TEERTHANKER MAHAVEER UNIVERSITY
MORADABAD, INDIA

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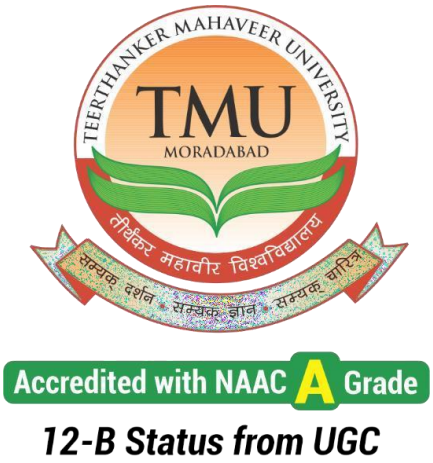


Programme: Bachelor of Commerce

Course: Macro Economics

Course Code: BCPGE202

Semester-II

Syllabus

Macro Economics

Objective/s and Expected Outcome: The Macroeconomics course is designed to provide students with a unified framework that can be used to analyze macroeconomic issues such as flow of income and expenditure, national income, consumption function, theory of investments, interest rates determinants, inflation, monetary and fiscal policies.

Unit-I **(12 Hrs.)**

Macroeconomics: Meaning, nature and scope. Basic concepts used: Stock and flow variables, partial and general equilibrium, static and dynamic analysis. **Circular flow of income and expenditure**. **National income**: Concepts, measurement , difficulties and importance

Unit-II **(12 Hrs.)**

Theory of Income and employment: Classical theory of output and employment, Say‟s law of markets. Keynsian theory of income determination. **Consumption Function**: Meaning, determinants and importance. Theory of consumption: Absolute income hypothesis, Relative income hypothesis, Permanent income hypothesis, life Cycle Hypothesis.

Unit-III **(12 Hrs.)**

Theory of Investment: Types of investment, determinants of investment, marginal efficiency of capital, net present value, internal rate of return, **Interest rate determination**: Classical, Neo-classical and Keynesian theories. **Theory of Multiplier**: Static and dynamic multiplier, tax multiplier, foreign trade multiplier, balanced budget multiplier, leakages from multiplier,Importance and limitations

Unit-IV **(12 Hrs.)**

Inflation: Meaning, types, and theories. **Stabilization policies**: Monetary and fiscal policies. **Money**: Its function and role: Quantity theory of money, Fisher and Cambridge equations. Keynes views about money and prices.

Suggested Readings/ Books:

- Erold Soga, *Macro Economics,* Pearson Education.
- Aggarwal, *Macroeconomics Theory and Policy,* Pearson Education.
- Samuelson, Nordhaus, Chaudhri, *Macroeconomics*, Tata McGraw Hill
- D. N Dwivedi, *Macro Economics*, McGraw Hill Education.
- Mishra and Puri, *Modern Macro-Economics Theory,* Himalaya Publishing House.
- Shapiro, *Macro-Economics Analysis,* McGraw Hill Education.
- Mark Hirschey, *Fundamentals of Managerial Economics*, Cengage Learning.

Table of Contents

10	Money	171

Chapter 1: Macro Economics

Objectives

After studying this chapter, you should be able to:

- Understand the nature and scope of macro economics;
- Obtain information about the basic concept and uses of macro economics;
- Acquire some information about stock and flow variables;
- Obtain information about partial and equilibrium analysis;
- Understand the concept of static and dynamic analysis.

Structure

1.1 INTRODUCTION

Alfred Marshall stated that "Economics is a study of mankind in the ordinary business of life", in his text book, *Principles of Economics*. This statement is as true as it was in 1890, when it was published. As a student you must study economics based on three reasons.

The first reason to study economics is that it will help you to understand the world in which you live. There are some questions about the economy that might flash your mind. Why purchasing of a land is very high in metropolitan cities? Why do some countries have high rate of inflation and some have low? Why jobs are easy to find in develop countries and hard in under develop countries? How is income related to employment, wages, prices and interest rates? These are just few of questions that this course in economics will help you to answer.

The second reason to study economics is that it will make you a more intelligent participant in the economy. As you move forward in your life you may make

many economic decisions. Once you obtain a job, you will decide how much salary to spend, how much to save etc. You may start small business thinking about the profits etc. the depth of it you will learn in this subject.

