diagram (Figure 3) AS is aggregate supply curve, AD_1 is initial aggregate demand and E is point of equilibrium where AD=AS. Equilibrium output is OQ_1 and price level is OP_1.

Now let us suppose that if individual do not spend his entire income (due to savings) and there is fall in aggregate demand. Due to fall in aggregate demand, the equality of aggregate demand and aggregate supply is disturbed. This fall in aggregate demand could cause economy to move

towards point A, where resources would be unemployed. The unemployment of inputs would cause fall in input prices and economy will adjust to new price level P_2.

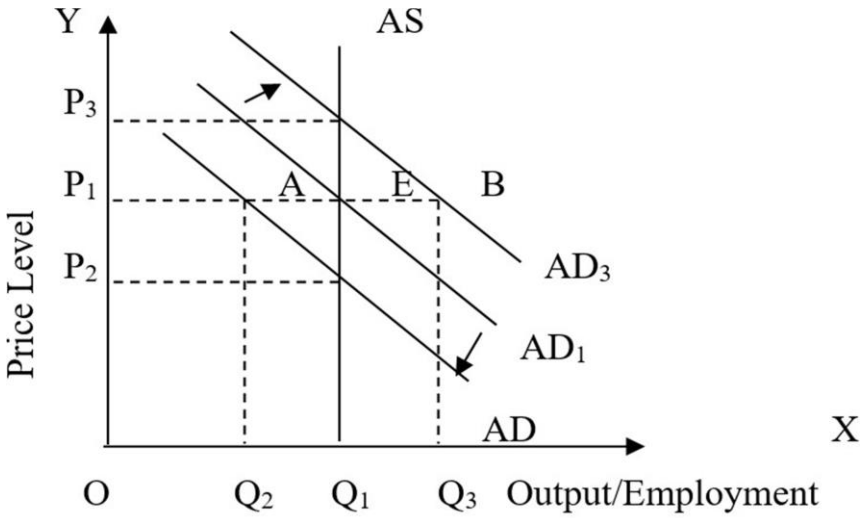

Figure 3

Similarly, if there is an increase in aggregate demand (aggregate demand curve shifts to AD_3), economy could move to point B which is beyond full employment level. The input suppliers bid up input prices and the economy quickly adjust to the new price level at P_3. Thus, due to flexibility of prices equilibrium is restored if disturbed due to fall in or increase in aggregate demand.

The classical economists believed in Say's law. Therefore, according to classical economists, production creates demand sufficient to purchase all goods and services produced. This law can be easily understood in barter system. Suppose a farmer produces wheat. Some part of the wheat produced will be consumed by the farmer and with the remaining surplus of wheat farmer is thinking of goods and services he can obtain in exchange of it. Thus, production of wheat by farmer creates demand for other products.

But in money economy, farmer may not spend his entire income because he may choose to save some money. Thus, farmer's demand for goods and services does not necessarily match the income of the farmer and it is difficult to believe that Say's law does hold in money economy. But classical economists argued that Say's law still holds in money economy where individuals may spend less than their entire income. They explain their argument on the basis of interest rate flexibility.

Check Your Progress-I

Q1. Define Say's law

Ans. .....

Q2. How to determine Equilibrium level of output?

Ans. .....

3.3.3 Interest Rate Flexibility

The classical economists argued that if an individual is not spending his entire income, he will save. Saving is the leakage out of spending stream and savings are injected back in spending stream through investment. In the classical model, saving is matched by an equal amount of investment because of interest rate flexibility in the credit market.

A. Investment (I): According to classical economists, investment is interest-elastic and there is inverse relationship between investment and rate of interest because rate of interest is cost of borrowing. The higher the rate of interest is, the fewer the borrowings of the firm. Hence the curve showing relationship between investment and rate of interest is downward sloping.

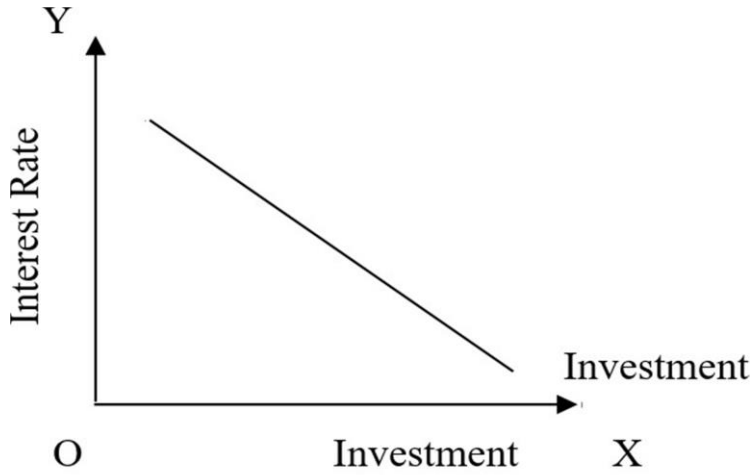

Figure 4

B. Savings (S): According to classical economists, savings of households are also interest-elastic and relationship between savings and interest rate is positive. The higher the reward for savings (rate of interest) is, higher the savings of households since opportunity cost of consuming is high. Hence the curve showing this relationship is upward rising.

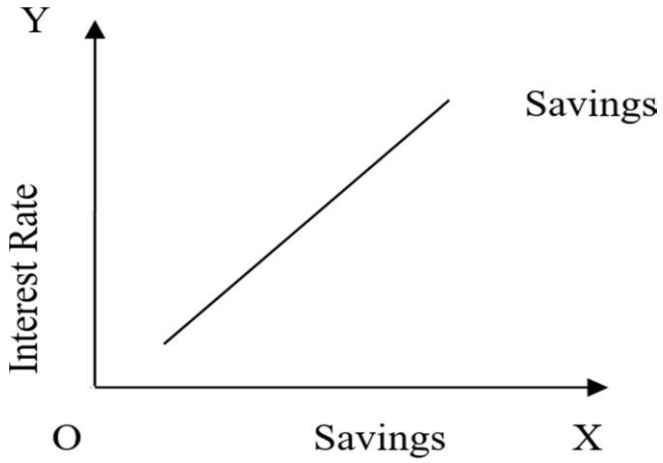

Figure 5

C. Equilibrium in Credit Market: According to classical economists, the interest rate is flexible and adjusts so that savings equals investment. Thus, if savings increase (from S_1 to S_2), interest rate falls (from i_1 to i_2) and hence investment increases (from I_1 to I_2) and saving investment equality restored since increase in saving would result in equivalent cut in consumption and investment increase by same amount as drop in consumption (as shown in figure 6).

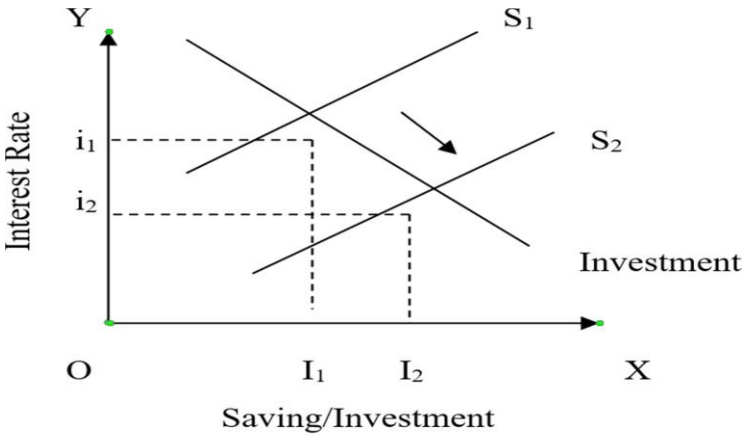

Figure 6

Therefore, saving and investment will always be brought into line by interest rate flexibility. Hence savings will always equal to investment in classical system and economy will always be in equilibrium. Such equilibrium will be at full employment level due to wage flexibility.

3.3.4 Wage Rate Flexibility

The classical economists believe that markets are competitive and forces of demand and supply operate in all market. Hence in labour market, wage rate flexibility would cause the equality of quantity supplied of labour and the quantity demanded of labour.

A. Demand for Labour: A competitive, profit maximizing firm would hire an additional unit of labour by comparing extra revenue generated by additional unit of labour (from increased production) is greater than extra cost of hiring additional unit of labour.

Here, Extra revenue generated by additional unit of labour = $MP_L \times P$ and extra cost of hiring additional unit of labour = W

Where MP_L is marginal product of labour, P is price of output and W is wage.

Now, if $MP_L \times P > W$ i.e. extra revenue exceeds the extra cost, an extra unit of labour increases the profit. Therefore, firm continue to hire labour until the next unit would no longer be profitable. It means,

$$MP_L \times P = W$$

or

$$MP_L = \frac{W}{P}$$

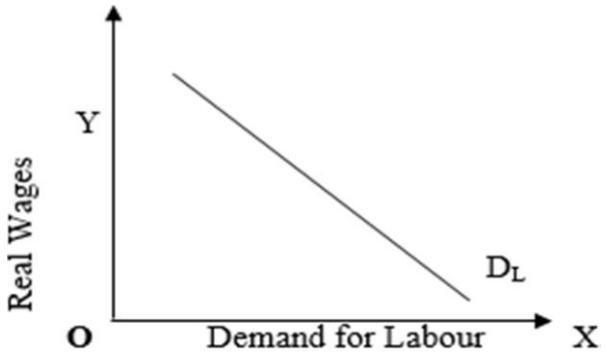

Figure 7

Thus, to maximize profit, the firm hires upto the point where marginal product of labour is equal to real wage. Since marginal product of labour decreases as the amount of labour increases so labour demand curve ($D_{L)}$ is downward sloping. Therefore, labour demanded increases with decrease in real wage rate as shown in figure 7.

B. Supply of Labour: The supply of labour is positively related to real wage because to get employment worker have to sacrifice leisure. So, employer has to offer additional wage to put worker on additional labour. Therefore, supply of labour increases with increase in the real wage rate as shown by supply curve (S_L in figure 8). But this relationship holds only till the point of work-leisure trade-off i.e after a point, further increase in

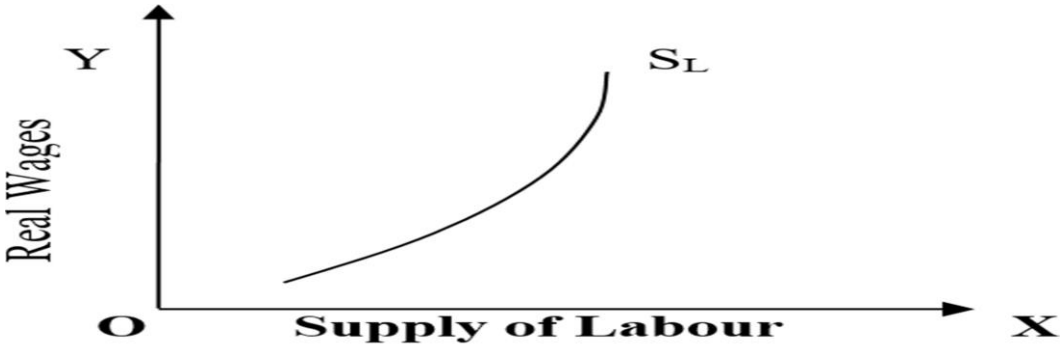

Figure 8

wage rate would induce workers to prefer leisure to work hence supply of labour would fall with increase in wage rate.

C. Equilibrium in Labour Market: The point of intersection of labour demand curve and labour supply curve determines the equilibrium in labour market (figure 9) hence the level of employment (ON) and wage rate (OW) is determined.

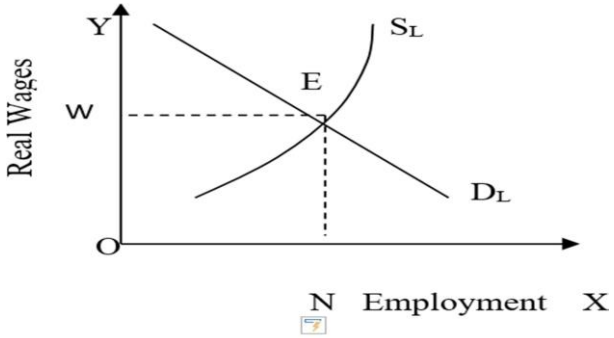

Figure 9

According to classical economists, there is always full employment in the economy. If there is unemployment i.e. demand for labour is less than supply of labour, money wages would fall and full employment level will be restored. Similarly, if there is a shortage in the labor market, the wage rate will rise, and the quantity supplied will equal the quantity demanded. We can understand this process as follows:

Unemployment→ fall in money wages→ fall in cost of production→ fall in product prices→ increase in demand for product→ increase in sales→ increase in production→ increase in employment.

Thus, full employment will be attained. This is known as wage-price flexibility in classical system.

3.2.5 Determination of Output and Employment

The level of output and employment in classical system is determined by production function and equilibrium in labour market. According to classical economists, output depends on the labour and capital employed. The classical production function assumed that capital is fixed hence labour is only variable factor and application of labour is subject to the law of diminishing returns i.e. marginal productivity of labour decreases with increase in employment. The figure 10 shows that marginal product of labour goes on decreasing as labour employment increases. The level of output increases as employment increases but less that proportionate.

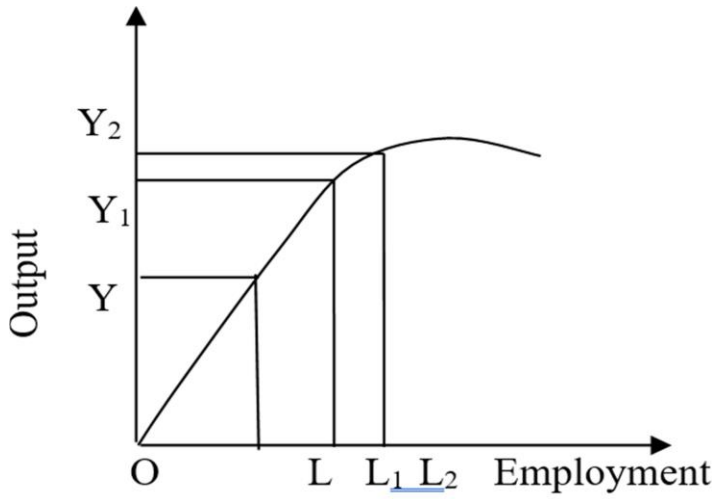

Figure 10

The equilibrium level of employment is determined by equating demand for and supply of labour and determination of output can be shown by putting together the production function with labour market equilibrium (Figure 11).

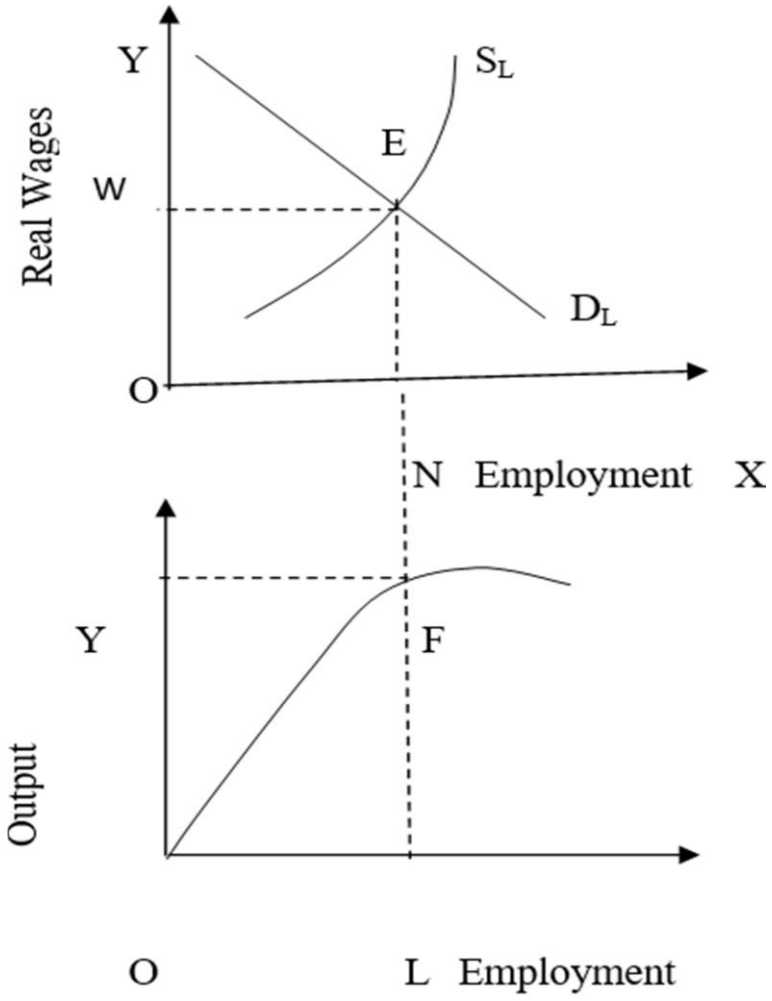

Figure 11

In labour market, the level of employment (ON) and wage rate (OW) is determined. The line ON extended downward to the production function which intersect the production function at point F. A line drawn from point F to Y-axis determines the equilibrium level of output at OY. Thus, employment and output are simultaneously determined in the classical model.

According to classical thoughts there is full employment in economy and prolonged unemployment is impossible in the long run because quick adjustments in prices, wages and interest rates keeps resources fully employed.

3.3.6 Criticism of Classical Economics

With the occurrence of Great Depression in 1930, the basic postulates of classical economics were proved wrong. Keynes challenged the classical thinking in 1936 on following grounds:

1) Keynes criticized the classical postulate of state of equilibrium and full employment in the economy. During Great Depression, economies suffered a long-run disequilibrium and a prolonged state of involuntary unemployment.
2) Another postulate of classical economics is Say's law i.e. aggregate demand is always equal to aggregate supply in classical system. In the US, due to depression, the supply of labour as well as goods and services was there but demand lagged far behind.
3) According to Keynes, increase in savings due to decrease in consumption may not matched by equal increase in investment. Thus, with decrease in total expenditure aggregate demand will fall.
4) Keynes challenged the classical economist's belief that saving and investment depend on the interest rate. According to Keynes there are number of factors such as income and business expectations that determines the level of savings and investment.
5) Keynes believed in government intervention to influence the level of output and employment.

Thus, classical economics was failed to explain the causes of unemployment and disequilibrium in economy during Great Depression. Hence classical system collapsed and it gave rise to Keynesian economics.

Check Your Progress- II

Q1. Which type of adjustments keeps resources fully employed in classical framework?

Ans. .....

.....

Q2. How Keynes challenged classical thinking?

Ans. .....

.....

3.4 Determination of Income, Output and Employment: Keynesian Approach

After discussing the classical theory, we now move to Keynesian theory of income, output and employment determination**.** Keynes had developed his theory of income and employment determination in contrast to classical model. He criticized the Say's law and emphasized the role of demand in the determination of output and employment. He also challenged the classical postulates of Laissez faire, self-regulating economy and wage, price and interest rate flexibility.

3.4.1 Assumptions

Before we start the Keynesian theory, let us go through the assumptions on which Keynesian theory is based.

1) In Keynesian theory prices are assumed to remain constant even if aggregate demand or aggregate supply change.
2) Keynesian theory holds good in short period because Keynes believed that, "in the long run we are all dead."
3) According to Keynes, medium of exchange is not the only function of money. It also performs store of value function.
4) In contrast to classical economists, Keynes believed that interest is monetary phenomenon and it is determined by demand for and supply of money.
5) There is no foreign trade.

Given these assumptions, we can now study the determination of income, output and employment in Keynesian economics. Before discussing the output and employment determination we need to know the views of Keynesian on wage, price and interest rate flexibility.

In contrast to classical economists, many economists believe that wages and prices are slow in adjusting, especially downwards. This tendency for wages and prices to adjust slowly downward to change in economy is known as wage-price inflexibility. Empirical evidences support the wages and prices to be sticky downwards. Due to long-term labour contracts and efficiency wages (higher wages attract productive workers); firm may not be able to cut wages

which causes downward stickiness of wages. Prices could also be inflexible due to menu cost i.e. cost of printing new catalogs and new advertisement etc.

Keynes also argued that wages and prices are inflexible downward. Wages could be sticky due to long-term labour contracts, trade unions and minimum wage laws. Due to stickiness of wages, price-level will not fall (because some firms adjust price slowly) in response to reduction in aggregate demand. Further Keynes argued that internal structure of economy is not always competitive enough to allow prices to fall. The monopolistic elements in economy sometimes prevent prices from falling.

This stickiness of wages and prices causes the sufficient excess capacity in economy and therefore short run aggregate supply curve is flat. Keynes believed that the time required for wages and prices to adjust downward is long enough to say that the economy is not self-regulating.

3.4.2. Aggregate Demand and Aggregate Supply Framework

According to Keynes, equilibrium level of output is determined by the equality of aggregate demand and aggregate supply.

A. Aggregate Demand: Since there is no foreign trade, aggregate demand consists of consumption, investment and government expenditure. Any change in these variables can cause shift in aggregate demand. For example, rise in autonomous consumption will raise consumption expenditure and hence there would be increase in aggregate demand depending on the multiplier. According to multiplier process, consumption of one person would increase with an initial rise in autonomous consumption level. This increased consumption generates additional income for another person leading to additional consumption spending by that person and so on. The value of multiplier is calculated by following formula.

$$\text{Multiplier} = \frac{1}{1-MPC}$$

Where, MPC is marginal propensity to consume i.e. change in consumption expenditure with change in income.

B. Aggregate Supply: Since the price level is assume to be constant until economy reaches at full employment, the aggregate supply curve must be horizontal. The Keynesian aggregate supply curve is horizontal until economy reached at full employment.

Now we can observe the affects of change in aggregate demand given the aggregate supply curve in Keynesian model (Figure 12). An increase in aggregate demand (from AD_1 to AD_2) before full employment level raises output but price remained same. Once economy has reached full employment level an increase in aggregate demand (from AD_3 to AD_4) raises the price level (from P_2 to P_3).

Therefore, changes in aggregate demand before full employment (in the horizontal section of aggregate supply curve) do not change any price level, but change in aggregate demand after full employment (in the vertical section of aggregate supply) do change in price level.