The third reason to study economics is that it will give you a better understanding of the opportunities and challenges of the economic policies.

The main purpose of studying economics is to gain knowledge about the business and market, in order to understand it clearly economics is divided into two broad categories, microeconomic and macroeconomics. Micro economics deals with individual actors in the economy such as firms, companies and individuals. Macro economics is the study of overall view of the economy, such as gross national income, inflation, unemployment, exports, imports, taxation policies etc.

With growing macroeconomic complexities and challenges, macroeconomics has emerged as the most fascinating branch of economic science. On the practical side both developed and developing countries are constantly confronting with the problems of macroeconomic such as, recession, unemployment, inflation,balance-of-payment deficits, outflow of capital and so on. To find the reasonable solutions to the above problems you should study the socio-political implications for the country in general and the government in particular.

1.2 Meaning of Macroeconomics

Macro economics can be defined as the economic analysis which studies the aggregated economy and the study of the behavior and performance of the economy as a whole. Actually it studies the relation between the factors which determine the level of output, employment, price level and balance of payments positions of an economy. However, some economist defines macro economics according to their own perceptions, which provides the broad view of macroeconomic. As a student of economics you should know few definitions of macro economics.

Kenneth E Boulding: “Macroeconomics is the study of the nature, relationships and behavior of aggregates of economic quantities. Macro economics deals not with individual quantities as such, but aggregate of these quantities… not with individual incomes, but the national income, not with individual prices, but with price levels, not with individual output, but with national output”.

J. M. Culburtson: “Macroeconomic theory is the theory of income, employment, prices and money”.

P. A. Samuelson: “Macroeconomics is the study of the behavior of the economy as a whole. It examines the overall level of the nation’s output, employment, prices and foreign trade”.

M. H. Spencer: “Macroeconomics is concerned with the economy as a whole or large segment of it. In macroeconomics, attention is focused on such problems as

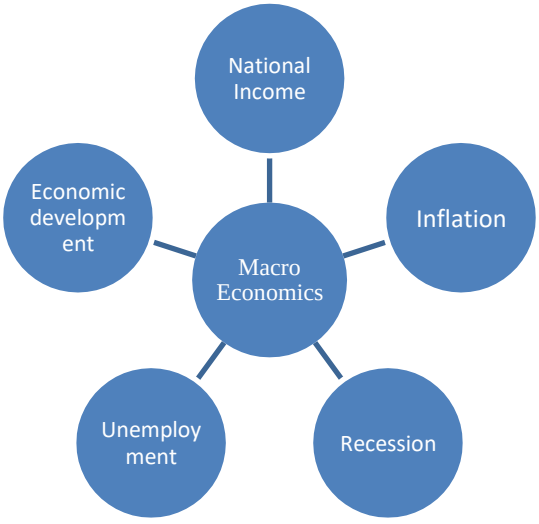
a level of unemployment, the rate of inflation, the nation's total output and other matters of economy-wide significance".

Although these definitions are fairly comprehensive, they do not reveal the exact subject matter of macroeconomics. To comprehend better the subject matter of macroeconomic you can look at the kinds of questions that macroeconomics seeks to answer.

- What determines the level of economic activity, total output, general price level and employment?
- How is the national income equilibrium determined?
- What are the reasons of fluctuations in the national output and employment?
- What determines the general level of prices in a country?

These are some questions which macroeconomic seeks answer.

Macroeconomics as a theoretical science uses macroeconomic models to explain behavior of macroeconomic variables (national output, employment, money supply and demand, general price level and balance of payments etc.) and specifies the nature of relationship between them in a logical manner. The macroeconomic theories provide framework and analytical tools to analyze the macroeconomic phenomena. Macroeconomics theories also provide a great understanding and insights into the working of economy and identify the factors and forces that cause adverse and desirable effects on the economy. Thus, now you have understood that macroeconomics deals with the overall analysis of the economic conditions and it also make you understand the reasons that effects national income, inflation, recession, unemployment and economic development.