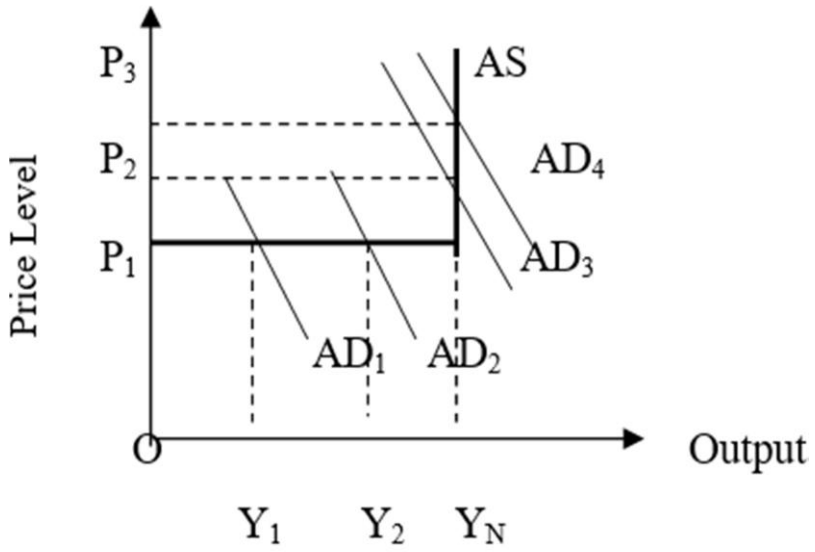

Figure 12

According to classical economists, disequilibrium in economy is temporary state. But Keynes believed that economy could get stuck in a recessionary gap because consumption and investment would not rise enough to shift the aggregate demand curve. Keynes argued that investment spending not always respond the change in interest rate. The pessimistic business expectations may resist people to invest more at lower interest rate.

Therefore, Keynes believed that the economy is not self-regulating and economic instability is possible. Hence government intervention can help to shift aggregate demand.

Check Your Progress- III

Q1. What are the views of Keynes on wage-price flexibility?

Ans. .....

.....

Q2. What is the shape of aggregate supply curve in Keynesian framework?

Ans. .....

.....

3.4.3. Aggregate Expenditure and Output Framework

1. Aggregate Expenditure: In two-sector model, there is no government taxes or subsidies. Hence, aggregate expenditure (aggregate demand) consists of two elements i.e. consumption expenditure and investment expenditure. That is,

$$\text{Aggregate Expenditure (AE)} = C+I$$

Where, C is consumption Expenditure and I is Investment

A. Consumption Expenditure: Consumption Expenditure is positive function of current absolute income. That is, if income increases, consumption expenditure also increases but less than proportionately.

$$C = f(Y)$$

The value of marginal propensity to consume lies between zero and one i.e. $0<MPC<1$. Marginal propensity to consume is the change in consumption expenditure with rise or fall in disposable income. The consumption function can be written as:

$$C = a + bY$$

Where, C is consumption expenditure,

a is autonomous consumption and b is MPC= $\frac{\Delta C}{\Delta Y}$

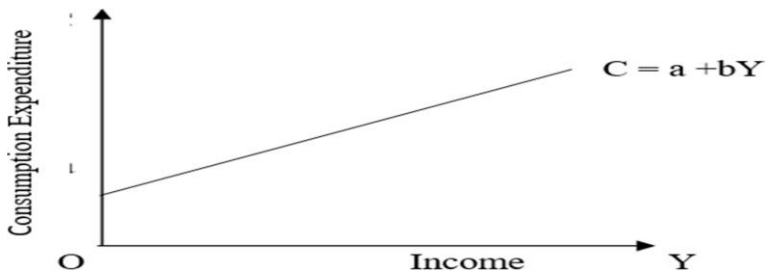

Figure 13

B. Investment: To simplify things, investment is assumed to be constant and the investment curve is horizontal. **$I = \bar{I}$**

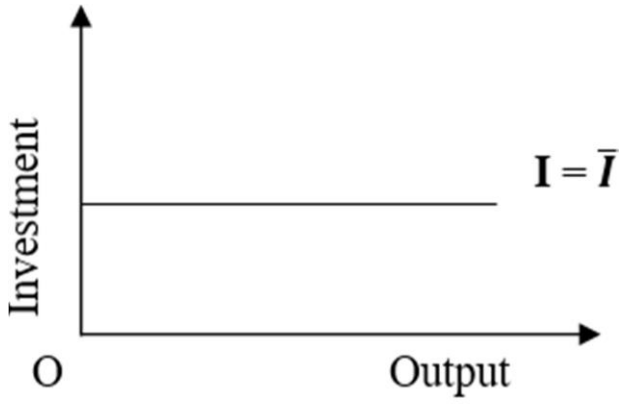

Figure 14

2. Aggregate Supply: Aggregate supply refers to the total supply of goods and services in an economy. Keynes used the classical production function to derive aggregate supply function where short run output depends on level of employment. It means aggregate demand is always equal to aggregate supply (AD = AS i.e. C + I = C + S).

Keynes form aggregate supply function on basis of this relationship between AD and AS. In diagram (figure 15) the relationship between aggregate demand and aggregate supply is shown by 45^0 line. At each point of this line output and aggregate expenditure are equal.

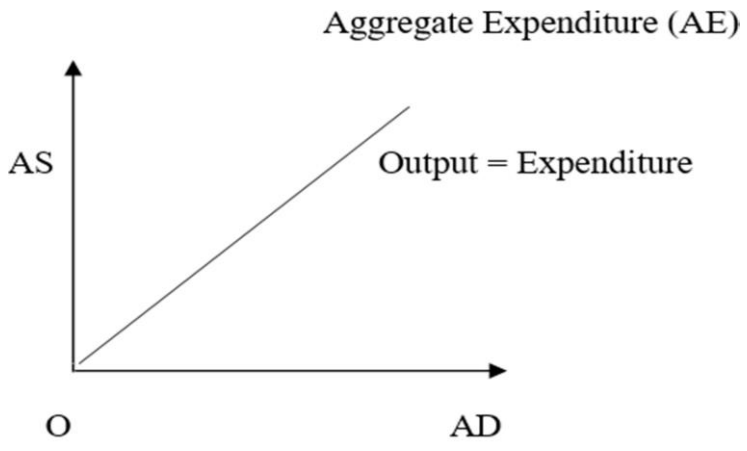

Figure 15

The concepts of aggregate supply and aggregate demand were first used by Malthus. Malthus, in contrast to classical, argued that aggregate demand might fall short of the aggregate supply leading to overproduction, but could not prove it. Keynes used this idea to develop his theory of income and employment determination.

3. Equilibrium: According to Keynes, equilibrium level of output is determined at a point where aggregate demand (C+ I) is equal to aggregate supply (C + S). That is,

$$AD = AS$$

$$C + I = C + S$$

But Keynes argued that aggregate demand and aggregate supply are not always equal. Because aggregate demand depends on households' plan to consume and to save and invest and aggregate supply depends on producers plan to produce goods and services. Therefore, if households' plan coincides with producers'' plan only then aggregate demand could be equal to aggregate supply. Thus, national income is in equilibrium at unique level of output and income at which aggregate demand equals to aggregate supply, hence equilibrium condition is:

$$S = I$$

3.4.4 Saving-Investment Approach

Saving investment approach can be derived directly from aggregate demand-aggregate supply approach. The equilibrium condition is

$$AD = AS$$

or

$$C + \bar{I} = C + S$$

or

$$\bar{I} = S$$

That is, savings equals to investment. Where investment is assumed to be constant and saving is function of income. Since people spends something on consumption at zero level of income, therefore savings are negative till individual is unable to meet his consumption requirements out of his income. When income rises above the consumption expenditure, positive savings takes place and after that savings increase with increase in income.

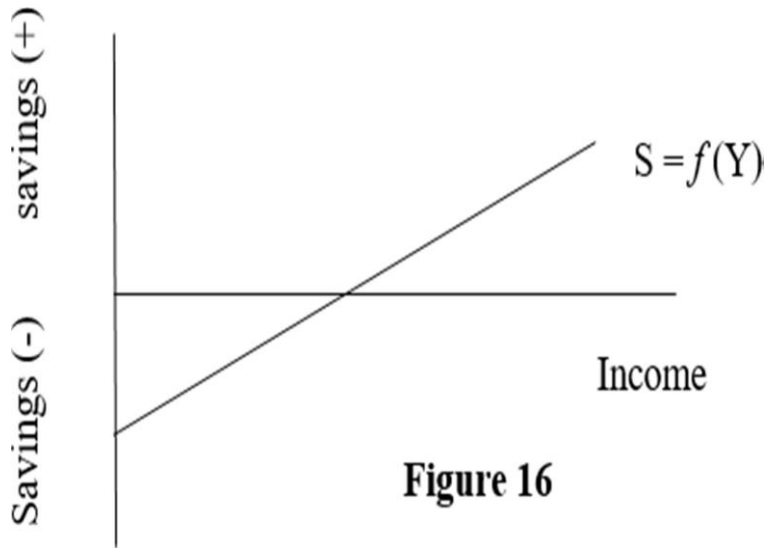

Figure 16

Saving investment approach determines the same equilibrium level of the national income as determined by the aggregate demand and aggregate supply approach as shown in figure 17.

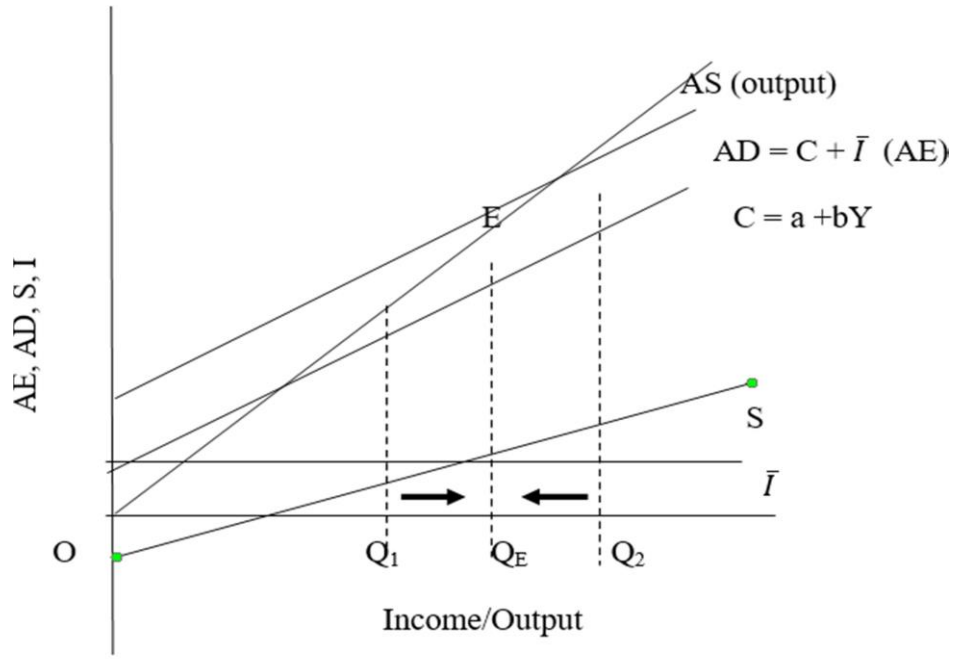

Figure 17

The point of intersection of AD curve and AS curve (i.e. AD = AS) is the point (shown by point E in the diagram) of equilibrium of national income. This point of intersection is called 'the Keynesian cross.' The output level other than Q_E when aggregate demand, the amount the people want to buy, is not equal to output produced shows disequilibrium in the economy and

this disequilibrium is corrected through change in inventories. Inventory is the stock of goods that a business firm hold to meet unexpected change in demand. For example,

- At output level Q_1, aggregate expenditure (AE) > Output produced→ unexpected decrease in inventories since firm have to meet this rise in demand from stock held→ firm will realize underproduction→ increase in production→ output move to Q_E.
- At output level Q_2, aggregate expenditure (AE) < output → firm has produced more than demand→ difference is added to inventories→ unexpected increase in inventories→ firm will realize overproduction→ production cut→ output move to Q_E.

Therefore, we can say that any change in aggregate expenditure (AD) will shift equilibrium from one point to other and accordingly output level will change. For example, increase in aggregate demand will cause an upward shift in aggregate demand curve, hence shift equilibrium point towards right will cause output to increase. We can further note that change in aggregate demand could be due to change in consumption or change in investment or both. Consumption is a stable function of income. On the other hand, investment is determined by business expectations, innovations, rate of interest etc and how national income changes with change investment depends on investment multiplier.

3.5 Differences in the Views of Classical Economists and Keynes

After discussing the classical and Keynesian approach of output and employment determination, we can easily differentiate the views of both schools of thought.

1) Classical economists believed Say's law of market. That is according to classical economists, supply creates its own demand. But Keynes believed that overproduction is possible due to lack of aggregate demand.
2) Classical school of thought focused on supply side while Keynes emphasized the role of aggregate demand.
3) According to classical economists, savings are directly related to rate of interest. But Keynes believed that it depends on savings goals of savers.
4) In classical system, investment is inversely related to interest rate. But in Keynesian economics, if business expectations are pessimistic investor may invest less at lower rate of interest.

5) Savings are leakages and investment is injection in the spending stream. So savings are equal to investment in classical system. But according to Keynes, income can be hoarded (in cash or banks) to avoid risky lending of money. In such situation savings will exceed investment.
6) Classical economists believed in wage price flexibility. According to Keynes, wages and prices may be inflexible downwards.

Check Your Progress- IV

Q1. Which side Keynes focused upon?

Ans .....

Q2. Does saving investment approach determines the same equilibrium level of the national income as determined by the aggregate demand and aggregate supply approach?

Ans .....

3.6 Summary

The classical economists believed that economy is always in equilibrium given the perfect competition in the market. If there is disequilibrium caused by external forces, the market forces of demand and supply bring it back to equilibrium. The classical economics is based on Say's law which states that aggregate demand is always equal to aggregate supply. The classical economics was dominating the macroeconomic ideas until the Great Depression, when ideas of classical economists were challenged by Keynes. Keynes argued that classical economics is failed to explain the phenomenon of US economy during the Great Depression. He criticized the Say's law and emphasized the role of aggregate demand. Keynes believed that there is possibility of overproduction due to deficiency of aggregate demand. He also questioned the classical economists' postulate of wage-price flexibility and argued that wages and prices may be inflexible downwards.

3.7 Question for Practice

A. Short Answer Type Questions

Q1. Define aggregate demand and aggregate supply.

Q2. What is principle of laissez-faire?

Q3. Do Keynes believe in laissez-faire?

Q4. Explain wage-price flexibility.

Q5. What is interest rate flexibility?

Q6. Derive Keynesian aggregate supply curve.

Q7. Why wages and prices are sticky?

Q8. Differentiate between classical and Keynesian views.

B. Long Answer Type Questions

Q1. Explain in detail the classical theory of output and employment.

Q2. Explain in detail the Keynesian theory of output and employment.

Q3. Critically examine the classical approach to income, output and employment determination.

Q4. How equilibrium level of output is determined under AD-AS framework of Keynes.

3.8 Suggested Readings

- Arnold, R.A. (2008). *Macroeconomics*. South-Western Cengage Learning.
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BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 4: CONSUMPTION FUNCTION: KEYNES' PSYCHOLOGICAL LAW OF CONSUMPTION, DETERMINANTS OF PROPENSITY TO CONSUME

STRUCTURE

4.0 Learning Objectives

After reading this unit, learner will be able to:

- Know the concept of consumption function.
- Describe Keynesian consumption function.
- Describe Relative Income Hypothesis.
- Identify the factors influencing consumption decisions.

4.1 Introduction

The consumption decisions of households, i.e. how much to consume and how much to save, are crucial. The classical school of thought tends to view consumption in negative sense because in their perspective, consumption spending is unproductive. The classical economists, based on Say's law, focused on supply side. Keynes, on the other hand, emphasized on demand side. He rejected the view of classical economists and appreciates the central role of consumption expenditure in determining effective demand. Keynes focused on propensity to consume in his theory to explain aggregate consumption expenditure.

4.2 Basic Concepts of Consumption

In the unit, we are going to discuss the consumption behavior of individual household. While studying the consumption behavior of individual household, we will go through Keynes' Psychological Law of Consumption, Determinants of Propensity to Consume, Absolute and Relative Income Hypothesis. Before we discuss these laws related to consumption expenditure, we need to have some idea of the concepts related to these laws such as consumption function, propensity to consume, propensity to save etc. Let us discuss these concepts first.

A. Disposable Income: All personal income is not disposable. Individuals have to pay taxes and they are free to spend left over income after payment of taxes. Thus**,** Disposal income is the income after receipt of government transfers and payment of taxes.

Personal Disposal Income = Personal Income – (Payable Taxes + Other Deductions)

We can observe from our daily life that people with high disposable income on an average spend more than people with lower disposable incomes.

B. Consumption Function: A functional statement showing relationship between consumption expenditure and its determinants is known as Consumption Function. Consumption expenditure of an individual or household depends on many factors such as income, wealth, expected future income, consumption of other people, age etc. Income is the primary determinant of consumption out of these factors, hence general form of consumption function shows the relationship between consumption expenditure and disposable income. It can be written as:

$$C = f(Y)$$

Where, C – Consumption Expenditure, and Y – Disposable Income.

C. Propensity to Consume: Propensity to consume is a functional relationship between given level of income and consumption expenditure out of that level of income.

i) Average Propensity to Consume (APC): The proportion of disposable income which is spent on consumption expenditure is called average propensity to consume.

$$APC = \frac{C}{Y}$$

ii) Marginal Propensity to Consume (MPC): The change in consumption expenditure with rise or fall in disposable income is called marginal propensity to consume. It is the amount consumed out of additional rupee of income and calculated by dividing change in consumer spending by change in disposal income.

$$MPC = \frac{\Delta C}{\Delta Y}$$

Where, ΔC – change in consumption expenditure and ΔY- change in disposable income

D. Saving Function: As we know that income is either consumed or saved therefore

$$Y = C + S$$

$$S = Y - C$$

Where S- Savings,

Therefore, saving function is counterpart of consumption function and it shows the relationship between savings and disposable income.

1. **Average Propensity to Save (APS)**: The proportion of disposable income which is not spent on consumption expenditure or saved is called average propensity to save.

$$APS = \frac{S}{Y}$$

2. **Marginal Propensity to Save (MPS):** It is the amount saved out of additional rupee of income and calculated by dividing change in savings by change in disposal income.

$$MPS = \frac{\Delta S}{\Delta Y}$$

Where, ΔS – change in savings and ΔY- change in disposable income

E. Relationship between Marginal Propensity to Consume (MPC) and Marginal Propensity to Save (MPS): We know that that part of income which is not spent on consumption expenditure is saved i.e.

$$Y = C + S$$

$$S = Y - C$$

$$\Delta S = \Delta Y - \Delta C$$

Divide both sides by ΔY

$$\frac{\Delta S}{\Delta Y} = \frac{\Delta Y}{\Delta Y} - \frac{\Delta C}{\Delta Y}$$

$$MPS = 1 - MPC$$

Or

$$MPS + MPC = 1$$

Therefore, total of marginal propensity to consume or marginal propensity to save is equal to one.

F. Autonomous Consumption Expenditure: Till now we have studied that consumption expenditure of a household depends on disposable income. But we can imagine a situation, when disposable income of household is nil. What would be the consumption expenditure of a household with zero disposable income? A household with zero disposable income would fund some consumption using its savings or by borrowing from someone. So, the expenditure of a household on consumption if it had zero disposable income is called autonomous consumption expenditure and the level of consumption independent of disposable income is called autonomous consumption.

4.3 Keynes' Psychological Law of Consumption

When we think about consumption function, some mathematical functional relationship comes to our mind. The economists, who study the consumption behavior, rely on data collected on income and consumption expenditure to analyze the behavior of households. However, Keynes, who wrote his book in 1936, made certain assumptions about consumption function based on introspection and observations.

4.3.1 Assumptions

Keynes' Psychological law of consumption is based on following assumptions:

1) Households decide their current consumption expenditure on the basis of their current income.
2) The marginal propensity to consume (MPC) is between zero and one.
3) The average propensity to consume (APC) falls as income rises.

Based on above assumptions Keynes developed a theory of aggregate consumption.

4.3.2 The Fundamental Psychological Law

Keynes' theory of aggregate consumption, what he calls a fundamental psychological law, is based on the concept of propensity to consume.

Keynes' defined this law as "the fundamental psychological law, upon which we are entitled to depend with great confidence, both a priori from the knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income.''

In the opinion of Keynes, when a person earns an extra unit of income (say rupee), he typically spends some part of it and saves remaining part of it. But as income increases, people spend less and less proportion of marginal income on consumption i.e. marginal propensity to consume decreases with increase in income. Thus, Keynes talked about non-linear consumption function. We can see from table below that marginal propensity to consume do not remains

constant. It decreased as income increases. This relationship is also shown with the help of Table 1 and the diagram (Figure 1).

Table 1

Income (Y)	Consumption (C)	Savings (S)	MPC = $\frac{\Delta C}{\Delta Y}$
0	50	-50	-
100	130	-30	0.8
200	200	0	0.7
300	250	50	0.5
400	275	125	0.25

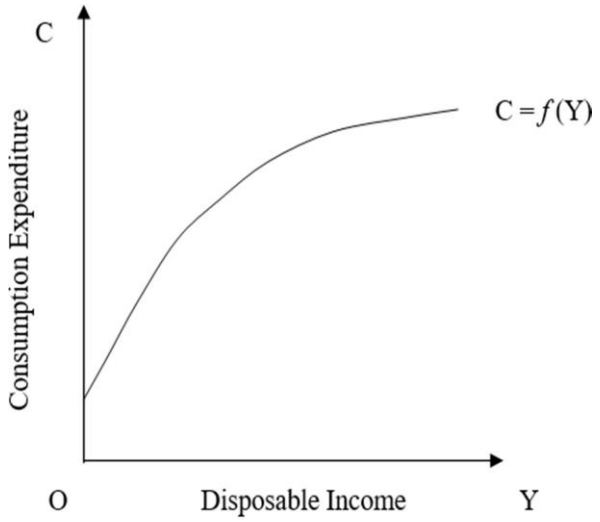


Figure 1

The consumption function produced by Keynesian theory is relevant for individual household's consumption behavior not for the economy as a whole or at the aggregate level. However, Keynesian economists empirically estimated the consumption function for economy of US and found that the relationship of income and consumption expenditure is linear i.e. marginal propensity to consume remains constant. Thus, propensity to consume is central to the consumption theory of Keynes and Keynesian economists.

Check Your Progress- I

Q1. Define consumption function.

Ans .....

Q2. What do you mean by propensity to consume?

Ans .....

.....

Q3. Define saving function.

Ans .....

.....