Check your progress:

1. The study of macroeconomic includes:

a._____

b._____

c._____

d._____

1.3 Nature of Macroeconomics

Nature of macroeconomics is that it is the study of aggregate economy which can be understood if you study the following

1. **Determinants of national income and employment:** Study of macroeconomics gives the aggregate information regarding the national income. You can also study the problems of unemployment due to lack of aggregate demand.
2. **Determinants of General Price level:** Macroeconomic study in details about the causes of inflation and deflation in the country.
3. **Determinants of Economic Growth and Development**: Macroeconomic study the factors which contribute the economic growth and development and helps in formulating policies.
4. **Distribution of factors of productions**: Macroeconomic also study the factors of production and its share in the total production and the national economy (Study of export material)

Thus, nature of macroeconomic deals with the factors responsible for rise and fall in national income, general price level, economic growth and development and factors of production i.e., aggregate demand and aggregate supply of any product.

Check your progress:

Choose the correct answer:

2. Macroeconomic nature includes the in -depth study of the

(i). Determinant of National Income

(ii). Company performance

(iii). Financial statements of the manufacturing firms

3. The inflation and deflation of the price can be analyzed through

(i). Factors of production

(ii). Determinants of general price level

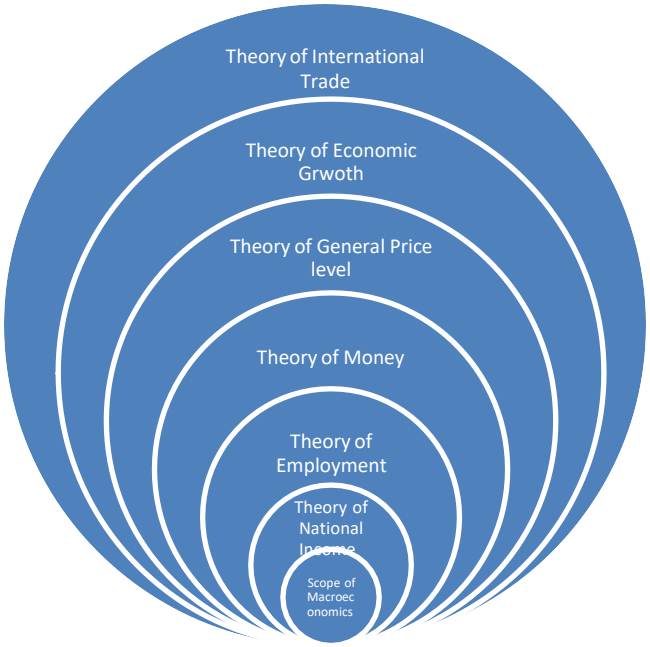
(iii). Determinants of national income

1.4 Scope of Macroeconomics

In the scope of macro economics you will study different theories of economics which are as follows:

1. **Theory of National Income:** In this theory you will study the concepts of national income, its different elements, methods of measurement and social accounting.
2. **Theory of Employment**: In this you will analyze problems relating to employment and unemployment. It studies different factors determining the level of employment, like, effective demand, aggregate supply, aggregate consumption, aggregate investment aggregate saving multipliers etc.
3. **Theory of Money:** Changes in demand and supply of money have considerable effect on the level of employment. Therefore you may learn about the functions of money and theories relating to it. Bank and other financial institutes are also part of its study.
4. **Theory of General Price level:** This theory develops the insight about the regulations and changes in general price-level. Problems concerning inflation or general rise in prices and deflation or general fall in prices are also studied under it.
5. **Theory of Economic Growth:** Here you will study of problems relating to economic growth or increase in per capita real income forms part of macroeconomics. It studies the economic growth of under developed economies. Monetary and fiscal policies of the government are also studied therein.
6. **Theory of International Trade:** Macroeconomics also studies trade among different countries. You must have information about theory of international trade, import and export trade, tariff, protection etc, which have due importance in the economics.

Thus, the study of macroeconomics enriches your knowledge through the theories of national income, employment, money, general price level, economic growth and international trade.



Check your progress:

Fill in the blanks:

4. Changes in_____ and_____of money have considerable effect on the level of employment

5. Theory of_____studies trade among different countries and give information about theory of international trade, tariff, protection etc.