4.4 Determinants of Propensity to Consume

The propensity to consume out of disposable income is centre-piece of Keynes' theory of aggregate consumption. Although income is the main determinant of consumption spending, but there is other which determine the value of propensity to consume. These are subjective, objective and habitual factors.

4.4.1 Subjective Factors

The subjective factors consist of such factors which motivate people to consume more or which put pressure on people to save more. These motivations may be different in different societies and depends on culture, history and beliefs of the society. We can broadly categorize the subjective factors into two types of motivations.

A) **Motivation to Consume:** If a community believes in enjoyment and extravagance, it shows that subjective motivations to consume are strong in that society. Hence the propensity to consume out of given income will increase.

B) **Motivation to Save:** If in a society, there are subjective motivations to refrain from consumption, people will believe in precaution, greed and saving. Hence subjective motivations to save are strong and propensity to consume out of given income will fall.

Keynes believed that subjective factors are unlikely to influence propensity to consume in short period. According to Keynes, subjective factors will only occur over long period of time.

4.4.2 Objective Factors

Keynes also identified some objective factors which can influence propensity to consume**.** These factors are:

A) **Windfall Gain and Loss:** Windfall gains and losses are unexpected. Therefore, Propensity to consume increases with windfall gains and it falls with windfall losses.

B) **Expected Future Change in Rate of Interest:** The propensity to consume is likely to increase with low rate of interest. But according to Keynes, propensity to consume is not responsive to small changes in interest rate.

C) **Change in Distribution of Income:** If the distribution of income moves towards poor people of the society, propensity to consume will increase.

D) **Change in Fiscal Policy:** Due to change in taxation policy, if the distribution of income changes, then it can influence the value of propensity to consume.

E) **Change in Aggregate Net Income**: Entrepreneurs set aside financial provision to cover supplementary costs. If aggregate net income falls due to increase in these supplementary costs, propensity to consume will fall.

4.4.3 Habits of Consumer

According to Keynes, another factor along with income, objective factors and subjective factors that can influence the propensity to consume is the habits of consumers**.** Due to short-period changes in level of income, the habits of consumers do not adjust to the changes instantly. This can cause value of the propensity to consume to fluctuate. However, if the change in income is sustained then eventually the consumer's habits will adjust to the changes.

However, Keynes assumed these subjective, objective and habitual factors remained constant and hence propensity to consume is a reasonably stable function.

4.5 Summary

The consumption behavior of household is important in determining aggregate demand. Consumption expenditure of an individual or household depends on many factors such as income, wealth, expected future income, consumption of other people, age etc. but income is the primary determinant out of these factors. Therefore, functional statement showing relationship between consumption expenditure and its determinants is known as Consumption Function. The change in consumption expenditure with change is income is shown by marginal propensity to consume. According to Keynes, current consumption expenditure depends on current income and marginal propensity to consume lies between zero and one. In his Fundamental psychological law, Keynes stated that as income increases, people spend less and less proportion of marginal income on consumption i.e. marginal propensity to consume decreases with increase in income. However, Keynesian economists based on empirical findings argued that marginal propensity to consume although less than one but remains constant with increase in income. According to Keynes, along

with income there are some objective factors, subjective factors and habitual factors which may influence the consumption behavior of individual. On the other hand, Duesenberry by using

income-consumption data propounded the theory of consumption based on two Relative Income Hypotheses.

Questions for Practice

A. Short Answer Type Questions

Q1. Explain briefly the concept of APC and MPC.

Q2.What is the relationship between APC and MPC?

Q3.What is autonomous consumption?

Q4.What do you mean by non-linear consumption function of Keynes?

B. Long Answer Type Questions

Q1.Explain in detail the Fundamental Psychological Law of Consumption.

Q2.What is propensity to consume? What are the determinants of propensity to consume?

4.6 Suggested Readings

- Branson, W.H. (1979). *Macroeconomic Theory and Policy*. Harper and Row Publishers New York.
- Dwivedi, D.N. (2010). *Macroeconomic Theory and Policy*. Tata MCGraw Hill Education Private Limited.
- Mankiw, N.G. (2003) *Macroeconomics*. Worth publications.
- Krugman, P. & Wells, R.(2015). *Macroeconomics*. Worth Publishers
- Sheehan, B. (2009).*Understanding Keynes' General Theory*, Palgrave Macmillan

BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 5: INVESTMENT FUNCTION AND MARGINAL EFFICIENCY OF CAPITAL

STRUCTURE

5.0 Learning Objectives

After going through this unit, learner will be able to:

- Describe the concept of Investment function
- Differentiate between different types of investment
- Identify the factors affecting the investment decisions
- Interpret the concept of marginal efficiency of capital

- Illustrate the investment demand schedule
- Recognise the relationship between MEC, rate of interest and investment.

5.1 Introduction

Term investment is a very common phrase and it usually refers to the addition in the existing stock of capital. In macroeconomics literature, investment has always been an important factor. This importance has been enjoyed not only in the Keynesian and post-Keynesian theories but also in the pre-Keynesian business cycle theories. This is so because aggregate investment expenditure is an important and volatile component of the aggregate demand function. Investment expenditure is found to be at higher levels in course of prosperity due to high rates of profitability, whereas it is found to be at lower levels in times of depression due to very low rates of return. In course of depression, investors become risk-averters and even reluctant to incur expenditure even for replacing the depreciated capital equipment. Therefore, we can say that investment plays a crucial role in determining the level of national income/output/employment in the country. Moreover, higher level of investment provides a push factor to productive capacity and hence assists in generating higher level of aggregate demand and supply, which will further help in achieving the goal of full employment in the economy.

In the light of above introduction, this unit will first of all provides the meaning of investment concept, then we will differentiate between different types of investment- gross and net; induced and autonomous and ex-ante and ex-post investment. After this, unit will focus on the determining factors of investment decision. From this, you shall be able to derive the meaning and determinants of the MEC. Finally, in the last sections of the unit, you will be able to analyse that how the investment decisions are undertaken by the investors in particular capital asset or project.

5.2 Basic Concepts of Investment

In common parlance investment in considered as the purchase of the existing stocks, shares, debentures and securities. But this is not generating or adding any increment to the productive capacity of the economy, which is regarded as the general outcome of the investment. So, in economics, such kind of expenditure on the purchase of stocks, shares, bonds and other financial instruments is not regarded as the investment, rather it is referred to as the financial investment, in which money merely transferred from one hand to another. In economics, investment is usually defined as the addition in the existing stock of capital.

In Keynesian economics, there is difference between real and financial investment. Real investment means, the investment undertaken in the purchase of new machines, construction of new factory buildings, roads, bridges and other forms of productive capital stock of the community, including the increase in inventories. On the other hand, financial investment refers to purchase of financial instruments (stocks, bonds, debentures, securities etc.), which comprises a transfer of money from one party to another party involved in the transaction. Financial investment does not lead to any change in the employment level in the economy. It is the real investment, which leads to change in the employment in the economy. An increase in the real investment will results in increase in demand for labour as well as for other physical resources and hence increasing the employment in the economy. Therefore, investment plays a strategic role in achieving the major goals of the economy. From above discussion it is clear that in economics, we are concerned with the Keynesian sense of investment.

Different economists have defined the term investment differently. In the words of J.M. Keynes, 'investment refers to the increment of the capital equipment.' According to Edward Shapiro, 'investment is that part of the economy's output for any time period that takes the form of new structures, new producer's durable equipment and change in inventories.' According to Rosalind and Rebmann, 'Investment refers to the accumulation over time by firms of real capital goods, which will yield a future flow of services. Real capital goods can be subdivided into two types- fixed capital and working capital. Fixed capital comprised of plant, machinery, buildings and transport infrastructures, which keep their particular physical form throughout their working life. Working capital consists of stocks of raw materials, manufactured inputs and final goods.'

In simple terms, investment refers to the addition in the existing physical stock of capital in a given time period.

5.3 Types Of Investment

There are different types of investment and their classification is based on the purpose, which they are solving. In this unit, we have emphasised on the following types of the investment-

1. Autonomous and Induced investment
2. Gross and Net Investment
3. Ex-ante and ex-post investment

5.3.1 Autonomous And Induced Investment

On the basis of returns from investment, it can be classified into two categories autonomous or induced type. Induced investment is usually associated with private sector and autonomous is associated with public sector. Induced investment, as its name suggest, is induced by the profit motive, this type of investment is determined by the changes in the income i.e. induced investment increases as income increases. The functional relationship between the investment and the income, indicating the induced investment in the economy can be illustrated with the help of Figure 1. On the x-axis income is measured and along with y-axis corresponding changes in the investment level are measured. II is the induced investment curve having positive slope. It is clearly shown in the figure that induced investment curve is upward sloping, implying the increase in investment level as a result of increase in the income level.

Figure 1: Induced Investment

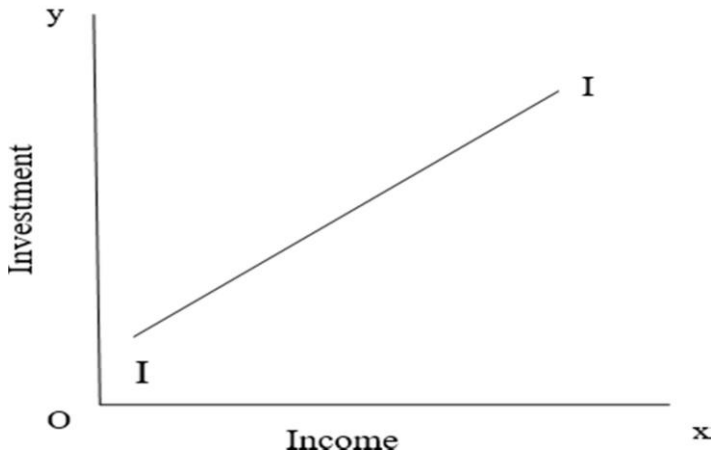


Figure 2: Autonomous Investment

Autonomous investment is not motivated by the profits. Autonomous investment is independent of the fluctuations in the output/income/profits level. Such type of investment is usually undertaken by the government- either central or state level or both. In simple words, autonomous investment is the expenditure incurred on the capital formation exclusively by the government, and which is independent of the change in income, output, rate of interest (profit rate) etc. The curve of autonomous curve is shown in the Figure 2. Figure is depicting the relationship between the investment and the income variables in the economy. I'I' is the autonomous investment curve. Shape of autonomous investment curve is horizontal, parallel to x-axis, representing income-inelasticity. Thus, we can say that autonomous investment is independent of economic activity. During the period of depression, government tries to boost the economic system by increasing the level of autonomous investment. Therefore, autonomous investment is one of the components of the welfare state.

5.3.2 Gross and Net Investment

Gross investment is defined as, the expenditure incurred on purchase of new fixed capital goods and on the maintenance of the existing stock of capital, in a given time period. Expenses incurred on the maintenance of the existing stock of capital are known as the replacement investment. Replacement investment is undertaken to offset the depreciation, wear and tear and obsolescence in the existing stock of capital. On the other hand, net investment can be obtained by subtracting the replacement investment from the gross investment. Thus, net investment actually shows the net addition to the stock of capital in a given year. It is the change in net investment, which leads to changes in the income, output and employment level in the economy. We can show the relationship between gross and net investment symbolically also-

$$I_g = I_n + I_r$$

I_g refers to the gross investment taking place in the economy in a given period; I_n refers to net investment- net addition to stock of capital and I_r shows the replacement investment in a given year. From the above equation three possibilities can be drawn regarding addition in the productive capacity of the economy

1) $I_g > I_r$: If in the given period value of I_g is more than I_r, it means I_n is positive and there is actual increase in the stock of capital in that year and hence increase in the productive capacity of the economy.

2) $I_g < I_r$: If in the given period, value of I_r is more than I_g, then I_n would be negative for that year, indicating decline in the productive capacity of the economy on account of depreciation and obsolescence expenses.
3) $I_g = I_r$: When the value of gross investment is equal to the value of replacement investment, then the value of net investment is found to be zero, indicating zero addition to the productive capacity of the economy.

Therefore, net investment is an addition to the stock of capital in a given time period and the gross investment is made up of new structures and new producers' durable equipment and allowance for the wear and tear and obsolescence of the existing stock of capital. Shapiro (2001) has classified the gross investment into three components- non-residential investment (which is essentially business fixed investment); residential investment (largest component of which is single unit houses) and the inventory investment (non-fixed component, change in the business inventories).

5.3.3 Ex-Ante and Ex-Post Investment

Ex-ante investment, also known as planned or intended investment, is usually undertaken by the firms in a planned way so that pre-determined targets can be achieved. The reason behind such type of investment by the firms is that- firstly, firms have anticipation that there will be increase in demand, so in order to earn profits, firms make planned investment. Secondly, ex-ante investment is required when the government want to achieve the goal of certain level of employment in the economy. On the other hand, ex-post investment is also termed as unplanned or unintended investment. As the name suggest, it is not planned investment, it takes place due to unexpected changes in the economic activity (demand in particular) in the economy. Simply, such type of investment is not intended or anticipated by the firms and the firms increase the stock of capital all of sudden in order to offset the fall in demand.

Check Your Progress- I

Q1. What do you understand from autonomous investment?

Ans. .....

Q2. Differentiate between gross and net investment.

Ans. .....

5.4 Investment Function

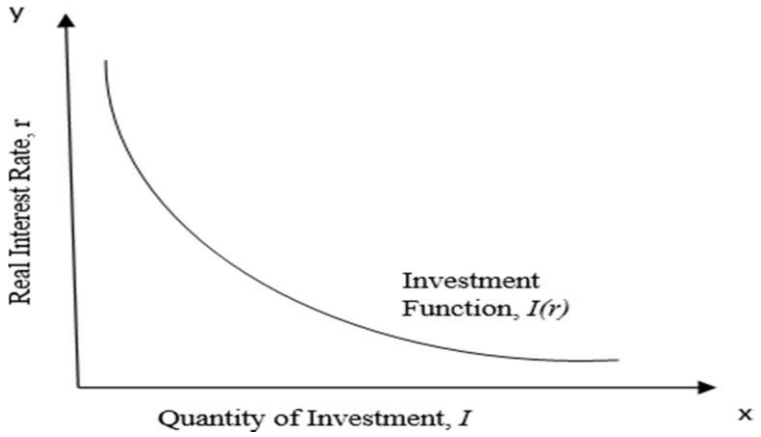
Investment function refers to the functional relationship between the level of investment and the real interest rate. In any economy volume of investment depends on the rate of interest. Interest rate reflects the cost of the borrowed funds, utilised for the investment purpose. Investment in profitable manner will take place only when the returns from the investment are more than the cost of borrowing the funds. In the context of interest rate, it is essential to distinguish between two types of interest rates i.e. nominal and real interest rate. Nominal interest rate is that interest rate, which is usually reported and investors pay in order to borrow money. Real interest rate, on the other hand, is that rate of interest which is corrected for the effects of inflation (Mankiw, 2008). For example if in year 2020, the nominal interest was found to be 6 per cent and the inflation rate was 2.6 per cent, in that case our real interest rate would have been 3.4 per cent. From the above distinction it is clear the real interest rate is most important because it helps us in calculating the actual cost of borrowing. Therefore, real interest rate is an important determinant of the investment decision.

We can depict the investment function in the functional form as-

$$I=I(r)$$

This equation shows that investment *(I)* is function of the real rate of interest (cost of borrowing). Further this functional relationship between investment and real rate of interest can be illustrated with the help of figure. Figure 3, shows the investment function. I(r) curve shows the change in quantum of investment due to changes in the real rate of interest. Real interest rate (r) and quantity of investment is measured along y-axis and x-axis respectively.

Figure 3: Investment Function



From the figure it is clear that, slope of the investment function is negative (downward) implying inverse relationship between the interest rate and quantity of investment. When the interest rate is lower, more quantity of investment will be demanded and vice-versa. If there is change in interest rate then it will be depicted on the same investment demand curve. But if interest rate remaining the constant and there is change in other factors such as technological progress, future expectations, change in cost etc. then it will be shown by shift in investment demand curve either rightward or leftwards depending upon the direction of change in other variables.

5.5 Factors Affecting Investment Decisions

As it is known fact that capital goods are useful for long time, so producers or firms usually take the decision to invest after considering returns from the investment. Decision to invest is affected by the cost of borrowing funds and expected returns out of this particular investment. Entrepreneur's estimate of the profit or loss that will accrue from any particular investment is based on the relationship among three components- the expected income flow from the capital good, purchase of price of the capital good and the prevailing market rate of interest. Although, there are several factors influencing the investment decision of the entrepreneur but Keynes has focused on two major determinants namely, market rate of interest and marginal efficiency of capital. Usually, entrepreneurs compare the marginal efficiency of capital with the market rate of interest; decision to investment will be taken only when the former is more than the later. If the rate of interest comes out be more than the marginal efficiency of the capital, then no investment will be undertaken by the entrepreneurs. In the following section we will elaborate the case of marginal efficiency of capital and rate of interest and their relationship with investment.

5.5.1 Marginal Efficiency of Capital (MEC)

This is an important variable in the Keynesian theory of investment. Marginal efficiency of capital is also termed as Internal Rate of Return (IRR). Keynes has defined the MEC as, that rate of discount which makes the present value of the series of annuities given by returns expected from the capital asset during its life just equal to its supply price. So, MEC can be considered as that rate of discount which makes the discounted present value of expected income stream equal to the cost of capital. Keynes has termed the expected rate of return from capital asset as the prospective yield and cost of capital as supply price.

Therefore, marginal efficiency of capital is determined by these two factors i.e. prospective yield and supply price of capital asset.

A. Prospective Yield: It actually shows the net return which is expected from the capital asset, over its whole life. In order to find out the net return, all costs like maintenance, wear and tear expenditure, depreciation or obsolescence cost etc. are deducted from gross returns. If the expected life of the capital asset can be segregated into number of series of years, then the returns per annum can be converted into series of annuities. Here the term annuity refers to the returns of a fixed amount at uniform intervals of time. Let us assume that series of annuities is shown by-

$R_1, R_2, R_3, \ldots\ldots, R_n,$

where R_1 refers to returns in 1st year, R_2 as returns in 2nd year and similarly, R_n means returns in the nth year of the capital asset. By adding these annual returns over the life time of capital asset, we will be having prospective yield of the asset.

B. Supply Price: Supply price is also known as replacement cost. Supply price reflects the cost of the asset, particularly of new asset not the existing one. In simple words, supply price is the purchase price of the new capital asset.

After discussing the relevance of prospective yield and supply price, we can focus on the MEC. According to Kurihara, marginal efficiency of capital can also be represented in the form of ratio of prospective to the supply price, symbolically $i=y/p$, i is the marginal efficiency of capital; y is perspective yield and p is the supply price of the capital asset. For example, cost of new capital asset to investor is Rs. 10 lakhs, further, suppose that net return from this asset over its life time is expected to be Rs. 5000 per annum. So, MEC of this capital asset can be calculated by the ratio of annual return to its supply price, i.e.

MEC= (5000/100000) *100= 5%.

So the value of MEC, in this project is found to be 5 per cent, which is actually showing expected annual return on the investment of Rs 10 lakhs. From this result, it is clear that any increase or decline in supply price of asset will reduce or increase the MEC, given the value of prospective yield. So, it can be stated that MEC is having a direct relationship with the prospective yield and inverse relationship with supply price.

But in this uncertain or dynamic world, it is not so easy to calculate the expected return with so much accuracy. So, there is need to calculate the discounted value of returns with respect to future. Therefore, Keynes has considered the MEC as that rate of

discount, which will equate the discounted present value of the expected income with the supply price of cost of capital asset. Accordingly, the formula for estimating the MEC will be,

$$MEC = R/1+r = C$$

In above equation, *r* is the rate of discount which makes the discounted value of expected returns (*R*) equal to the supply price of the asset (*C*). So, *r* actually shows the marginal efficiency of capital or internal rate of return. The value of *r* can be obtained from the above equation, i.e.

$$r = (R/C)-1$$

In order to illustrate, we can take an example, let us assume that an entrepreneur undertake an investment in capital asset having life of one year, which costs Rs 100 million and the expected returns from investment are Rs 125 million at the end of one year. Putting these values in the above-mentioned formula, we will get the value of MEC as,

$$MEC = r = (125/100)-1=0.25 \text{ or } 25 \text{ per cent}$$

If the same capital asset is having life of two years and expected return at the end of second year is Rs 144(it is expected to give no return in first year), then the MEC would be-

$$MEC= 144/(1+r)^2=100 = 20 \text{ per cent}$$

Similarly, if the life of the capital asset is extending to *n* number of years, in that case MEC can be estimated with the help of following formula-

$$MEC = R_1/(1+r)+ R_2/(1+r)^2+R_3/(1+r)^3\ldots\ldots+R_n/(1+r)^n = C$$

For any investment, value of discount rate can be estimated only if we are having the information regarding *C* and $R_1, R_2, R_3, \ldots\ldots, R_n$ variables.

Check Your Progress- II

Q1. Define investment function.

Ans. .....

Q2**.** What is the meaning of supply price of capital asset?

Ans. .....

5.5.2 Marginal Efficiency of Investment (MEI)

This concept is general form of the marginal efficiency of capital. Difference between the two is, MEI is related to particular project, whereas, MEC is related to particular capital asset. Marginal efficiency of investment (MEI) is that rate of discount which will make the present value of expected returns from the given investment to the cost of financing that project. Symbolically-

$$C = R_1/(1+d) + R_2/(1+d)^2 + R_3/(1+d)^3 + \ldots\ldots\ldots R_n/(1+d)^n$$

Here *C* is the cost of financing the given investment project, *R* is the expected returns or prospective yield from the given amount of investment and *d* implies the rate of discount or marginal efficiency of investment, which makes the expected yields equal to the costs. Importance of this concept is that it assists us in ranking the investment projects or making the choice among different investment projects. If the value of the MEI is found to be high, then obviously ranking of that investment project would be higher and vice-versa.

Difference Between the MEC and MEI

A. Marginal efficiency of capital is related to the most gainful capital asset, on the contrary, marginal efficiency of investment is related a fixed amount of investment in particular project.
B. Marginal efficiency of capital is a stock concept, whereas marginal efficiency of investment is a flow concept.
C. Under marginal efficiency of capital, supply price is important variable, while under marginal efficiency of investment, cost of financing the project is determining factor.

5.5.3 Market Rate of Interest

Assessment of the decision to investment cannot be done on the basis of MEC or MEI alone. Market rate of interest also plays a determining role in the investment decision of the firms. If the investment decision is undertaken solely on the basis of MEC, then in that case it is presumed that market rate of interest is zero and funds are easily available. But in reality, this is not the case. We have to pay a positive price for using the borrowed funds. Therefore, entrepreneur or firms considers both the MEC i.e. expected returns from the investment and the market rate of interest i.e. cost of borrowing funds for investment purpose.

Market rate of interest is defined as the rate at which the funds are borrowed. The relationship between level of investment and rate of interest is inverse type i.e. higher rate of interest implies the higher cost of borrowing the funds and it will discourage the investments. On the other hand, if the rate of interest is lower, then it will encourage the investments in the economy.

5.6 Investment Demand Schedule

This is also known as schedule of marginal efficiency of capital. Investment demand schedule depicts a functional relationship between the marginal efficiency of capital and amount of investment/stock of capital. According to this relationship, demand for capital asset/investment is inversely related to the marginal efficiency of capital. That is MEC diminishes with the increase in investment in capital assets and vice-versa. Causes for such diminishing nature of MEC are as- firstly, due to increase in the investment in capital asset during a given period, prospective yields will decline. The reason being that more assets are produced and ultimately, they will give competition to each other in order to meet the demand for product, subsequently, prospective returns from the investment will decline. Secondly, supply price of capital asset will rise as more capital assets are produced. Thus, we can say that MEC diminishes with an increase in investment level, either due to falling prospective yield or rising supply price of the capital asset.

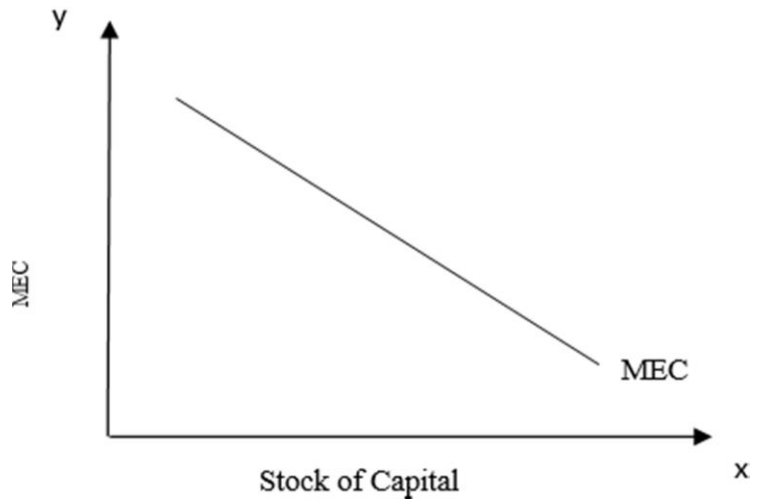
Investment demand schedule can be illustrated with the help of an example, described in the following Table 1. Table depicts the relationship between stock of capital and marginal efficiency of capital. We can observe from the table that when the investment was of Rs 20 millions, MEC was the highest. As the quantity of investment increased to 100 millions, marginal efficiency of capital reduced to 7 per cent only.

Table 1: Marginal Efficiency of Capital and Quantity of Investment

Investment (in Million Rs.)	Marginal Efficiency of Capital (%)
20	25
40	18
60	13
80	10
100	7

Investment demand schedule can be illustrated with the help of a diagram, as shown in Figure 4. On vertical axis MEC is measured and on horizontal axis stock of capital is measured.

Figure 4: Investment Demand Schedule



It is clearly depicted in the diagram that investment demand schedule is downward sloping showing inverse relationship between MEC and stock of capital. Investment demand schedule can shift rightwards or leftwards depending upon the changes in MEC. If at the given market rate of interest, there is expectation that expected returns on investment will increase then subsequently, MEC schedule will shifts rightwards. On the other hand, in times of depression, due to lesser business confidence, there are expectations of falling expected returns on investments and hence MEC schedule will shift leftwards.

5.7 Relationship Between MEC, Rate of Interest and Investment

From the above discussion, it is clear that marginal efficiency of capital and market rate of interest are two determining factors in investment decision. Interest rate shows the cost of borrowing the funds, which is determined by the demand for and supply of funds. Marginal efficiency of capital is the anticipated rate of profitability on the investment/capital asset. For taking a wise decision i.e., whether to undertake the investment in new project or not, an entrepreneur usually compares the value of MEC with rate of interest. Investor will be interested in undertaking the investment in new capital stocks as long as the value of MEC is more than market rate of interest, as it indicates the excess of expected returns over the cost of borrowing the funds. If the value of MEC is found to be equal to market rate of interest then investor can be neutral in this situation. If the value of MEC is less than interest rate then no investment will take place because cost of borrowing funds is more than expected return

from this particular investment. This relationship between MEC, rate of interest and investment can be depicted with the help of an illustration, shown in Table 2.

Table 2: Relationship Between MEC And Rate of Interest and Investment Decision

Supply Price (C) (in Rs)	Expected Annual Returns (R) (in Rs)	MEC(r) (in %)	Rate of Interest (i) (in %)	Investment Decision
25000	1000	4	4	Neutral
25000	1000	5	4	Profitable to undertake investment
25000	1000	2	4	Unfavourable

From the above table it is clear that supply price of capital asset is Rs. 25,000, having annual return of Rs. 1,000. Now the decision of the investor will depend on the cost of borrowing the funds and the corresponding returns on that investment. In the three different scenarios, investment seems to be profitable when the MEC>i, i.e. in second case where the MEC is 5 per cent and rate of interest is 4 per cent, clearly indicating the positive difference.

5.8 Decision Rule for the Entrepreneur

After estimating the marginal efficiency of capital and market rate of interest, entrepreneur can take decision about the investment. There are rules of thumb in this context-

A. If value of MEC>i, then investment project is acceptable to the entrepreneur
B. If value of MEC=i, then the project is acceptable to entrepreneur only on the non-profit basis.
C. If value of MEC<i, then the investment project is rejected by the entrepreneur

Check Your Progress- III

Q1. Define Marginal Efficiency of Capital.

Ans. .....

Q2. Explain market rate of interest.

Ans. .....

Q2. What are the different rules of thumb for investment decision?

Ans. .....

5.9 Summary

Investment refers to the addition in the existing physical stock of capital in a given time period. Investment can be classified in to different types, like- gross and net investment, autonomous and induced investment, ex-ante and ex-post investment. Gross investment is sum of net investment and replacement investment, whereas net investment refers to the net addition in the existing stock of capital. Autonomous investment undertaken usually by government on non-profit considerations, whereas, induced investment is intended by the profit motive. There are two main determinants which affect the investment decision- marginal efficiency of capital and market rate of interest. MEC is that rate of discount which makes the discounted present value of expected returns equal to the cost of capital. Investment decision will be undertaken when the marginal efficiency of capital is more than the market rate of interest.

5.10 Questions For Practice

A. Short Answer Type Questions

Q1. What is an investment function?

Q2. Differentiate between induced and autonomous investment.

Q3. Explain the followings:

a) Gross and net investment

b) Ex-ante and Ex-post investment

Q4.Explain Marginal Efficiency of Capital.

Q5.Define Marginal Efficiency of Investment.

Q6. Difference between the MEC and MEI.

Q7. Explain the decision rules of the entrepreneur.\

B. Long Answer Type Questions

Q1.Elaborate the factors affecting investment decision

Q2. What do you mean by investment? Briefly explain its types.

Q3. Explain MEC, also discuss the relationship between MEC, rate of interest and investment decision.

5.11 Suggested Readings

- Abel, A.B.; Bernanke, B.S. & Croushore, D. (2014). Macroeconomics. New York: Pearson Publishers, 8th edition.
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BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 6: STATIC AND DYNAMIC MULTIPLIER AND ACCELERATION THEORY AND ITS WORKING

STRUCTURE

6.0 Learning Objectives

After reading this unit, learner will be able to:

- Define the concept of multiplier
- Differentiate between static and dynamic multiplier

- Derive the working of multiplier
- Interpret the accelerator principle
- Illustrate the operation of accelerator principle

6.1 Introduction

In general, equilibrium level of income and output is determined by the aggregate spending level in the economy. Any change in aggregate spending will consequently affect the income and output level and this will further result in either unemployment or full employment depending upon the direction of change. Increase in the aggregate spending or consumption expenditure leads to multiple times increase in the income and output level and vice-versa. Ratio of this change in income and output to the change in consumption expenditure is known as the multiplier. So, the analysis of multiplier mechanism helps us in understanding, the change in circular flow of economic activity due to change in any component of aggregate spending/demand (consumption, investment, government spending or net exports).

Concept of multiplier was first embraced to macroeconomics analysis in the 1930s, when Keynes used it in his analysis of income determination for explaining the Great Depression of 1930s. However, this concept was introduced by FA Kahn in early 1930s and later on refined by Keynes. Kahn has focused on the employment multiplier, whereas Keynes has emphasised on investment multiplier. Employment multiplier indicates that for any increase in employment, there will be multiple times increase in aggregate employment level. Similarly, investment multiplier refers to manifold increase in income/output/employment due to initial increase in investment level in economy. Another concept related to multiplier is the accelerator, which is opposite to multiplier. Accelerator refers to the change in investment level due to change in aggregate spending/consumption expenditure.

6.2 Basic Concepts of Multiplier

In Keynesian approach to income/output determination, multiplier occupies an important position. Not only this, it is an important variable in the business cycle theories too. Keynes believed that in any economy employment relies on the effective demand, which is, further determined by the consumption and investment expenditure. Since, consumption remains constant in the short-run, it is the investment which led to change in income/output level in economy. According to Keynes, it is the initial increase in the investment which

plays a significant role in income determination process. So, this relationship in investment and change in income or employment or output can be expressed in terms of multiplier.

An injection to circular flow of economic activity leads to an increment in national income, this increment is usually larger than the extent of the injection. The ratio of incremental increase in income to the quantum of fresh injection is referred to as multiplier. The injection to circular flow of economic activity can take any form, such as- investment, government spending and exports. These forms of injection, results in upward shifts in the national income/output. For example, if the economy is injected with the investment of Rs.1 crore, consequently national income of the economy boost up by Rs.3 crores. In this illustration income has increased by three times, simply implying that increase in investment has resulted in multiple times increase in the national income/output level in the economy.

We are concerned with the autonomous investment expenditure incurred by the government which will take the form of injection to circular flow of economic activity. In short, investment multiplier can be described as the ratio of change in income to the change in autonomous investment expenditure.

6.3 Multiplier Theorem: Derivation of Investment Multiplier

Investment multiplier can be derived with the help of aggregate spending function in the two-sector economy. We know that in the equilibrium position, aggregate spending function is composed of consumption function and investment function. In simple terms, income is either consumed or saved (=investments under equilibrium), accordingly the income expenditure is sum of consumption expenditure and investment expenditure in the economy. In algebraic form, we can define the above relationship as-

$$Y=C+I \qquad ...(1)$$

Where, Y, is initial income level; C, is the consumption expenditure and I, is the autonomous investment expenditure. Equation 1, shows the initial equilibrium in the economy.

Suppose that investment expenditure increased in the economy from I to ΔI and this leads to increase in the Y and C as well. So the 1 equation becomes,

$$\Delta Y = \Delta C+\Delta I \qquad \ldots(2)$$

ΔY, shows the change in income; ΔC, change in consumption and ΔI, change in investment spending. Rearranging the above equation, we will get-

$$1 = \Delta C/\Delta Y + \Delta I/\Delta Y \qquad \ldots(3)$$

Here the ratio of change in consumption expenditure (ΔC) due to change in income level (ΔY) is known as the marginal propensity to consume (MPC). Using this identity in equation 3, we will obtain-

$$1 = MPC + \Delta I/\Delta Y \quad \ldots(4)$$

$$\Delta I/\Delta Y = 1\text{-}MPC \quad \ldots(5)$$

Taking reciprocal of equation 5 on both sides,

$$\Delta Y/\Delta I = 1/(1\text{-}MPC) \quad \ldots(6)$$

By putting $\Delta Y/\Delta I = k$, which is actually our multiplier's coefficient, so equation 6 becomes-

$$k = 1/(1\text{-}MPC) \quad \ldots(7)$$

Since, we know that $MPC+MPS=1$(sum or marginal propensity to save and marginal propensity to save is equal to unity), so $1\text{-}MPC = MPS$, by using this identity in above equation,

$$k = 1/MPS \quad \ldots(8)$$

Finally, value of multiplier coefficient can be determined either with the help of MPC or MPS. Equation 7 and 8 are describing the value of multiplier and also the relationship between k and MPC and k and MPS. Following are the major results of this functional relationship-

1) As the value of MPC varies between zero and unity, similarly, the value of multiplier lies between 1 and ∞.
2) There is a positive relationship between MPC and *k*. If the value of MPC is higher/lower, value of multiplier will be also higher/lower.
3) There is negative relationship between MPS and k. If the value of MPS is higher, then value of multiplier (*k*) will be lower and vice-versa.

For example, if the value of MPC= 1, then putting this in above formula,

$$k = 1/(1\text{-}MPC) = 1/(1\text{-}1) = 1/0 = \infty$$

Similarly if the value of MPC=0.5, then value of multiplier will be,

$$k = 1/(1\text{-}0.5) = 1/0.5 = 2$$

On the other hand, if the value of MPS= 0.3, multiplier will be equal to-

$$k = 1/MPS = 1/0.3 = 3.33$$

for the value of MPS= 0.7, value of multiplier would be, k = 1.43.

6.4 Operation of Multiplier or Working of Multiplier

As discussed earlier, multiplier is the process through which income gets multiplied as an outcome of initial investment in the economy. How the operation of multiplier goes on? can be well explained with the help of working of multiplier. Let us assume that economy is in the position of equilibrium and government undertake an autonomous investment of Rs. 1000 crores. So, in the first period/round, this will raise the income by Rs. 1000 crores in the economy, particularly to those engaged in the investment goods sector. Further, assume that marginal propensity to consume is worked out to be 0.8, which implies that out of every increase in income, 80 per cent is spent on consumer goods. Accordingly, 80 per cent of Rs. 1000 i.e. Rs. 800 crores, will be our consumption expenditure in the first round. This expenditure on consumer goods will form the income to consumer goods producers. This idea is based on the assumption that one person's consumption expenditure is forming another person's income. Therefore, those who received Rs 800 crores as income in second round, they will spend 80 per cent of this income on the consumption activity, i.e. Rs. 640 crores as consumption expenditure in this period. Similarly in third round, income of Rs 640 crores will be generated. Important point to mention here is that, this increases in income in each successive round will goes on declining and this process will continue till additional increase in income tends to zero. Ultimately, this process will end up when additional income becomes equal to 5000 (k=1/(1-0.8)=5, which means income will increase five times of initial increment in investment).

Illustration of working of multiplier is depicted in Table 1, which clearly shows the process of income generation by an additional investment of Rs. 1000 crores in the system.

From table no.1 it is clear that injection in the circular flow of income will leads to multiple times increase in the income of the economy. It is generally perceived that it will take around two-three months' time to actualise the expenditure incurred in each period. This gap in realisation of consumption expenditure is termed as the multiplier period or propagation period.

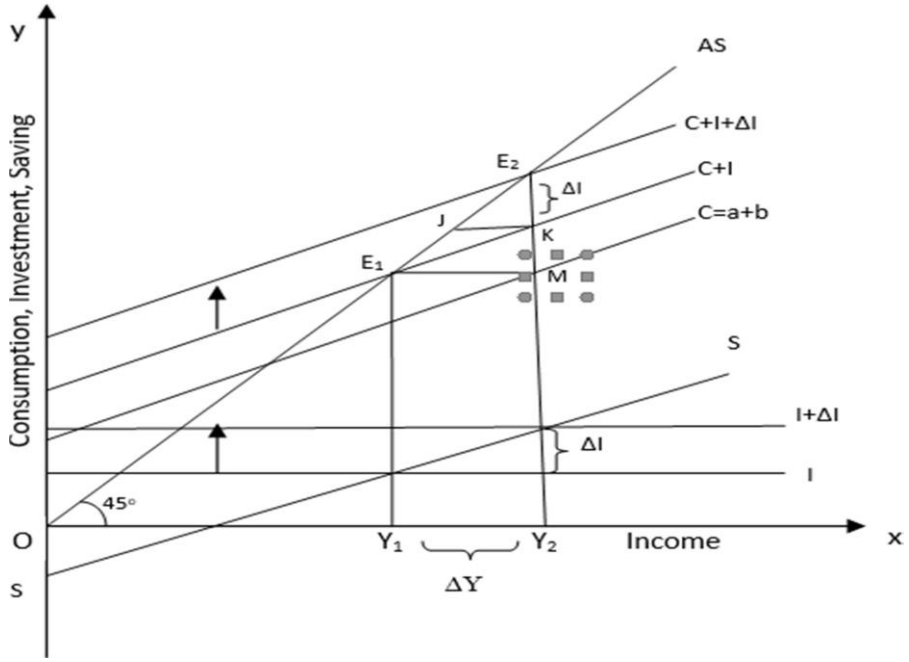
Table 1: Working of Multiplier

Period/Rounds	Change in investment (ΔI)	Income Generation or Change in income (ΔY)	Change in Consumption Expenditure (ΔC) (MPC=0.8)
1	1000	1000	800
2	--	800	640
3	--	640	512
4	--	512	409.6
5	--	409.6	327.68
…..	--	….	….
……	--	….	….
…….	--	….	….
Last round	--	0	….
Total	1000	5000	4000

So, multiplier period can be defined as the mean/average time which will be involved in conversion of income-consumption-income, i.e. when income received is converted into consumption and this consumption expenditure becomes someone else's income. Shift from one round to another round, will leads to gradual fall in the consecutive additions in the income.

The working of multiplier is illustrated graphically in the figure 1. Consumption expenditure and savings are measured along y-axis and income/output measured along x-axis. It is assumed that economy is in equilibrium and it is indicated by consumption function $C=a+bY$ and initial investment given by the line I, which is parallel to horizontal axis. Further, with the given consumption function and investment level, aggregate spending/demand is indicated by $C+I$. Equilibrium level of income is determined at Y_1, where aggregate demand ($C+I$) curve intersects with the aggregate supply curve (AS). Aggregate supply is equal to addition of consumption expenditure and savings ($AS=C+S$)

Figure 1: Working of Multiplier



With the injection of autonomous investment in the system, original investment curve) shifted upward to $I+\Delta I$ curve. This upward shift in the investment schedule results in shift in aggregate demand curve from $C+I$ to $C+I+\Delta I$. The new *AD* (Aggregate Demand) demand curve intersects the *AS* (Aggregate Supply) curve at point E_2, hence equilibrium level of income shifts rightwards from Y_1 point to Y_2 point. So, increase in national income (ΔY) can be expressed as-

$$\Delta Y = Y_2 - Y_1 = Y_1Y_2 = E_1M$$

This increment in income is the outcome of change in investment (ΔI). If we look at the figure, we can notice that increase in income is more than the increase in investment level i.e. $\Delta Y > \Delta I$, which implies that there will be multiple times increase in the income due to initial injection of investment. So, the multiplier can be expressed as the ratio of change in income due to change in investment level, algebraically,

$m = \Delta Y/\Delta I$, here m is the investment multiplier.

Check Your Progress- I

Q1. If the value of MPC=0.5, what would be value of multiplier.

Ans.

Q2. What is the relationship between multiplier and MPC and MPS?

Ans. .....

.....

6.5 Static and Dynamic Multiplier

On the basis of time lag involved in consumption function, multiplier is considered as static and dynamic. Under static multiplier, no time lag is involved, whereas, dynamic multiplier considers the time involved in consumption response.

6.5.1 Static Multiplier

Actually, static multiplier is independent of time, this is the reason that static multiplier is also known as comparative static multiplier, simultaneous multiplier, logical multiplier, timeless multiplier and instant multiplier. According to static multiplier, if there is change in the investment in the economy, then it will cause immediate change in the income levels, means no time lag is involved in response. In simple terms, static multiplier entails that change in investment results in instantaneous change in income. For example, if government injected the investment of Re 1 in the system, it will instantly increase the society's income by multiple of Re 1. Working of static multiplier is explained in the earlier section and the illustration shown in Table 1 is an example of static multiplier.

In real world, we are not dealing with timeless economic activities, we are living in dynamic world. So, time lag is involved in initial autonomous investment and final change in income, moreover, series of successive rounds happen in order to complete the working of multiplier. Therefore, limitation of static multiplier is that it does not consider the course of time involved in completion of the multiplier process.

6.5.2 Dynamic Multiplier

It is also termed as period multiplier or sequence multiplier. In contrary to static multiplier, dynamic multiplier, considers the time lag involved in working of multiplier. According to dynamic multiplier, change in investment will not cause immediate/instant change in income of the economy rather it is a gradual process through which the income will change. So, this multiplier is fundamentally a stage-by stage calculation of change in income due to change in initial investment and this process will continue till the full potential of multiplier is comprehended.

Let us assume that initially, our economy is in equilibrium position. Government injected the system with the autonomous investment of Rs 1000 crores. Suppose further that this investment is undertaken on the purchase of capital goods and labour, which leads to increment in income of capital goods producers and labourers by Rs 1000 crores in the period 1, denoting this by ΔY_1. If the marginal propensity to consume is found to be 0.8 of the society, then it implies that who received this income (Rs 1000 crores), will make consumption expenditure of Rs 800 crores. Consequently, in next period, income of the consumer goods producers rises by Rs 800 crores, denoting it as ΔY_2. Further, 80 per cent of this Rs 800 crores i.e. Rs 640 crores, will be increment in income in period 3, denoted by ΔY_3. This procedure will go on until the increment in income and consumption expenditure is reduced to zero. This illustration is pre-assuming that there is one period lag in the change in consumption expenditure due to change in income of the economy, i.e. change in consumption expenditure to be incurred in t time period is the function of change in income in t-1 time period.