6. Theory of economic growth and development help the government in framing_____and_____policies.

1.5 Uses of Macroeconomics

You can use macroeconomic in different walks of life. According to Lord Keynes from the book "The General Theory of Employment Interest and Money" in 1936, macroeconomic has increased manifold. The main uses are:

1. **Helpful in understanding the functioning of an economy:** In modern economies several economic factors are interrelated and interdependent. To have an understanding of its functioning you must have knowledge of macro economics.
2. **Study of National Income:** The study of national income helps you to know about the economic conditions of different countries. While formulating policies, concerning economic plans, welfare of the people a country must have complete knowledge of its national income.
3. **Formulation of Economic Policy:** Study of macroeconomic is very much useful in formulating economic policies. Modern governments gather information about the aggregate data pertaining to national income, employment, investment, general price level etc in formulating policies.
4. **Study of Trade Cycles:** Trade cycles are the problems of the economic fluctuations. In capitalist economy rapid economic changes takes place, which has the adverse affect on the economy. These economic fluctuations depend on aggregate factors like saving, output, demand supply etc. So, study of macroeconomic becomes essential to know the causes for trade cycles.
5. **Changes in the General Price level:** Fall in the values of money or rise in price level is called inflation and fall in price level is called deflation. In order to control the changes in value of money, the economists depend on the study of macroeconomics.

6. **Economic Growth:** The study of macroeconomics had made it possible to know the factors for economic growth and policies to be pursued to achieve it.
7. **Helpful in the Study of Microeconomics:** The study of macroeconomic has a great role in constructing theories and principles of microeconomics such as law of diminishing marginal utility (When the consumption of the quantity of a commodity is increased , its marginal utility begins to diminish)
8. **Estimation of material welfare:** Increase of physical welfare of the people is the main goal of economic development. To estimate the welfare gathering information from the aggregate source is necessary such as total income, employment, aggregate consumption which helps in assessing material welfare.
9. **International comparisons:** Study of macroeconomics is helpful in making international comparisons, which compares rate of per capita income, investment rates, consumption and saving level of different countries and determination of exchange rate of different currencies etc.
10. **Economic Planning**: Knowledge regarding different sectors, composition of national income, level of unemployment, nature of poverty etc. is essential for formulating a comprehensive economic plan. This information again can be gathered from study of macroeconomics.

Check your progress:

7. Explain in detail how macroeconomic is useful in framing the government policies?

Ans: _____

_____

_____

_____

_____

1.6 Stock and Flow Variables

You can understand macroeconomics through the different approaches; certain economic aggregates are called macroeconomic variables. Macroeconomic variables are generally grouped under stock and flow variables.

The stock variables refer as the quantity of a variable at a point in time, for instance, on 31st march 2014 or December 31st, 2014.In other words the variables that are measured with reference to a point in time are stock variables. For example, the stock of capital in a country, the number of person employed, and the total money supply etc. The flow variables are expressed per unit of time, per hour, per week, per month or per year.

For you to understand both the concept clearly we distinguish between stock and flow variables. The quantity of water in a lake is a stock variable but the quantity of water flowing in or out per unit of time (day, week) is a flow variable.

Stock Variables	Flow Variables
Total Stock of capital	Gross National Product
Supply of money	Consumption expenditure
Inventories	Savings and Investments
Accumulated savings	Export and Import
Labor force	Government tax revenue
Total employment	Government expenditure

1.7 Partial and General Equilibrium Analysis

Equilibrium refers to a position in which forces working in opposite directions are in balance and there is no in built tendency to deviate from this position. Machlup defines equilibrium as “a constellation of interrelated variables so adjusted to one another that no inherent tendency to change prevails in the model which they constitute”. At macro level, economy is said to be in equilibrium when aggregated demand is equal to aggregated supply and investment equals to savings.

Partial equilibrium analysis is the analysis of a part of an economy, isolated and insulated through assumptions from the influence of the changes in the rest of the economy. When a part of economic system is analyzed in isolation of the economic system it is called as partial equilibrium analysis. Partial equilibrium analysis is based on ceteris paribus (Latin phrase meaning "with other things the same" or "all or other things being equal or held constant" or "all other things being equal" or "all else being equal") , that is, it assumes all other factors or variables, specially the related ones, to remain constant. The entire analysis of determination of equilibrium price and output and input prices is based on partial equilibrium analysis.