This exercise of dynamic multiplier can be summed up in the following expression-

$$\Delta Y = \Delta Y_1 + \Delta Y_2 + \Delta Y_3 + \Delta Y_4 + \ldots\ldots\ldots\ldots + \Delta Y_{n-1} \qquad \ldots(1)$$

So the aggregate change in income (ΔY) due to initial investment of Rs 1000 crores, will be-

$$\Delta Y = 1000 + 1000\,(0.8)^1 + 1000\,(0.8)^2 + 1000\,(0.8)^3 + 1000\,(0.8)^4 + \ldots\ldots\ldots + 100\,(0.8)^{n-1}$$

$$\Delta Y = 1000 + 800 + 640 + 512 + 327.7 + \ldots\ldots\ldots + \rightarrow 0 = 5000$$

In order to match this aggregate increase in income, we can compute the value of multiplier as, ratio of proportionate change in income to proportionate change in investment i.e.

$$\Delta Y/\Delta I = 5000/1000 = 5$$

Since in period 1, increase in income is equal to the autonomous investment, so it can be written like this, $\Delta Y_1 = \Delta I$ and dynamic multiplier can be generalised as-

$$\Delta Y = \Delta I + \Delta I\,(c)^1 + \Delta I\,(c)^2 + \Delta I\,(c)^3 + \Delta I\,(c)^4 + \ldots\ldots\ldots + \Delta I\,(c)^{n-1} \qquad \ldots(2)$$

$$\Delta Y = \Delta I\,(1 + c^1 + c^2 + c^3 + c^4 + \ldots\ldots\ldots + c^{n-1}) \qquad \ldots(3)$$

In equation 3, c is the marginal propensity to consume, replacing the sum of an infinite geometric series by $1/(1-c)$, we will get-

$$\Delta Y = \Delta I\,(1/(1-c)) \qquad \ldots(4)$$

By putting the values of ΔI = Rs 1000 crores and c= 0.8, we get

$$\Delta Y = 1000 * (1/(1-0.8)) = 1000*(1/0.2)= 1000*5 = Rs\ 5000\ crores$$

From equation 4, it is clear that cumulative change in aggregate income is equal to a multiple of increase in autonomous investment expenditure. The term *1/(1-c)*, is termed as multiplier, whereas equation 2, implies the working of dynamic multiplier in the economy.

6.6 Limitations of Multiplier

Although, it has been realised that investment multiplier plays a determining role in economy and helps in bringing about desired results in income/output/employment. Still, it is not free from limitations. It has been seen that in order to achieve the target growth rate, nation just need to measure the exact requirement of investment, given the value of MPC. But in reality, we can't compute the quantum of investment required to push the economy, with so much exactness. So, the limitations of working of multiplier can be classified into three main categories-

- Leakages from income stream
- Non-availability of consumer goods and services
- Full employment situation

6.6.1 Leakages From Income Stream or Leakages in the Working of Multiplier

It is clear from the above discussion that value of multiplier is neither one nor infinity. We never spent the whole amount of increase in income and never saved the whole increased portion of income. Reason behind such behaviour is that there are many leakages under income stream, which reduced the speed of income propagation process and hence the working of multiplier gets affected. Moreover, under theory of multiplier it is assumed that certain portion of increased income will be spent on the consumer and capital goods. But in reality, society tends to spend on the various non-consumption and non-capital goods. These types of expenses are termed as leakages from income stream in the process of multiplier. These leakages include, like savings, debt cancellation, imports, hoardings, purchase of existing wealth etc. Detailed discussion on different types of leakages from income stream follows as-

1) **Payment of Past Debts:** If the increase in income is used for payment of loans purpose, then it will lead to fall in marginal propensity to consume. This decline in MPC, further, reduces the value of multiplier.

2) **Savings and Hoardings:** Savings are considered as an important leakage in the multiplier process. As we know that there is inverse relationship between marginal propensity to save and value of multiplier, therefore, more the share of additional income goes for savings; less effective will be the multiplier. On the other hand, activity of hoarding i.e. high liquidity preferences also restricts the value of multiplier.
3) **Purchase of Existing Wealth:** This is also an important type of leakage in the working of multiplier. If the society have a tendency to spend the increased portion of their income on the purchase of existing stock of wealth and property such as real estate, second-hand consumer durables, purchase of shares, bonds, stocks and securities etc. then it will inhibit the process of income propagation because such types of expenses never come back in consumption stream, hence affecting the working of multiplier.
4) **Imports:** If the economy is open economy, then inflow of foreign products and services, negatively affect income propagation process of the economy. This is so because, income spent on the imported goods and services will flows out of the country and having the lesser chances to come back to income stream of the nation.

6.6.2 Non-Availability of Consumer Goods and Services

The theory of multiplier is based on the pre-assumption that there is efficient and instantaneous supply of consumer goods and services in the system. But in practice, this is not the case. Supply of consumer goods and services does not respond instantaneously to the increased demand, time lag is always there. So, time dimension involved in adjustment process has been ignored. In course of lag period, increased income generates additional demand for goods and services which in turn generates the demand pressure and thus resulting in rise in prices (inflation). Theses rise in prices reduce the consumption expenditure in real terms, which restraint the multiplier effect.

6.6.3 Full Employment

Working of multiplier is not compatible with full employment. If the economy is in full employment or close to full employment situation, then further increase in production capacity is not possible. Thus, increase in autonomous investment will only result in inflation, not the generation of additional real income in the economy.

6.7 Multiplier And LDCs: Keynes' MPC And Multiplier Paradox

As per the multiplier theory, higher the value of MPC, more effective will be the multiplier and vice-versa. Further, lower the income, higher proportion will be spent (higher

MPC). In context of less developed countries (LDCs), it was found that income, saving and investment rates were low as compared to developed countries scenario. In the LDCs, usually the saving rates are lower, which implies relatively higher MPC. It is perceived under the multiplier theory that higher the value of MPC, higher will be the size of multiplier. Therefore, in LDCs, higher value of MPC should accommodate higher values of multiplier and hence given quantum of autonomous investment should result in higher employment and output and consequently high economic growth rates. But in practice, this whole scenario does not hold true in case of less developed countries. Generally, in LDCs value of multiplier and rate of economic growth are lower, despite the larger size of MPC. This shows a paradoxical situation in context of multiplier theory and is termed as Keynes' MPC and multiplier paradox. So, we can say that Keynesian investment multiplier is not compatible with the less developed countries.

The reasons behind, non-applicability of multiplier principle to less developed countries are the assumption taken by this principle. These assumptions are not fulfilled by the LDCs.

Assumptions:

1) High level of industrial development in the economy
2) Existence of involuntary unemployment
3) Existence of excess productive capacity
4) Price-elastic supply of goods and services
5) Absence of dynamic changes i.e. technological progress, capital formation and accumulation, factor supplies etc. remains constant
6) Based on the closed economy model
7) Instantaneous changes in consumption expenditure as a result of change in income

Many of the above-mentioned assumptions do not hold in case of LDCs. According to V.K.R.V. Rao (1952), there are certain other reasons (along with these assumptions) behind this inapplicability of multiplier theory to LDCs. Other reasons include, the circumstances prevailing under LDCs, such as- pre-dominancy of agriculture sector, substantial portion of disguised unemployment, shortage of capital, outdated technology, existence of non-monetised sector (barter system) and production for self-consumption purpose. Due to these features of LDCs, multiplier does not work effectively in LDCs.

Check Your Progress- II

Q1. What do you mean by static multiplier?

Ans.

Q2. What are the leakages in the process of multiplier?

Ans.

6.8 Acceleration Theory and Its Working

In the previous sections related to principle of multiplier, we have seen that investment is treated as the autonomous and most important variable in income determination process. However, the post-Keynesian refinements in the investment theory has realised the interdependency of the investment and income on each other. That is level of investment relies on the national income and national income in turn depends on the level of investment. This interdependent correlation among income and investment is explained by super multiplier and accelerator principle. We are here concerned mainly with the acceleration principle, popularly known as accelerator theory of investment. Principle of acceleration was developed by A. Aftalion (1909), Hawtrey (1913) and C.F. Bikerdike (1914) and J.M. Clark (1917). The main idea of this theory is that accelerator is related to quantum of desired or optimum stock of capital rather than change in autonomous investment. So, the basic relationship with which we are concerned, i.e. relationship between change in level of output and volume of investment spending, is known as the acceleration principle. As we know that ratio of capital stock to output is termed as capital-output ratio, this ratio is known as accelerator under this theory.

6.9 Assumptions of Acceleration Theory

This theory is based on some assumptions, which are as follows-

1) Capital to output ratio or accelerator coefficient is assumed to remain fixed. This fixed ratio, further, implies that there is absence of technological progress in the economy.
2) Capital goods in the economy are fully utilised.
3) Absence of excess capacity.
4) There is no upper limit on investment, which implies that supply function is perfectly elastic.

5) There is absence of time lag between demand and production, i.e. instantaneous adjustment in demand for and supply of product.
6) Net investment will increase instantaneously with the increase in output in the economy.
7) Supply of funds is elastic i.e. no financial restriction on availability of funds.

6.10 Working of Acceleration Principle

According to acceleration principle, investment enlarges the stock of capital as more capital is required to produce more output. Increase in output can be brought with the help of technological advancements also, but for simplifications we have assumed that capital-output ratio remains constant in the system.

Let us assume that the output of firms in the economy is measured by *Y* and the stock of capital required to produce it be measured by *K*. Capital-output ratio (*K/Y*) is indicated by *v.* So, the formal relationship between capital stock and the output can be articulated as-

$$K = vY$$

Or

$$v = K/Y$$

Here value of v is assumed to be more than unity i.e. $v>1$.

With fixed capital-output ratio over time, the desired stock of capital will change over successive time periods only with the changes in output levels. Considering the some particular time frame as t, preceding time periods as t-1 and t-2 and subsequent time periods as t+1 and t+2; according to this we can assume that in period t-1, desired stock of capital was required to produce the particular level of output in period t-1. Symbolically,

$$K_{t-1} = v\ Y_{t-1} \qquad \ldots(1)$$

When there is increase in output level from Y_{t-1} to Y_t, it will lead to change in desired stock of capital also, from K_{t-1} to K_t, i.e.

$$K_t = v\ Y_t \qquad \ldots(2)$$

If there is rise in desired stock of capital, then it is measured by $K_t - K_{t-1}$. In order to raise the stock of capital, net investment expenditure (I_t) is required, which is equal to the difference between the capital stock in t and t-1 time period. In equation terms-

$$I_t = K_t - K_{t-1} \qquad \ldots(3)$$

By using 1st and 2nd equations in 3rd equation, net investment can be expressed as-

$$I_t = vY_t - vY_{t-1} = v(Y_t - Y_{t-1}) \quad \ldots(4)$$

This equation implies that net investment during t period relies on the change in output from t-1 to t period multiplied by capital-output ratio *v*. Possible outcomes related to net investment-

A. if $Y_t > Y_{t-1}$, then net investment would be positive in period t;
B. if $Y_t < Y_{t-1}$, then net investment turns out to be negative or disinvestment has taken place in the economy in t period and
C. if $Y_t = Y_{t-1}$, then there will be zero net investment in the economy. In simple terms, given the value of v, any change in output level from t-1 to t period is responsible for the change in net investment, which could be either positive or negative.

In order to check out the importance of gross investment under the acceleration principle, we can make addition of replacement investment in the equation system. As we have learned in the previous unit that gross investment is equal to the sum of net and replacement investment, thereby adding the replacement investment component in both sides of the 4th equation, we get,

$$I_t + R_t = v(Y_t - Y_{t-1}) + R_t \quad \ldots(5)$$

Since gross investment (I_{gt}, gross investment in t period in economy.) is sum of net and replacement investment, so equation 5 can be represented as-

$$I_{gt} = v(Y_t - Y_{t-1}) + R_t \quad \ldots(6)$$

This is the final equal of the accelerator theory, here v is the accelerator coefficient. It is clear from the above equation that value of accelerator coefficient, *v*, depends on the output level also along with the capital-output ratio. Further, if the value of *v* is found to be more than one, then the required increase in capital stock must overweigh the increase in output.

Working of the acceleration theory can be better understood with the help of numerical example exhibited in Table 2. This example is based on certain assumptions, i.e. capital-output ratio is considered as two and rate of depreciation or replacement investment is considered as five per cent of the initial capital stock (in period 1).

Table 2: Working of the Acceleration Principle, With N=2 And RT=5%

Period	Output	Required/Desired Capital Stock	Actual Capital Stock	Replacement Investment	Net Investment	Gross Investment
1	200	400	400	20	0	20
2	210	420	420	20	20	40
3	220	440	440	20	20	40
4	250	500	500	20	60	80
5	270	540	540	20	40	60
6	260	520	520	20	-20	0
7	256	512	512	20	-8	12
8	250	500	500	20	-12	8
9	230	460	460	20	-40	20
10	200	400	400	20	-60	40

In this table column 1 refers to the time periods under consideration, column 2 provides us the information regarding output level in the economy in each period. Since capital to output ratio is taken as two, so we can estimate the required stock of capital by simply multiplying the output level with two, which is shown in column 3. Actual stock of capital is given in column 4 and in column 5, replacement investment is given, which is assumed to be five per cent of initial stock of capital. In our example, stock of capital in first period is given as Rs 400 crores, so replacement investment is Rs 20 crores (5 per cent of 400). Further, column 6 deals with net investment, which is estimated by subtracting the actual capital stock in t-1 period from actual capital stock in t period. In last column 7, gross investment is computed by simply adding column 5 and 6. The acceleration or deceleration in net investment can be seen from column 6. Upto period 5, there is acceleration in net investment, after that process of deceleration has started.

On the basis of above illustration, we can measure the change in output in period 1 and 2, i.e. 10 units increment in output level has been registered. Provided the value of ν as two, gross investment required in order to achieve this increment of 10 units in output level can be estimated as-

$$I_{gt} = \nu(Y_t - Y_{t-1})$$

$$I_{gt} = 2(210-200) = 2*10 = \text{Rs. 20 crores.}$$

Similar calculation can be worked for other periods as well.

6.11 Limitations Or Criticism of The Accelerator Theory

Accelerator theory suffers from serious defects and these defects are mainly based on the rigid assumptions taken by this theory. Some of the points of criticism are as follows-

1) **Constancy of Capital-Output Ratio:** Acceleration principle is based on fixed value of capital-output ratio. Under the dynamic and uncertain situations, we can't retain this constancy. Moreover, in reality this ratio is found to be determined by changes in technology, expectations, uncertainty, changes in composition of output etc. factors.
2) **Absence of Excess Capacity:** It has been assumed that there is inexistence of excess capacity in consumer goods industries, which is totally wrong. In practice, firms always maintain reserve capacity in order to capture the sudden increase in demand. In such circumstances, acceleration principle becomes less effective or ineffective.
3) **Financial Limitation:** According to this theory there is no ceiling on availability of funds. But in practice, there are financial limitations on meeting the additional capital requirements.
4) **Time Lag:** It has been assumed that there is no time lag between demand and production process. In reality, existence of discontinuities and indivisibilities in the production function hampers the production process and prevents smooth and instant adjustments.
5) **Profitability Considerations:** According to this principle major objective of firms is to maximise their profits. Business firms do not always focus on profit maximisation goal, there are many other goals along with this goal. Such as, sales maximisation goal, securing certain market share, building reputation etc.
6) **Lacks Practical Utility:** This principle lacks practical utility. According to this principle, for acceleration coefficient to work in effective manner, full capacity is a pre-condition. Statistical evidences have shown that full capacity rarely exists.

Although, this theory is less practicable, still it can be used along with other factors by economists to explain the oscillations, which are observed in investment in the economy from time to time.

Check Your Progress- III

Q1. Define Accelerator

Ans.....

Q2. Discuss any two limitations of the acceleration theory.

Ans.

6.12 Summary

Investment multiplier can be described as the ratio of change in income to the change in autonomous investment expenditure. The value of multiplier depends upon the marginal propensity to consume and save. On the basis of time dimension, distinction is made between static and dynamic multiplier. Further, according to static multiplier, if there is change in the investment in the economy, then it will cause immediate change in the income levels, means no time lag is involved in response. According to dynamic multiplier, change in investment will not cause immediate or instant change in income of the economy rather it is a gradual process through which the income will change. Accelerator is related to quantum of desired or optimum stock of capital rather than change in autonomous investment. Relationship between change in level of output and volume of investment spending, is known as the acceleration principle. Theory of acceleration principle is criticised on the basis of rigid nature of its assumptions.

6.13 Questions for Practice

A. Short Answer Type Questions

Q1.Describe the meaning of investment multiplier.

Q2. Define dynamic multiplier with the help of example

Q3.Explain the concept of MPC and multiplier paradox.

Q4. Give assumptions of acceleration theory.

Q5.Discuss the leakages in the working of multiplier

Q6. Briefly explain the working of acceleration principle

B. Long Answer Type Questions

Q1. What do you mean by multiplier? Derive investment multiplier.

Q2. Differentiate static and dynamic multiplier and discuss in detail the working of multiplier.

Q3.Explain the limitations of multiplier in detail.

Q4.Critically examine the theory of acceleration.

6.14 Suggested Readings

- Abel, A.B.; Bernanke, B.S. & Croushore, D. (2014). Macroeconomics. New York: Pearson Publishers, 8th edition.

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BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 7: BUSINESS CYCLES AND INFLATION: MEANING, PHASES AND TYPES

STRUCTURE

7.0 Learning Objectives

After reading this unit, learner will be able to:

- Know about the meaning of the business cycles
- Describe the different phases of business cycles
- Define the concept of the inflation
- Know about the different types of inflation
- Identify the causes and the effects of inflation

7.1 Introduction

This unit throws light on the concepts and types of business cycles as well as inflation. Most of the classical economic theories are based on the assumption that the economy is always in equilibrium. Any deviation from that is only for the short period and in the long run, the economy automatically reaches the full employment level, where the supply creates its own demand (Say, 1834) and aggregate demand is equal to aggregate supply. These theories also assume that the savings are passive in nature which means that they adjust themselves according to the demand for investment. Hence, there is no need of government intervention. But in real life, we find gaps in aggregate demand and aggregate supply along with the gaps in savings and investment. If government does not intervene, then these gaps continue to exist for a long period. This leads to inflationary or deflationary tendencies in to the economy. Keynes (1936), too, has pointed out that underemployment equilibrium is the general condition of the economy. He tried to show the gaps in aggregate demand and supply through his psychological law of consumption. He said that a marginal propensity to consume being less than one, causes the turning points in any business cycle. Schumpeter (1961) says that the innovations are the causes of cyclical fluctuations in the economy while according to Samuelson (1948), the business cycles are caused by the interaction of accelerator and the multiplier. All these theoreticians' emphasis that any market economy goes through several fluctuations. Therefore, it is important to know about the concept, types and causes of business cycles in general and inflation, in particular.

7.2 Meaning and Basic Concepts of Business Cycles

Business cycles, trade cycles, cyclical fluctuations are being identified by many economists since 19th century. In economic literature, Clement Juglar is supposed to be the first economists to talk about it in his writings. Some also call these cycles as Juglars after his name. Mitchell and Burns define a business cycle as a cycle which consists of expansions and contractions in various sectors of the economy at the same time or at different time periods,

giving an overall picture of expansion or contraction. This sequence of change is recurrent not periodic. The durations of the cycles may differ from sector to sector or from economy to economy, depending upon the macro economic policies. In short, a business cycle exhibits a wave-like fluctuation in economic activity which expansion or prosperity is followed by contraction and vice-versa. Some trade cycles are of shorter duration and may last for two to three years while others may last for longer period, of say 8-10 years or even larger. The experience of various economies has displayed that there is so fixed duration of a complete cycle. Even the cyclical movements within a single cycle may not be symmetrical, e.g., movement towards the peak can be gradual while to that of the trough can be sudden or vice-versa.

7.3 Phases of A Cycle

In economic theory, a trade cycle has four phases, which are mentioned below:

7.3.1 Prosperity

It is a phase that is characterized by rising income, employment and output, there are no unemployed resources, wages and consumption levels are high, prices are rising and profitability is also very high. Thus, during this phase, most of the economic activities are moving towards their peak levels. This period is also called as a period of inflation. General optimism prevails in the economy. This phase also witnesses the cumulative growth of consumption of durables as well as non-durable items, giving a boost to agriculture, industry as well as services. The confidence in future is so strong that people are increasing investments in financial and non-financial instruments and real estate. But this trend cannot go for ever. The forces of expansion get weaker with time. Marginal propensity to consume being lower than one leads to slower growth in consumption than income which results in to overproduction, further causing a stagnation in prices, profits, additional investments, employment etc. before they move to a declining phase.

7.3.2 Recession

As we have seen above that the slow down starts in the period of prosperity itself and after all the economic activities reach their peak level, declining tendencies are set in. Since the optimism of the earlier phase did not bring the desired results, the investors, producers as well as

the households become skeptical in making new investments. The projects are halted, flow of credit to existing projects/ventures slows down or stops. This lead to declining prices, lower wages, higher rate of unemployment etc. The level of investment can not be increased by reducing the rate of interest as the marginal efficiency of capital is declining during this phase. Thus, this phase is characterized by contraction of every economic activity, yet the real economic variables remain above the equilibrium path.

7.3.3 Depression

Depression is a dismal condition of the recessionary tendencies. This is the phase when all the economic variable attains a value below the equilibrium path. During this phase, the production, investment, employment, prices, profitability etc. undergo a substantial decline. The rate of interest remains at the lowest level, still the investors are not willing to make any investments. They rather prefer to keep the money with themselves. This phase experiences a liquidity trap and all sectors of the economy like manufacturing, construction and services experience a substantial fall in investment and many enterprises just shut down due to extremely pessimistic economic conditions. This phase is also termed as a phase of deflation. Bearish tendencies prevail in the financial sector, people lose money on the value of their securities, shares or other financial instruments. Unemployment is also at its highest level and there is a sharp fall in demand despite the fact that the prices are falling. However, this phase is also not permanent. After, many weaker enterprises have left the market, the gap in demand and supply narrows down. Though, the fall in income and employment leads to a fall in consumption but the fall in consumption is not as sharp as that of the income. This further leads to fall in gap in demand and supply. As a result, the fall in prices, profitability and employment is checked and the economy starts gaining some relief from the declining tendencies. Some sectors start gaining some confidence in the economy which lead the economy to the path of recovery.

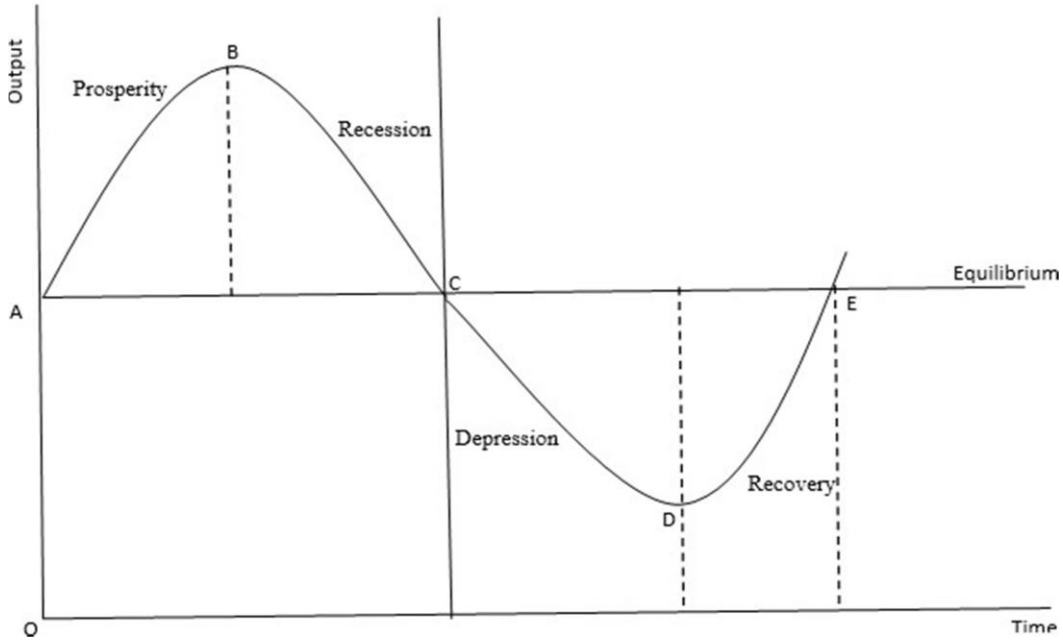
7.3.4 Recovery

This phase begins by the lower turning point from the period of depression and ends at the point of equilibrium from where, the prosperity starts. This phase shows the signs of restoring the business confidence and every economic activity starts improving. The level of income, output and employment starts increasing. The investors start making new investments, the stalled projects may restart during this phase. An increase in wages, profits and interest also leads to

increase in demand which further increases prices, profitability, rate of investment and hence, employment. The financial sector also regains the confidence of the investors as securities and shares start showing increase in their values. Thus, money starts flowing in, giving a renewed life to the economic activities, which leads to fading away of general pessimism that was prevailing in the economy during the preceding phase. But the economy still remains below the equilibrium level. The shorter this phase is, the quicker will be the transformation of the economy to the path of prosperity.

Above mentioned four phases of a business cycle can be observed from figure 1. In figure, the cycle starts from point A, where the economy was in original equilibrium. From A to B, we can see the prosperity phase which starts declining after the economy reaches its peak at point B. Then from point B to C, the economy witnesses the period of recession. This phase continues until the economy reaches the equilibrium level. But as the declining tendencies do not stop, the economy slips below the equilibrium level and enters the phase of depression which ranges from point C to D. Finally, the economy recovers from the declining tendencies and a turning point at the trough, marked by D leads the economy back to the point of equilibrium. This is known as the recovery phase. In figure, it is marked by the movement of the economy from point D to E.

Figure 1: Four Phases of a Business Cycle



Check Your Progress- I

Q1. What do you mean by recession?

Ans. .....

Q2. Define the business cycle of depression.

Ans. .....

7.4 Meaning of Inflation

In common parlance inflation often refers to a sustained increase in prices. Yet, the economists differ in their approaches while defining inflation. Some simply express it as fall in value of money at a constant rate of growth. They say that it is a purely monetary phenomenon when too much money follows too few goods. Thus, it follows that increase in money supply causes rise in prices along with the fall in purchasing power.

7.5 Types of Inflation

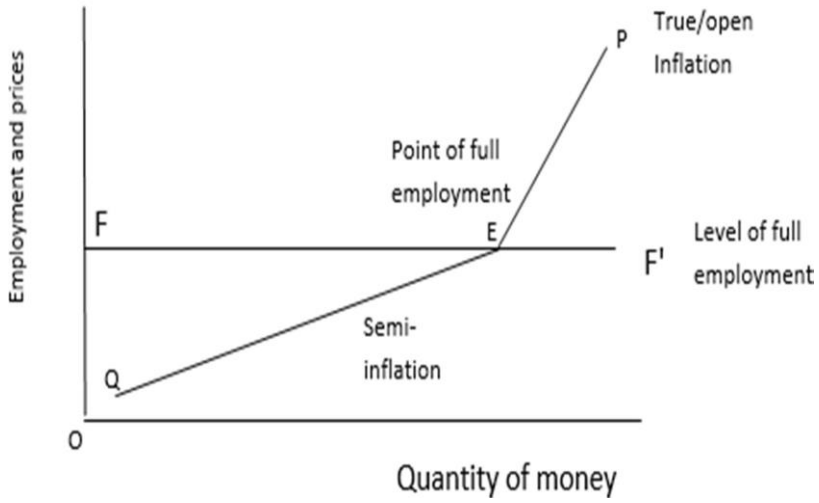
Inflation is further categorized on various scales. Some categorize it by its causes, some by its time of occurrence while some by its rate of change. These types are discussed below:

7.5.1 Types of Inflation by Level of Employment in the Economy

Most of the Keynesian economists think that inflation occurs after the level of full employment is achieved in the economy. They say, any rise in prices before the level of full employment only induces the investors to invest more which further leads to increase in demand for factors of production and pushes the economy towards the level of full employment. Keynes opined that the inflation is caused by the excess of effective demand and hence open inflation occurs only after the level of full employment is achieved in the economy. He says that any increases in quantity of money before the level of full employment increases the level of income, output and employment proportionately and any increase in prices during this phase is mainly due to the structural bottlenecks. Therefore, any inflation that occurs before the level of full employment is achieved is termed as semi-inflation, reflation or bottle-neck inflation. But as the level of full employment is achieved, any increase in money supply leads to pressure on demand for productive resources and since all the resources are already fully employed, therefore, it leads to sharper increase in prices. Keynes calls this phase as a phase of open or true

inflation. These types can be observed from the figure 2. The figure shows that FF' is the level of full employment, curve QEP shows the price level and E is the point where the full employment is achieved. Below the curve FF', as money supply increases, it leads to slower increase in prices than the period after level of full employment is achieved. This is shown by lower slope of the curve QE than that of the PE. Thus, we can observe that the economy faces semi-inflation, reflation or bottleneck inflation below FF' and open or true inflation above the curve FF'.

Figure 2: Types of Inflation by Level of Employment

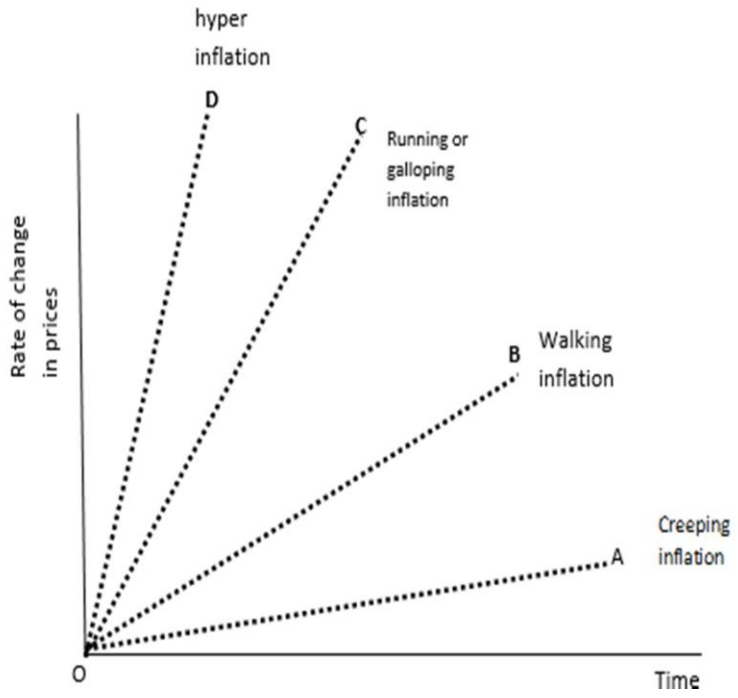


7.5.2 Types Of Inflation by The Rate of Increase in Prices

Open inflation may assume different types by the rate of change in prices. Initially, prices may rise at a lower rate but if the problem is not overcome by conscious policy actions, the situation may aggravate. Little doses of inflation are considered as the oxygen of the economy as it gives the investors a feeling of optimism that their profitability is rising. However, a very high rate of inflation may cut their profits drastically as the cost of inputs also increases. The economists believe that not all types of inflation are bad. A smaller rate of change in prices is good for the economy. They call this rate as creeping inflation while a rate of inflation higher than that may fall in to a category of walking or running inflation while the hyper-inflation is caused by wars, a catastrophy or some other emergency situation which halts the production with drastic economic consequences. Under such situations the purchasing power of the money people have in their hands is eroded overnight. However, under normal

circumstances, any economy may go through the phases of creeping, walking or running inflation. Figure 3 shows these types by the rate of change in prices. The curve OA shows that the prices are increasing at a very slow rate, usually less than 10 per cent per decade or less than 1 per cent per annum. This curve shows the case of creeping inflation. The curve OB shows the case of walking inflation i.e. the prices are rising at a rate of 30-40 per cent per decade or 3-4 per cent per annum while the running inflation (shown by curve OC) shows that the rate of change in prices is about 100 per cent per decade or 10 per cent per year. On the other hand, the curve OD shows the case of hyper-inflation which means that the prices rise by 100 per cent in a period of less than one year and the cumulative change in such cases can be more than 1000 per cent in a decade if it is left unchecked by any government. This will definitely lead to devastating conditions for any economy.

Figure 3: Types of Inflation by Rate of Change in Prices



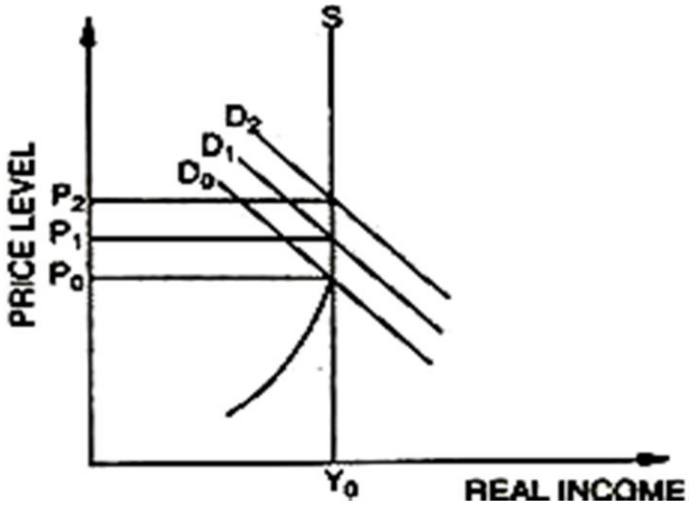
7.5.3 Types of Inflation by the Causes

In this section we will discuss the types of inflation by their causes. It is generally stated that inflation can be caused by both demand and supply sides. Hence, it can be called demand pull or cost push inflation. All other types like credit inflation, wage inflation or structural inflation can be put under these two broader categories.

7.5.3.1 Demand Pull Inflation

This type of inflation is caused by excess demand, relative to the available supply of goods and services. When the economy has already reached the full employment level, there is no possibility of increasing the supply of goods and services but increase in supply of money increases the demand. This leads to increase in prices in factors as well as goods market. This can be observed from figure 4. In this figure, S is the supply curve while D_0 is the original demand curve. The original equilibrium is obtained at OP_0 level of prices and the economy is at the level of full employment as we can see that after the point of intersection of original demand and supply curves, the supply curve becomes parallel to Y-axis which means that the supply of goods and services cannot be increased with existing resources. Hence, any increase in demand will lead to increase in prices. The figure shows that as the demand increases, the demand curve shifts upwards to D_1 and the new equilibrium is attained at higher prices i.e. OP_1. Similarly, when demand further increases to D_2, the prices also increase to OP_2.

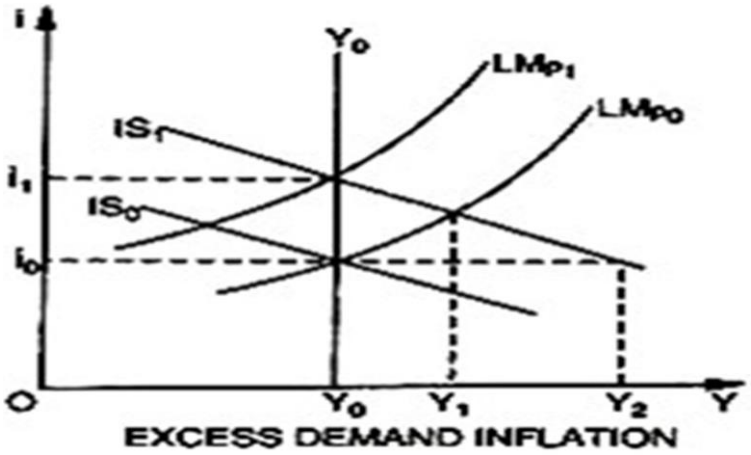
Figure 4: Demand Pull Inflation



The concept of demand pull inflation can also be understood with the help of the IS and LM curves. Figure 5 shows that the initial increase in excess demand is to the extent of Y_0Y_2 as the IS curve shifts from IS_0 to IS_1. This leads to increase in prices and new equilibrium is attained at Y_1 at an interest rate higher than the original Oi_0. During this process, the contraction in LM curve occurs due to two reasons, an increase in excess demand, shifts the existing resources to transaction purposes and there will be lesser demand for speculative purposes at higher rate of

interest. Further, increase in prices resulting from this excess demand also reduces the real value of the money balances people have in their hands, this is just like a fall in money supply. Hence, the LM curve shifts inwards to LM_{p1} and the final equilibrium is restored at full employment level i.e., Y_0 but at higher rate of interest and prices.

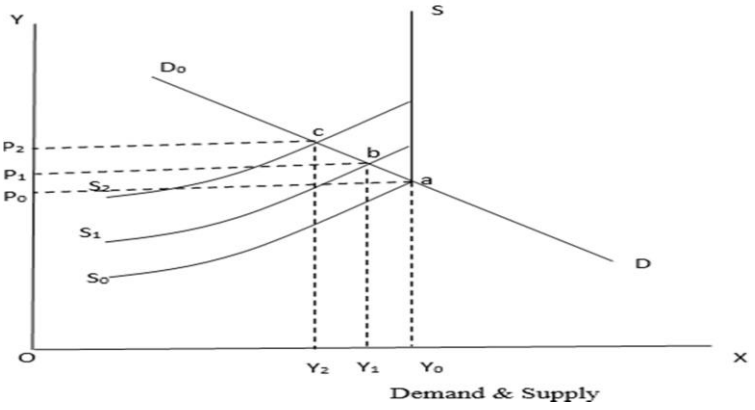
Figure 5: Demand Pull Inflation: IS And LM Curves



7.5.3.2 Cost Push Inflation

Another view point is that instead of excess demand, the prices rise due to increase in cost of production. It may occur due to demand for higher wages by the labour unions, increase in prices of raw materials or other inputs or due to a higher mark-up by the sellers, especially in an oligopolistic market. The idea of cost push inflation was put forth in its theoretical form by Thorp and Quandt (1959). Whenever, there is an increase in prices, the producer will ask for higher prices for the same level of supplies as their cost of production has increased.

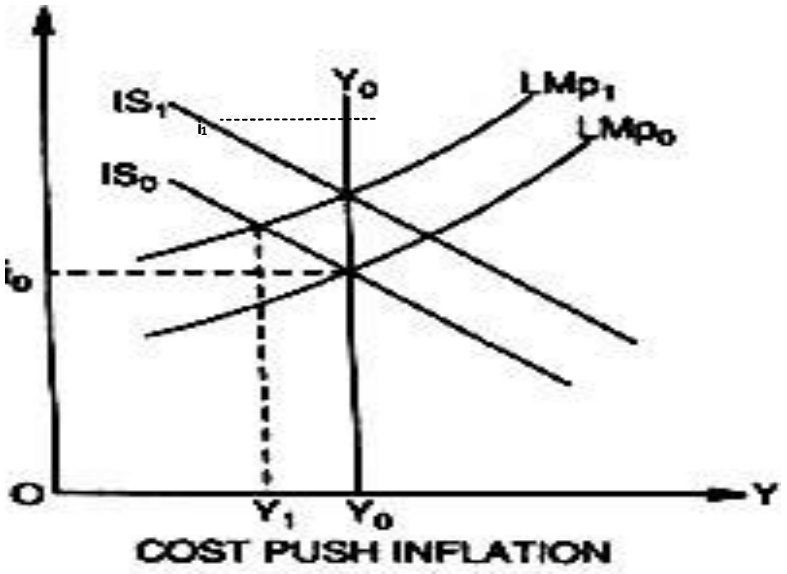
Figure 6: Cost Push Inflation



In figure 6, DD_0 is the demand curve and SS_0 is the original supply curve. The original equilibrium is attained at point 'a', where the economy is at the full employment level. After increase in cost of the inputs, the marginal cost of production increases as a result, the supply curve shifts from SS_0 to SS_1 and the new equilibrium is attained at point 'b'. This leads to increase in prices to OP_1 and unemployment is created to the extent of Y_0Y_1. A further is cost shifts the supply curve to SS_2 and the price level increases to OP_2 while the level of unemployment increases to Y_0Y_2. Thus, the increase in cost not only leads to rise in prices but also an increase in unemployment.

The working of cost push inflation can also be understood with help of the IS and LM curves, as shown in figure 7.

Figure 7: Cost Push Inflation: Is and LM Curves



In this figure, the original equilibrium is attained where IS_0 and LM_0 intersect each other and full employment is achieved at OY_0 and the rate of interest is i_0. With an increase in cost of production, more of the money is spent in purchase of inputs and less of the money is left for other purposes, this is like contraction of money supply, which is represented by inward shift of the LM curve to LM_{P1}. The new equilibrium is attained at OY_1 level of income which is less than the full employment level. The level of full employment can only be achieved if there is fiscal expansion and the IS curve shifts to IS_1. But it will cause a further rise in rate of interest to i_1 which is equivalent to increase in prices.

Check Your Progress- II

Q1. Define Demand Pull Inflation.

Ans. .....

Q2. Define cost push inflation.

Ans. .....

7.6 Effects Of Inflation

As we have discussed earlier lesson that every increase in prices, is not considered bad. Though, most of the theories assume that the money is neutral, indicating in simple terms that the increase in prices is similar for all the sectors and sections of the economy. But this does not happen in real life. When prices rise, different factors are affected differently. The lower income sections of the society, those with fixed income and consumers often suffer more than the richer sections and the producers or the sellers. So, it is important to discuss the effects of inflation on different sections of the society.

Some of these effects are discussed below:

1. **Effects on the Producers:** After the level of full employment is achieved, any increase in money supply may turn the rise in prices from a creeping inflation to walking or running inflation and if it remains uncontrolled then even to hyperinflation. Under such situations, the producers have to bear a very high cost of production. So they have only two options of either reducing the supplies or to maintain the supplies at higher prices. This will further have a negative impact on their sales and hence on the profitability.
2. **Effects on Distribution**: Inflation is often seen as an agent to increase the income inequalities as it does not increase the income of various factors of production in equal proportions. Big hoarders and speculators earn more while those with fixed income lose their purchasing power. The profits, rent etc. may increase while the wage rate may not change in proportion to the rate of inflation. This redistributes the resources from the hands of the low income groups to the high income groups. Thus, inflation increase the income inequalities.

3. **Effect on Debt:** As the increase in prices leads to deterioration in the purchasing power, the debtors are considered to be benefited from the inflation. If the rate of interest remains unchanged with increase in prices or the change in rate of interest is less than the rate of inflation, then the debtor will return lower amount of money in real terms. Under such cases, the creditors will suffer from inflation as they will not get back the same amount of money in real terms.
4. **Effect on Wage/Salaried Earners:** Many studies have indicated that the after inflation, the wages or salaries of the persons increase after a lag and more often this increase is not in proportion with the inflation rate. In coutries where agricultural sector employs a big proportion of its workforce and/or a majority of the workers belong to the unorganised sector (as in India), any increase in prices pushes the people towards the poverty line. With a small increase in prices, a big majority of them fails to make their both ends meet. Thus, with inflation, the middle class is pushed towards poverty; those who were earlier just above the poverty line, are pushed below the poverty line and poor become poorer.
5. **Effect on Human Capital Formation**: Inflation has a negative impact on standard of living of common masses. With limited income, when the prices increase, they find it difficult to maintain their original standards. This leads to cut in expenditure on education and health of the family members. During the periods of inflation, the school fees and cost of medical treatment also increases. Hence, people find it difficult to attain higher education, nutritional diets and proper medical care for their wellness. This has an adverse effect on the process of human capital formation.
6. **Social Problems and Political Instability:** Inflation aggravates the income inequalities. A big proportion of the population of developing economies live under the conditions of vulnerability to poverty. The growth does not percolate to the lower sections of the society and inequalities are in their worst form. This leads to wide spread unrest among the common masses. With a life full of deprivations, public often lose faith in the democratically elected governments. This results in to political instability. Wider inequalities also leads to social problems. When people do not get enough from their livelihoods and their labour is not adequately rewarded, they resort to other means such as looting, corruption, dowry, or other illegal ways to amass money.

7.7 Summary

Business cycle can be defined as the downward and upward fluctuations of gross domestic product (GDP) along with its natural growth rate over a long period of time. Business cycles influence business decisions enormously and set the tendencies for future business. In this unit, there are four phases of business cycles namely, Depression, Recovery, Prosperity and Recession. The period of prosperity opens up new and lager opportunities for investment, employment, and production and promotes business in the economy. Whereas, the period of depression reduces business opportunities and investment as well as employment in the economy. Thus, in order to earn maximum profit, an entrepreneur must analyze the economic environment of the period before taking his important business decision. We have further discussed about the meaning and types of inflation. Here, inflation means increase in money supply which causes rise in prices along with the fall in purchasing power. Demand pull and cost push inflation are the types of inflation. Demand pull inflation means rise in prices is caused by excess demand, relative to the available supply of goods and services, while cost push inflation means, instead of excess demand, the prices rise due to increase in cost of production.

7.8 Questions for Practice

A. Short Answer Type Questions

Q1.What do you mean by a business cycle?

Q2.Define prosperity.

Q3.How would you differentiate between recession and recovery?

Q4.What are the characteristics of the phase of depression in any business cycle?

Q5.What do you mean by inflation?

Q6.Define hyper-inflation

Q7.Do you think that all types of inflation are bad? If not, why?

Q8.Differentiate between cost-push and demand-pull inflation.

B. Long Answer Type Questions

Q1.What do you mean by a business cycle? Discuss various phases of a business cycle.

Q2.Discuss various types of inflation.

Q3.What is inflation? Discuss its causes and effects.