General equilibrium analysis is carried out where the aim is to analyze the complete economic system. General equilibrium analysis takes into account the interrelationships and interdependence between the various elements of an economy. It allows all the interrelated factors to vary in response to change in one

another and seeks to analyze the simultaneous equilibrium of all the prices and output of all the related goods.

General equilibrium analysis is immense importance in identifying and explaining the causes and effects of economic disturbances, and in the formulation of growth, employment and income determination theories. Macroeconomics uses largely the general equilibrium analysis.

Check your progress:

8. Differentiate between partial and general equilibrium

Ans:

a._____ _____

b._____ _____

c._____ _____

d._____ _____

1.8 Static and Dynamic analysis

Static and dynamic analyses are the two approaches used in economics. Macro economics uses both the analysis for the study of whole economy.

When an economic phenomenon is studies under static conditions, it is called static analysis. For this you must have static model. A static model assumes that there is no change in the size of the economy, national output, prices and employment. In a static economy, the basic forces of change, like stock of capital, technology, population, nature of business organization and taste of preferences of the people remains unchanged over the reference period. The entire economic process in a static economy reproduces itself year after year at the same level of output and employment. Such an economy is said to be in a state of static equilibrium. Static analysis is useful in hypothetical and theoretical purpose only.

When a macroeconomic phenomenon is analyzed under changing or dynamic conditions is called as dynamic analysis. A dynamic economy raises certain issues which cannot be handled through static and even comparative static approach. These issues are

(i) Does a dynamic equilibrium, when displaced from one equilibrium point, ever reach another equilibrium position?

(ii) What path is a dynamic economy likely to move from one equilibrium point to another?

A static analysis by its nature has no power to predict the path a dynamic economy follows while moving from one equilibrium point to another point, nor it can be used to predict whether the economy will ever attain another equilibrium position. Dynamic analysis does this job.

Thus, economic analysis studies the factors and forces that set an economy in motion and lead or do not lead it to a new equilibrium. It studies the actions and interactions between forces of change.

Static Analysis	Dynamic Analysis
Economic statics is an abstraction from reality	Economic dynamic is a study of the real world
All variable are undated	All variable are dated (Movement in time scale)
Timeless analysis	Timely analysis(time is used as one of the variables, because it works as a determinant of the other variables
Fundamental economic conditions are assumed to be known	Fundamental economic conditions are continued to change over time.

1.9 Summary

Macroeconomics is the study of overall view of the economy, such as gross national income, inflation, employment rate, exports and imports. With growing macroeconomic complexities and challenges, both developed and developing countries are constantly confronting with the problems of macroeconomic such as, recession, unemployment, inflation, balance-of-payment deficits, outflow of capital and so on. Here in this chapter you might have learned about the uses of macroeconomic and how it is helpful in framing the government policies. In order to have the in depth knowledge about macroeconomic study of different variable such as stock and flow variable, static and dynamic are necessary.

1.10 Glossary

Macro economics: Macroeconomics is concerned with the economy as a whole or large segment of it. In macroeconomics, attention is focused on such problems as a level of unemployment, the rate of inflation, the nation's total output and other matters of economy-wide significance

Stock variable: The stock variables refer as the quantity of a variable at a point in time.

Flow variable: The flow variables are expressed per unit of time, per hour, per week, per month or per year.

Partial equilibrium: When a part of economic system is analyzed in isolation of the economic system it is called as partial equilibrium analysis

General equilibrium: The analysis of complete economic system is called general equilibrium analysis

Static analysis: When an economic phenomenon is studies under static conditions, it is called static analysis.

Dynamic analysis: Analysis of economics under changing or dynamic conditions is called as dynamic analysis.

Inflation: Fall in the values of money or rise in price level is called inflation

Deflation: fall in price level of the commodity is called deflation

1.11 Self Assessment Questions

1. Define macroeconomic?
2. Write in details about the nature of macroeconomics?
3. Explain in brief about the scope of macroeconomics?
4. What is stock and flow variable explain briefly? Differentiate between stocks and flow variable?
5. Differentiate partial and general equilibrium analysis and write its uses?
6. Explain in detail about the uses of macroeconomic?