7.9 Suggested Readings

- Thorp, Willard L. and Richard E. Quandt (1959). The New Inflation. McGraw-Hill Book Company Inc., New York.
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BACHELOR OF ARTS

SEMESTER –II

COURSE: MACRO ECONOMICS

UNIT 8: MONETARY POLICY AND FISCAL POLICY - OBJECTIVES AND TOOLS

STRUCTURE

8.0 Learning Objectives

After reading this unit, learner will be able to:

- Outline the concept of fiscal and monetary policy
- Know the objectives of fiscal and Monetary policy
- Use of tools of fiscal and Monetary policy for its objectives

8.1Introduction

Macro Economic policies play crucial role in an economy. Fiscal Policy is a significant policy tool of economic framework of the economy. Fiscal Policy is the policy related to Public Revenues, Public Expenditures, Public Debts and also Deficit Financing by the government. Fiscal policy helps to mobilize the resources, allocation of resources, capital formation, rise in investment levels and alike. Fiscal Policy aims to promote development and productive activities. It includes both Development activities (like expenditure on infrastructure, transport, small scale industries etc.) and non-development activities (like salaries, pensions, subsidies etc.). Fiscal Policy provides incentives to private sector investment and production. Fiscal Policy is designed by the government of the country. For example, in India, the union finance minister formulates and deals with Fiscal policy through annual budget and other interventions.

8.2Meaning of Monetary Policy

Monetary policy means the policy relating to supply of money, availability of money and cost of money. Through monetary policy, central bank regulates the supply of money, direction and cost (rate of interest) of money in the economy.

Harry, Johnson, "A policy employing the central banks control of supply of money as an instrument for achieving the objectives of general economic policy is a monetary policy." G k Shaw, "By monetary policy, we mean any conscious action undertaken by the monetary authorities to change the quantity, availability or cost (rate of interest) of money."

Aston, D.C. "Monetary policy involves the influence on the level and composition of aggregate demand by the manipulation of interest rates and availability of credit."

These definitions explain the following points:

a) Central bank or monetary authority operates monetary policy
b) Regulation of quantity/ cost/ direction of money supply
c) Influence on aggregate demand
d) Specific objectives of monetary policy.

8.3Objectives of Monetary Policy

1. **Achievement of Full Employment:** Generation of employment is a pertinent issue in all the economies especially in less developed economies. Monetary policy aims at generating

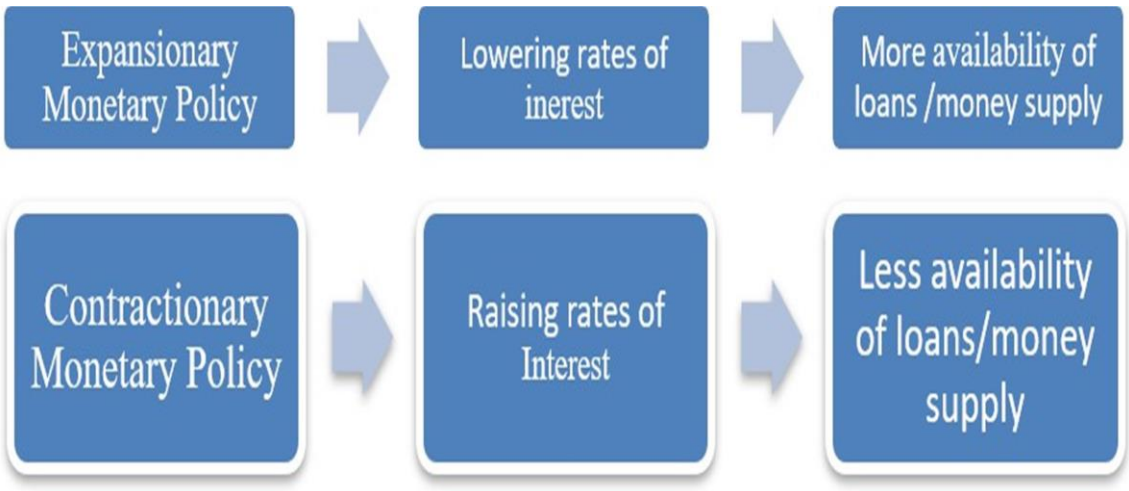
more employment through the expansion of AD, incomes and outputs. For this objective, central bank adopts 'cheap monetary policy/expansionary monetary policy' and lowers the rates of interest in order to increase the flow of credit for consumption and investments.

2. **Promote Economic Growth and Development:** Economic growth means the process by which the real national and real per capita income continue to rise for a long period of time. This process will enhance the production capacities, lead to skill formation and capital formation. Less developed economies face the problem of shortage of financial resources and less capital formation. Therefore, monetary policy aims to mobilize the financial resources for more investments and capital formation.
3. **Price Stability:** It refers to lessen the fluctuations in price level. The process of persistent rise in prices is called inflation. Greater flow of Money supply, higher AD and less production of goods are main causes of inflation. Inflation brings social injustice, inequality of income and wealth. It lowers the purchasing power of people and reduces consumption expenditures and AD. The process of falling prices called deflation is also harmful because it discourages investment and production. Monetary policy aims to correct both the situations by regulating money supply and rates of interest.
4. **Exchange Stability:** The issues relating foreign exchange rate, stock of foreign exchange reserves and balance of payments (BOP) are significant for the external price stability. The problems of shortage of foreign exchange reserves and adverse BOP can be solved with monetary policy.
5. **Equitable Distribution of Income and Wealth:** This objective of monetary policy relates to redistribution of national income in such a manner that more incomes and funds flow to the poorer sections of society. Monetary policy aims to provide more loans and funds at low rates of interest to marginalized sections, weaker sections, women and small investors for providing better opportunities of businesses, work and investment in industry and agriculture.

In short, monetary policy works in tune with the main objectives of economic policies and planning for growth and development.

8.4Types of Monetary Policy

Following are the main types of monetary policy:



A. **Expansionary Monetary Policy**: Expansionary monetary policy expands the amount of money/credit supply available to consumers, producers and investors. Lowering of rates of interest makes the loans/credits cheaper. It encourages the consumers to borrow more for buying goods like cars, furniture, and house construction and provides boost to the investors to borrow more for starting up businesses, industries and trade activities. This raises the level of aggregate demand in the economy. As a result, levels of income output and employment start rising.

B. **Contractionary Monetary Policy:** Contractionary monetary policy restricts/contract the amount of money/credit supply available to consumers, producers and investors. Raising of rates of interest makes the loans/credits costlier. It discourages the consumers to borrow more for buying goods like cars, furniture, and house construction and restricts the investors to borrow more for starting up businesses, industries and trade activities. This reduces the level of aggregate demand in the economy. As a result, levels of income output and employment start shrinking.

Check Your Progress- IV

Q1. Define monetary policy.

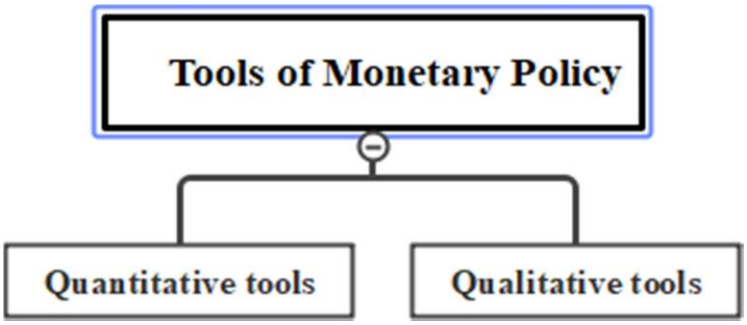
Ans. .....

Q2. Outline the differences between liberal/cheap monetary policy and restrictive/dear monetary policy.

Ans. .....

.....

8.5Instruments/Tools of Monetary Policy



A. Quantitative Tools: Quantitative tools are those tools which target at changing the quantity of money supply in circulation. Generally, the use of such tools affects the entire economy. This is a non-discriminatory credit policy operated by central bank. Following are the main quantitative tools of monetary policy.

- Bank Rate;
- Open market operations;
- Cash reserve ratios (cash minimum reserve ratio and statutory liquidity ratio

Let us analyze these tools in detail.

1. **Bank Rate:** It is defined as that rate of interest at which central bank lends to commercial banks and discounts the securities of banks. Bank rate is positively related to market rate of interest. Market rate of interest is the rate at which commercial banks give loans to the people (investors and consumers). A rise in bank rate increases the market rate of interest (called as Dear money policy or Restrictive monetary policy; and a fall in bank rate decreases the market rate of interest (called as Cheap money policy or Expansionary monetary policy). A rise in bank rate and market rate of interest brings a contraction in credit available to investors and consumers. A fall in bank rate and market rate of interest brings an expansion in credit available to investors and consumers.
2. **Open Market Operations (Omo):** This is the mechanism through which central bank sells and buys the securities in the open market. A) The sale of securities by the central bank to the public has a contractionary effect on money/credit supply in the economy (called as Dear

money policy or Restrictive monetary policy) because when people buy securities from central bank, their money is transferred to central bank. B) When central buys securities from people then money is transferred from central bank to people so that this has an expansionary effect (called as Cheap money policy or Expansionary monetary policy). However, the effectiveness of OMO depends on securities market, excess reserves with commercial banks and such other factors. In India, RBI changes the repo rate and Reverse repo rate. Repo rate is a rate at which commercial banks borrow money by selling their securities to RBI. Reverse repo rate is the rate at which RBI borrows money from commercial banks when there is excess money supply in the market. At the time of inflation, RBI raises the reverse repo rate so that banks give more of their funds to RBI to earn more returns. This has a contractionary effect.

3. **Changes in Minimum Reserve Ratios:**
   a. **Minimum Cash Reserve Ratio (CRR):** It refers to the minimum percentage of the total deposits of each commercial bank which is to be kept with central bank. For example, every commercial bank will deposit/transfer this amount to central bank. This cannot be used by the commercial banks as advancing loans to the investors and consumers. It is a check on the lending capacity of the commercial banks. A higher cash minimum reserve ratio (called as Dear money policy or Restrictive monetary policy) leads to fall in the credit creation capacity of commercial banks through loans to investors and consumers; and a fall in this ratio expands the credit creation capacity of commercial banks (called as Cheap money policy or Expansionary monetary policy).
   b. **Change in Statutory Liquidity Ratio (SLR):** It refers to the percent of total deposit of commercial banks which they have to keep in cash or liquid form. For example, every commercial bank will keep a fixed percent of its total deposits in cash and it will not be able to lend this money to investors and consumers. This ratio is a big check on the credit creation capacity of commercial banks. A higher statutory liquidity ratio(called as Dear money policy or Restrictive monetary policy) leads to fall in the credit creation capacity of commercial banks through loans to investors and consumers and a fall in statutory liquidity ratio expands the credit creation capacity of commercial banks (called as Cheap money policy or Expansionary monetary policy).

Remember: a) Expansionary monetary policy means fall in bank rate, buying of securities by central bank, fall in minimum cash reserve ratio and fall in statutory liquidity ratio; and b) Contractionary/restrictive monetary policy means rise in bank rate, selling of securities by central bank, rise in minimum cash reserve ratio and rise in statutory liquidity ratio.

B. Qualitative Tools/Selective Tools: Qualitative tools are used as discriminatory credit policy. These tools aim to change the direction of money supply. These tools are used to discriminate between different uses of credit. For example, more credit can be made available to agriculture and export sector and less to car manufacturing industry.

a. **Change in the Margin Requirements of Loans**: The central bank can raise or lower the margin requirements of loans. Margin is the difference between the value of goods pledged as security and amount of loan. It means that proportion of loan amount which is not offered by the bank. Higher margin means low amount of loan and lower margin means more amount of loan. This tool helps to divert financial recourses from less important sectors to more and needy sectors. This is done by raising the margin requirements of loans for less important sectors and reducing it for more necessary sectors.

   For example, lowering the margin requirements of loans for farmers/agriculture sector and raising it for production of cars.

b. **Rationing of Credit:** Central bank lends money to all the commercial banks. Under rationing, credit is advanced by putting a limit. Central bank can
   - directly refuse to give loans;
   - it can reduce the amount of loans;
   - fix credit quotas for different banks; and
   - it can fix quotas for various sectors. Central bank can regulate the consumer credit also.

c. **Moral Persuasion by Central Bank:** Central bank can suggest the commercial banks to work in coordination with the policies of central bank which are adopted time to time. In a way, central bank can exercise some pressure on commercial banks in order to achieve the objectives of monetary policy.

Remember**:** Central bank uses a judicious mixture of these tools for effective implementation of monetary policy. It can use a combination of tools to get the desired results.

Check Your Progress-V

Q1. What is the link between bank rate and market rate of interest?

Ans. .....

Q2. Mention the changes in quantitative tools, under expansionary monetary policy.

Ans. .....

Q3. What is rationing of credit?

Ans. .....

8 . 6 Applications of the Tools of Monetary Policy

Use of Monetary Policy for Internal and External Stability

1. **To Control Inflation:** During inflation, it is necessary to restrict money supply in the economy. For this, following tools can be used.
   (i) Application of quantitative tools such as increase in bank rate, sale of securities by central bank, increase in CRR and SLR.
   (ii) Qualitative tools can be used for reallocation of funds into more productive sectors such as increasing the margin requirements of loans and more rationing of credit. One or all the tools can be used as per the requirements.
   (iii) Besides, central bank can prohibit the printing of new currency.

   This will help to check the money supply in the economy because the above changes will discourage more borrowing by investors and consumers, leading to fall in AD and this will control the rising prices.

2. **To Control Deflation:** During deflation, it is necessary to expand money supply in the economy. For this, following tools can be used.
   a) Application of quantitative tools such as decrease in bank rate, purchase of securities by central bank, reduction in CRR and SLR.

b) Qualitative tools can be used for reallocation of funds into more productive sectors such as lowering the margin requirements of loans and more credit to banks. This will ease the borrowings by people.

One or all the tools can be used as per the requirements.

c) Besides, central bank can increase the printing of new currency.

This will help to enhance the money supply in the economy because the above changes will encourage more borrowing by investors and consumers. This will increase available money with consumers and investors. It will increase AD in the economy and control the falling prices.

3. **Exchange Rate and Balance of Payments Position:** In simple words, balance of payments (BOP) refers to the account of exports and imports. The deficit BOP means excess of imports over exports. This means more payments for imports are to be made in terms of foreign currency (say Dollar, $). This raises the demand for foreign exchange (say Dollar, $). As a result, the value of Dollar, $ in terms of say, Rupee start rising. It means dollar$ becomes more costly in exchange of Rupee. This worsens the BOP situation. To tackle this situation, central bank can use tools of monetary policy.

   When there is deficit BOP (as sated above), following tools can be used as under.

   (i) Reduction in money supply to lower the level of domestic prices. This will make exports cheaper and lead to rise in demand for exports and discourage imports because cheap goods are available in the home country now. The deficit in BOP will become lesser, requiring less demand for foreign currency (say dollar$).

   (ii) Lowering the rates of interest and making more credit/money supply available to domestic businesses and investors and foreign investors as well. The increased production of goods and services will lead to fall in demand for imported goods and less demand for foreign exchange.

   (iii) More credit available to exporters will also help to increase the export earnings. This will increase the inflow of foreign exchange in the country and will reduce the demand for foreign currency in world market.

Remember: The combination of different tools of monetary policy can be used such as combining OMO, CRR /SLR or qualitative tools.

Economic Growth and Development:

Let us first understand the process of economic development and growth. Economic growth/development is a continuous process whereby the real national income and real per capita income continue to rise for a long time period. This process requires rise in capital formation which in turn involves:

A) Higher volume of savings;

B) Mobilization of savings through banking/financial systems; and

C) Investments of savings.

An effective monetary policy uses its tools for financing the development process. This is very much significant especially for developing economies. Let us know it through an example.

India is a developing economy. More and more funds are required for financing the development activities such as businesses, village industries, small entrepreneurs, women entrepreneurs, factories, farming, infrastructure and alike. For this task, monetary policy aims at following steps

- Better mobilization of savings through large number of financial institutions,
- Lucrative savings schemes
- More finances for investments even for startups, small businesses
- Identification of priority sectors and providing these sectors loans at lower rates of interest
- Easy loans for consumption purposes
- More and easy loans for more and more productive purposes.

Check Your Progress-VI

Q1. Mention the tools of monetary policy for controlling inflation.

Ans. .....

Q2. What is the difference between CRR and SLR?

Ans. .....

Q3. What are the steps of tools of monetary policy are needed for the expansion of business activities in the economy?

Ans. .....

8.7Meaning of Fiscal Policy

Fiscal Policy is the policy related to public revenues, Public Expenditures, Public Debts and also Deficit Financing by the government. It is a policy relating to government tax and non-tax revenues and government expenditures and government borrowings. Let us understand with the help of following definitions.

Rowan, D.C.- "*Fiscal Policy is defined as the discretionary action by the government to change the level of government expenditure on goods and services and transfer payments and the yield of taxation at any given level of output*".

G.K. Shaw- "*Fiscal Policy is defined as any decision to change the level, composition and timing of government expenditure or change the burden, structure and frequency of the tax payment*."

Both the above definitions state the main elements of fiscal policy- Revenues and expenditures. Government can change the magnitude, composition, direction and timings of taxes and expenditures.

Monetary policy is an effective policy for regulating the economy in terms of internal and external stability and generation of employment. It is a policy tool which manages the quantum/size of money supply and growth rate of money supply in an economy. The central bank of the economy generally regulates monetary policy through its financial system/banking system/commercial banks and uses its tool such as Bank rate, Rate of interest adjustments, Cash reserve requirements and Rapo rates to change the quantity and direction of money supply to achieve various objectives. It regulates (expand or contract) the flow of credit and money supply to available the public in the economy.

8.8Objectives of Fiscal Policy

Main objectives can be explained as under:

1. **Price Stability**: Price stability means fewer fluctuations in the general price level. It is measured by rate of inflation. Price stability means when there is no/low rate of inflation or deflation. Let's understand the two situations.
   a. When there is higher rate of inflation, a contraction in aggregate demand and expenditure is required and for this, government reduces the fiscal deficit and public

expenditure and raises the taxes, introduces various tax saving schemes. The policy is to use all financial resources in a productive way.

b. When there is deflation, an expansion of aggregate demand is required and for this, government increases the public expenditure and reduces the taxes.

2. **Higher Economic Growth and Development:** Economic growth and development is measured by rate of increase in gross domestic Product (GDP) of an economy. Expansionary fiscal policy is needed for this. For economic growth and development, GDP and per capita income must rise for a long time period. Fiscal Policy can raise the levels of investments in an economy. For this, regular investments are required which leads to increase the rate of capital formation. This in turn, helps to increase the levels of output, income and employment in the economy. As a result, the rate of economic growth and development starts increasing.
3. **Higher Employment Rate:** Fiscal Policy aims to accelerate the rate of employment generation so that economy can move towards full employment level. This is possible by raising the level of aggregate demand. Fiscal policy can help to increase the productive public expenditure and reduce taxes on productive activities like small scale industries. Investments in productive activities and infrastructure generate more employment. This expansionary act will boost up investment in the economy which in turn will increase the level of output, income and employment.
4. **Economic Equality:** Most economies suffer from the issue of income and wealth inequalities. The society is divided between rich and poor sections. Fiscal policy aims to reduce these inequalities and bring more equal distribution of income and wealth. For this, Government designs fiscal policy in such a manner that money/income is transferred from the rich to poor via government activities. Government imposes progressive taxes like income and wealth taxes on the richer section and collects tax revenue. This amount is spent by the government on provision of welfare activities for the poor and weaker sections.
5. **Reducing Balance of Payments Deficits:** Balance of Payments (BOP) is a record of all international transactions (current and capital accounts) of a nation during a year. A deficit BOP means that receipts (inflow of money incomes) are less than the Payments (outflow). To reduce this deficit, fiscal policy aims to promote exports by provision of certain fiscal

incentives to producers/exporters like exemption in taxes and provision of subsidies. Rise in exports increases the export receipts which reduces the deficit in BOP.

6. **Balanced Regional Development:** It means more development of backward regions/states so that all the regions/states grow equally. Fiscal policy aims to raise the growth rates of backward regions/states through the allocation of more grants and other funds for creation of infrastructure like roads, power and directly productive activities like small scale enterprises, cottage and villages industries.
7. **Optimum Allocation of Resources**: Fiscal Policy aims to allocate resources mobilized through tax revenues. These allocations are made keeping in view the objectives of fiscal policy like allocation of funds for education, health, development of social and physical infrastructure, investment in small sector, village industries and measures to boost investment in private sector.

   To sum up, fiscal policy plays significant role to promote welfare of the people, growth of industries and agriculture and other sectors.

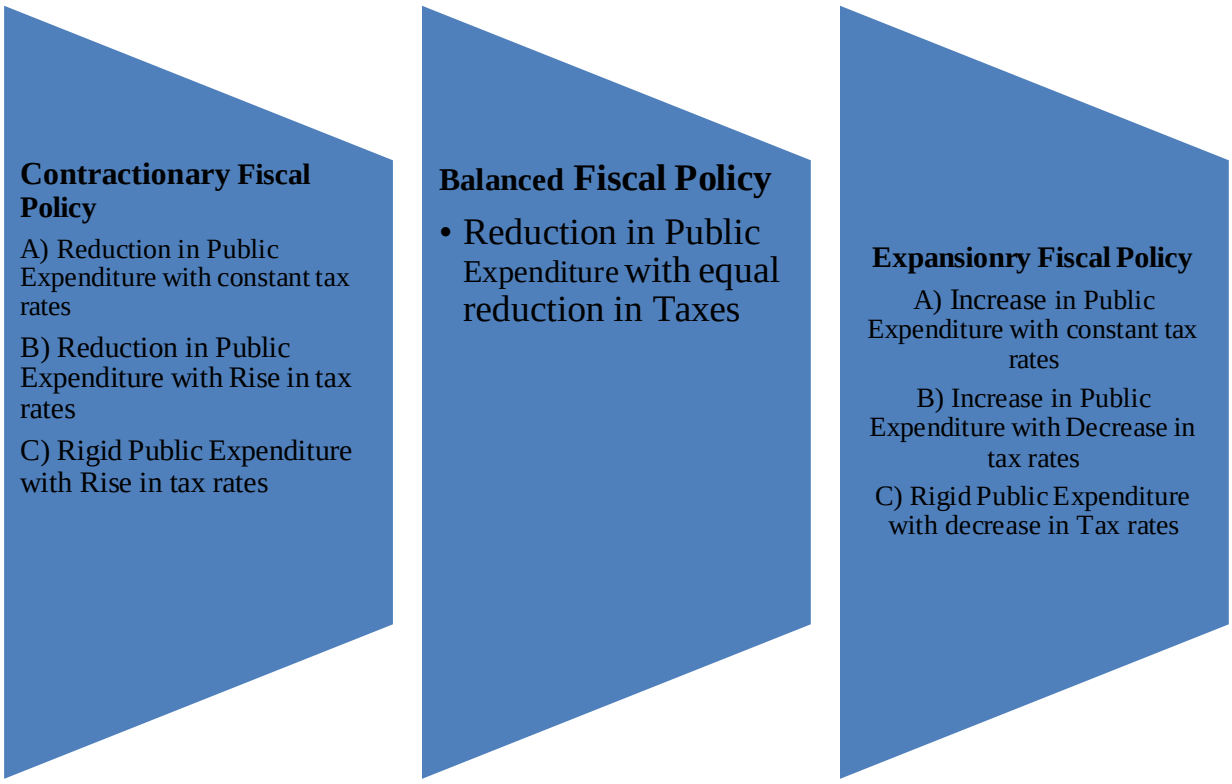
8.9Types and Various Combinations of Fiscal Policy

A. Neutral Fiscal Policy
B. Expansionary Fiscal Policy
C. Contractionary Fiscal Policy

Neutral Fiscal Policy	Expansionary Fiscal Policy	Contractionary Fiscal Policy
• Government expenditure= Tax Revenue • Budget has neutral effect on the economy	• Government Expenditure > Tax Revenure • Boost to investment and production in the economy	• Government Expenditure < Tax Revenue • Control and contraction of expenditures especailly unproductive expenditures

Most often, the Fiscal Policy is either expansionary or Contractionary. We must understand that under different situations, government uses different combinations of the tools of fiscal policy to get the desired results. When there is need to give boost to investments,

government will design and implement expansionary fiscal policy, for example- during the time periods of deflation or recession/depression. When there is need to restrict/contract the expenditures, government will design and implement contractionary fiscal policy, for example- Inflation.



In Contractionary Fiscal Policy, there are following possibilities mainly,

A) Reduction in Public Expenditure with constant tax rates

B) Reduction in Public Expenditure with Rise in tax rates

C) Rigid Public Expenditure with Rise in tax rates

In Expansionary Fiscal Policy, following combinations are:

A) Increase in Public Expenditure with constant tax rates

B) Increase in Public Expenditure with Decrease in tax rates

C) Rigid Public Expenditure with decrease in Tax rates

Government has to monitor the Fiscal Policy very closely so that price stability as well growth and development and other objectives are achieved. Government will take the decision regarding the combinations of fiscal policy as per the objectives of the policy.

Check Your Progress- I

Q1: What is fiscal policy?

Ans. .....

Q2: Mention the name of types of fiscal policy?

Ans. .....

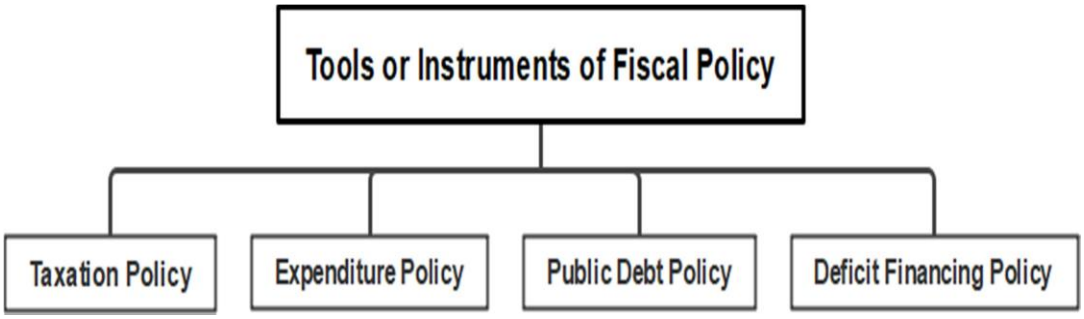
Q3: Differentiate between expansionary and contractionary fiscal policy.

Ans. .....

8.10Tools or Instruments of Fiscal Policy

Here, we will know the main tools/methods which government uses to achieve the various objectives of fiscal policy during different economic situations.

Fiscal Policy is operated and implemented through its main tools explained as under.



A. Taxation Policy

This tool relates to the revenue side of the fiscal policy. Tax is a compulsory payment made to the government. The aim of taxation policy is to

(i) mobilize the resources,

(ii) formation of capital,

(iii) achievement of economic equality and

(iv) price stability.

Taxes can be direct taxes like income tax or indirect taxes like sales tax, excise duty, GST etc. Taxes reduces the disposable income of the household sector (Disposable Income = Personal

Income-Taxes). Direct taxes reduce money incomes and indirect taxes reduces real income via rise in prices (Purchasing Power falls). Therefore, changes in tax rates affect the aggregate demand (AD) in the economy. The extent, to which this change affects AD, depends on tax multiplier.

Tax multiplier is the change in AD or Income caused by a change in taxation levels.

Tax Multiplier = $\Delta Y/\Delta T$ or change in income divided by change in tax.

Tax Multiplier = $\frac{-MPC}{(1-MPC)}$ or $\frac{-MPC}{MPS}$

MPC= marginal propensity to consume

MPS= marginal propensity to save

Tax multiplier shows negative relation between change in income or AD and change in tax. It means a rise in taxes reduces AD or income and a fall in taxes increases AD or income. Government will adopt tax rate policy as per the set objectives. Under expansionary fiscal policy, tax rates generally fall and under contractionary fiscal policy, tax rate rise.

B. Expenditure Policy

Government expenditure policy includes expenditures made by the government on development and non- development activities. The main heads of such expenditure are welfare activities like social security contributions by government, transfer payments like pensions, scholarships, expenditure on social and economic infrastructure like hospitals, roads, bridges, health care, education, defense, public enterprises etc.

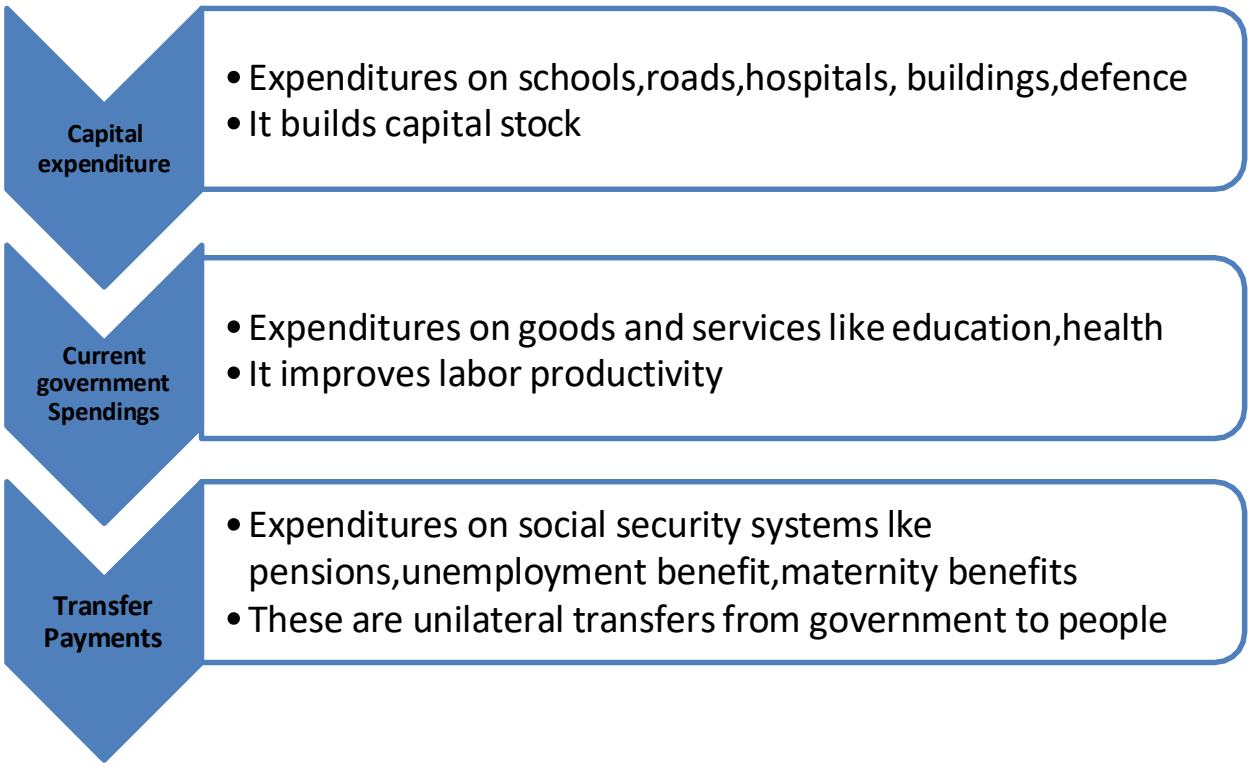
A rise in government expenditure leads to increase in AD and a fall in government expenditure leads to decrease in AD. For example: When government spends money, incomes of people rise, their purchasing power rises, AD in the economy rises. It has expansionary effect.

Government can spend in various ways:

a) Expenditure to buy goods and service which has direct effect on AD.
b) Expenditure on Transfer payments like pensions, medical facilities which have indirect effect on AD.

Government expenditure is classified into three main parts:

(i) Capital Expenditure
(ii) Current government spending and
(iii) Transfer payments.



The extent to which government expenditure affect AD or income, depends on the Government expenditure multiplier. Government expenditure multiplier measures the ratio of change in income to the change in government expenditure.

Government expenditure multiplier = $\Delta Y/\Delta G$ or change in income divided by change in government expenditure.

$$\text{Government expenditure multiplier} = \frac{1}{1-MPC}$$

Where MPC= Marginal Propensity to consume

It shows that there is positive relation between the value of MPC and Government expenditure multiplier. It means a rise in value of MPC will increase the values of Government expenditure multiplier and vice versa. Therefore, a rise in government expenditure will increase income or AD multiplier times and a fall in government expenditure will decrease income or AD multiplier times.

Government will adopt expenditure policy as per the set objectives. Under expansionary fiscal policy, government expenditure rises and under contractionary fiscal policy, government expenditure falls. Government expenditure is directed towards specific groups, practices or goods.

C. Public Debt Policy

Public debt refers to the borrowings taken by the government to meet its expenditures. It can be a) Internal debt- borrowings within the country from non-bank financial intermediaries, commercial banks, central bank and from people through bonds and securities. It involves transfer of funds from people to government. These borrowings may reduce the money/incomes available to/with people. b) External debt- borrowings from outside the country.

Public debt and AD/income generation in the economy are related. Public debt affects AD/income in many ways.

a) Expansion of AD and incomes: After public debt, if there are constant expenditures or same AD by private sector along with rise in government expenditures out of amount of public debt, then there will be expansion/rise in AD/incomes in the economy. This will have an expansionary effect in terms of income, output and employment.
b) Contraction of AD/incomes: After public debt, if there is fall in expenditure or fall in AD by private sector along with rise in government expenditures out of the amount of public debt, then there will be fall in AD/incomes in the economy. This will have a contractionary effect in terms of income, output and employment.

In general, these three tools of fiscal policy are highly significant. However, budget deficits form important part of fiscal policy. Therefore, we can analyze here deficit financing as a tool of fiscal policy.

D. Deficit Financing

Deficit financing is a technique to generate funds to fill the deficit of the budget. This is done by borrowings advanced by central bank by printing new money. Therefore, more deficit financing means more money supply with the government. This tool is used when government expenditures exceed its revenues. When this increased money supply is spent by the government for productive purposes which increase levels of output of goods and services, then it is beneficial for the health of the economy. Otherwise, it may be highly inflationary.

To sum up, government uses combination of various tools per the set objectives for desired results.

Check Your Progress- II

Q1. What is tax multiplier?

Ans. .....

.....

Q2. What is Government expenditure multiplier?

Ans. .....

.....

Q3. What is public debt?

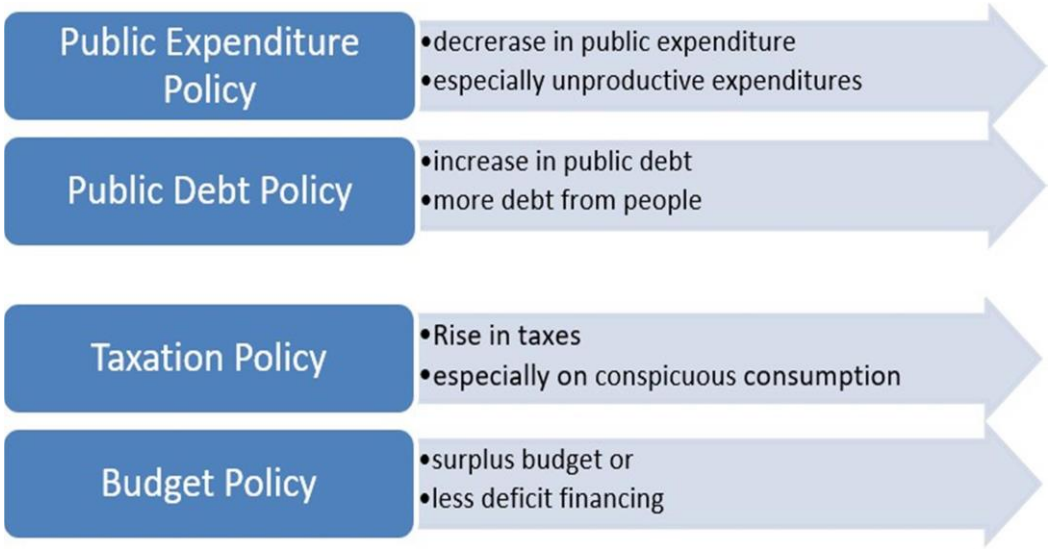
Ans. .....

.....

8.11Application of the Tools of Fiscal Policy to Achieve Objectives

Use of Fiscal Policy for Internal and External Stability:

1. **Use of Fiscal Policy During Inflation:** Inflation is the process of continuously rising prices. Price stability is essential to achieve this objective; following tools of fiscal policy can be applied.



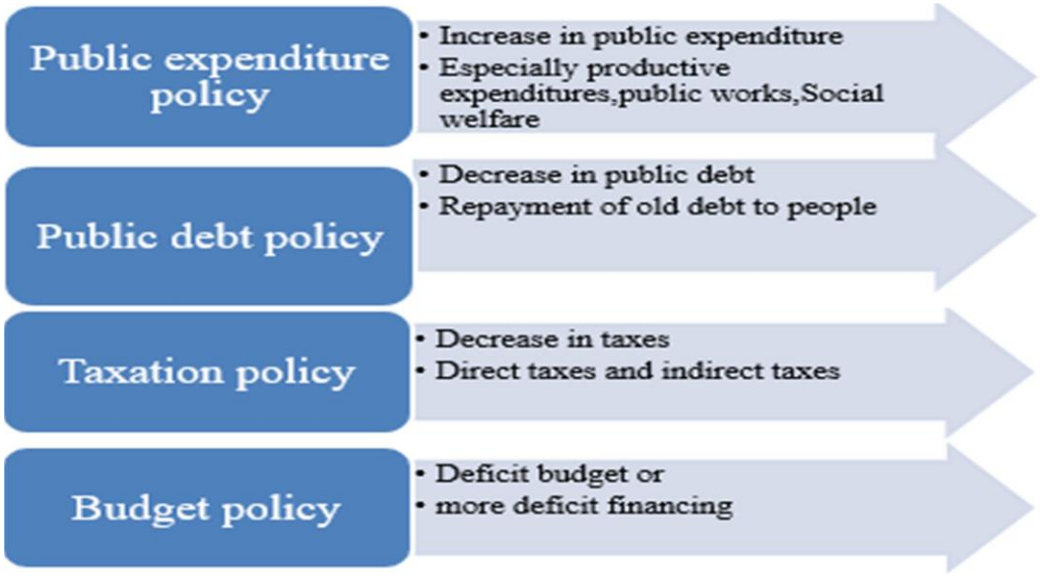
a. **Public expenditure policy**: Government should decrease public expenditure. Higher levels of government expenditures have expansionary money effects in the economy which leads to rise in prices. Therefore, a fall in public expenditure, especially unproductive expenditures will help to control the rising prices.

b. **Public debt policy:** During inflation, it is essential to reduce the purchasing power of the people or to reduce the available money with the people so as to contract the size of AD in the economy. Therefore, government should borrow more especially from people, so that savings of the people are transferred from people to the government. As a result, total spending by the people or AD will fall.

c. **Taxation Policy:** During inflation, a rise in rates old taxes and imposing new taxes will help to curtail purchasing power of the people. As a result, the spending by the people or AD will fall. This will help to check the rise in prices.

d. **Budget Policy/Deficit Financing:** Ideally speaking, a surplus budget policy is needed during inflation. Surplus budget means when revenues of the government exceed its expenditures. It will help to check inflation.

2. **Use of Fiscal Policy During Deflation/Recession:** Deflation is the process of falling prices. To achieve this objective, following tools of fiscal policy can be applied.



Let us analyze each policy one by one.

a. **Public Expenditure Policy**: Government should increase public expenditure during deflation/recession. Higher levels of government expenditures have expansionary money effects in the economy which will boost the levels of private investment. During times of depression, rise government expenditure acts as *pump priming*. Pump priming means 'when the increase in government expenditure acts as incentive to private investment'.

i. Government borrows from banks and idle cash with banks gets utilized and investments by government increase.

ii. Rise in government investments leads to increase in income by multiplier times which in turn boost the private investments.

Therefore, a rise in public expenditure especially on productive activities will help to control the falling prices and profits. Besides this, government can spend more on social welfare activities such as public health, medical services, social security, grants etc. This will raise the levels of AD and investments.

b. **Public Debt Policy:** During deflation, it is essential to increase the purchasing power of the people or to raise the available money with the people so as to expand the size of AD in the economy. Therefore, government should repay the old debts so that money is transferred from government to people. Government should not borrow from the people. As a result, total spending by the people or AD will increase.

c. **Taxation Policy:** During deflation, a reduction in rates of old taxes and fewer new taxes will help to increase the purchasing power of the people. As a result, the spending by the people or AD will rise. This will help to check the falling prices.

d. **Budget Policy/Deficit Financing:** Ideally speaking, a surplus budget policy is needed during inflation. Surplus budget means when revenues of the government exceed its expenditures. It will help to check inflation.

3. Exchange Rate Stability

Exchange stability means minimization of the fluctuations inn foreign exchange rates. For this, the balance of payments (BOP) situation needs to be monitored. An unfavorable BOP (when import payment exceeds export receipts) leads to more fluctuations in exchange rates. Fiscal policy aims to:

a. promote exports by provision of certain facilities like subsidies, tax concessions and alike
b. restrict imports by certain import duties and
c. encourages import substitution

Economic Growth and Development

For economic development, fiscal policy acts as powerful tool. With the use of fiscal policy,

1. Level of investment and rate of capital; formation; mobilization of these savings and increasing investment can be raised.
2. Different tools of fiscal policy like taxation, government expenditures, public debts can be used to achieve this objective.
3. Government itself can invest like private entrepreneurs and encourage private investment for the generation of more production, income and employment.
4. The role of fiscal policy for this purpose is to allocate the resources in an efficient and desirable manner. For example, Government can design fiscal policy to divert resources from non-essential/luxurious production to more useful and essential production.
5. At the same time, price stability is maintained.
6. Fiscal policy focuses on the equitable distribution of income simultaneously and diverts money/incomes from richer sections to poorer sections via its expenditure and tax policies.
7. Employment must be generated along with economic development. Fiscal policy is used for enhancing the skills of human resources (human capital formation). It operates to provide work opportunities. For example, government expenditures on construction work generate employment and tax concessions promotes industries/ small enterprises which provide employment to large number of people.

Remember: 'Public expenditure in any sector attracts more recourses and investment while taxes imposed in any sector leads to withdrawal of resources and investments from that sector'- Meier and Baldwin.

Check Your Progress- III

Q1. What do you mean by public debt?

Ans. .....

Q2. Define deficit financing?

Ans. .....

Q3. What is pump priming?

Ans. .....

8.12Summary

Monetary policy involves the influence on the level and composition of aggregate demand by the manipulation of interest rates and availability of credit. The challenge before monetary policy is that many of the objectives are conflicting. For example, acceleration of development process needs more money supply while control of inflation needs less money supply. A judicious mix of various tools and proper timings are essential for the desired results.

Fiscal Policy is the policy related to public revenues, Public Expenditures, Public Debts and also Deficit Financing by the government. It is a policy relating to government tax and non-tax revenues and government expenditures and government borrowings. In other words, fiscal Policy is the policy related to public revenues, public expenditures, public debts and also deficit financing by the government. Fiscal policy aims at price stability, exchange rate stability, economic development, equitable distribution, and employment generation. The tools of fiscal policy i.e., government expenditures, public revenues, public debt are used to achieve all the objectives. Generally, more than one tool is used simultaneously for the effective and desired results of fiscal policy.

Central bank can use various tools simultaneously for achieving various objectives or to control any instability like inflation and deflation/depression and can regulate the quantum and direction of money/credit supply in the economy.

In the end, for achieving various objectives, fiscal and monetary policies are used simultaneously. A judicious blend of these two macro-economic policies will help to get the desired results. The tools of both these policies must operate in tune with each other, i.e., in the same direction.

8.13Questions for Practice

A. Short Answer Type Questions

Q1. What do you mean by fiscal policy?

Q2.What are the objectives of fiscal policy?

Q3.Discuss the types of fiscal policy.

Q4.Explain the government expenditure policy under the tools of fiscal policy.

Q5.Explain the use of fiscal policy for the economic growth and development.

Q6.Define monetary policy

Q7.What are the objectives of monetary policy?

Q8.What are the types of monetary policy?

Q9.Explain the quantitative tools of monetary policy

B. Long Answer Type Questions

Q1. Define fiscal policy. Also explain its objectives and types.

Q2. Explain the various tools of fiscal policy

Q3. Explain the applications of the tools of fiscal policy

Q4. Discuss the objectives and types of monetary policy

Q5. Explain the quantitative and qualitative tools of monetary policy

Q6. Discuss the applications of the monetary policy for internal and external stability.

8.14Suggested Readings

- Blanchard,Oliver.(2016). Macro Economics 7ed.Pearson education Ltd.
- Mankiw,Gregory,N. and Taylor,Mark,P.(2016).Macro Economics, W.H. Freeman & Co.
- Jones,C.(2016).Macro economics, 5th ed. W.W.Norton
- Dornbusch,R., Fischer,S., & Startz, R.(2018)Macro economuics,12th ed. McGraw-Hill.