1.12 Further Reading

M.L.Seth., "Macro Economics", Lakhmi Narain Agarwal Educational Publisher: Agra, Ch.1

T.R.Jain & O.P.Khanna, "Macroeconomics Management", V.K Enterprise : Delhi, Ch.1

M.C.Vaish, "Essential of Macroeconomics Management", Vikas Publishing House Pvt.Ltd. New Delhi, Ch.1

1.13 Model Answers

Model answers to check your progress questions

Following are the answer to the Check your progress questions given in the chapter

1. **a. National income**
   b. Unemployment
   c. Inflation
   d. Recession
   e. Economic development

Macroeconomics deals with the overall analysis of the economic conditions and it also studies the factors which effects national income, inflation, recession, unemployment and economic development.

2. **(i) Determinants of National income**

Study of macroeconomics gives the aggregate information of economic condition one factors of aggregate information is determinants the national income.

3. **(ii) Determinants of General Price level**

Macroeconomics studies provide detail information about the causes of inflation and deflation in the country, through the determinants of general price level.

4. **Demand and Supply**

   Theory of Money states that changes in demand and supply of money have considerable effect on the level of employment.

5. **Theory of International Trade**

   Theory of international trade studies trade among different countries and give information about import and export trade, tariff, protection etc, which have due importance in the economics.

6. **Monetary and Fiscal Policies**

   Theory of Economic Growth studies problems relating to economic growth or increase in per capita real income forms part of macroeconomics. It studies the economic growth of under developed economies. This theory help the government in framing the monetary and fiscal policies of the country.

7. Study of Macroeconomics is highly useful the government in framing the economic policies of the country. The government is mainly concerned with the aggregate information of the economic system such as, income

level, general price level, employment ratio, trade cycle, economic growth, material welfare and production.

8. Difference between partial and general equilibrium

Partial Equilibrium	General Equilibrium
Analysis of the part of an economy	Analysis of complete economy
Analysis is done in isolation	Analysis is done based on interrelated factors
If one variable is analyzed rest of the variable remains constant	All the variable are interrelated and interdependent and variable changes with time

National Income

Structure

1. Introduction

In the previous chapter we discussed about the nature, scope and some basic concepts of Macro Economics. In this chapter we will be discussing National Income. National Income is one of the important topics in Macro Economics. It represents a comprehensive measure of the level of aggregate economic activity in the economy. It is, therefore, regarded as an important yardstick of the overall performance of the economy. In this chapter we will discuss circular flow of income and expenditure, various concepts and measures associated with national income, measurement of national income and importance and limitations of these measurements.

2. Objectives: After studying this chapter, you should be able to:

- describe Circular Flow of Income and Expenditure;
- identify various concepts and measures of national income ;
- describe different approaches to measuring national income;
- calculate different components of national income;
- understand the importance of measuring national income
- understand the drawbacks in measuring national income

3. Income and Expenditure

Individuals either work or own business that fetches them some earning. This earnings is called is called as Income. This income is spent for procurement of food, clothing, shelter, education etc. This spending is called as Expenditure. Thus there are various sources of incomes and expenditures like wages, salaries, rent, interest etc. The income for one individual is expenditure for another.

For example, the salary paid by an employer is expenditure for him and the salary earned by the employee is his income. Hence, in an economy there are numerous transactions which include income and expenditure. A model representing various transactions, classified in few broad categories, is called as “The circular flow of Income and Expenditure”.

4. Circular Flow of Income and Expenditure

In the transactions, in an economy, we see two types of flow - real flow and money flow. The real flow is flow of goods and services between households and business firms. The money flow is the payment of cash made by firms to the households for their services, and the payments of cash by households to the firms when they purchase goods and services from firms. Thus, there is a continuous flow of money and income between firms and households.

Two Sector Economy.

To understand this concept, let us assume a simple economy in which there are only two sectors – the business sector and the household sector. The business sector engages the factors of production and produces goods and services where as the household sector, which is assumed to own the factors of production, supplies the factors and consumes the goods and services produced by the business sector. Figure 2.1 shows the transactions of flow of goods and services and money in the economy.

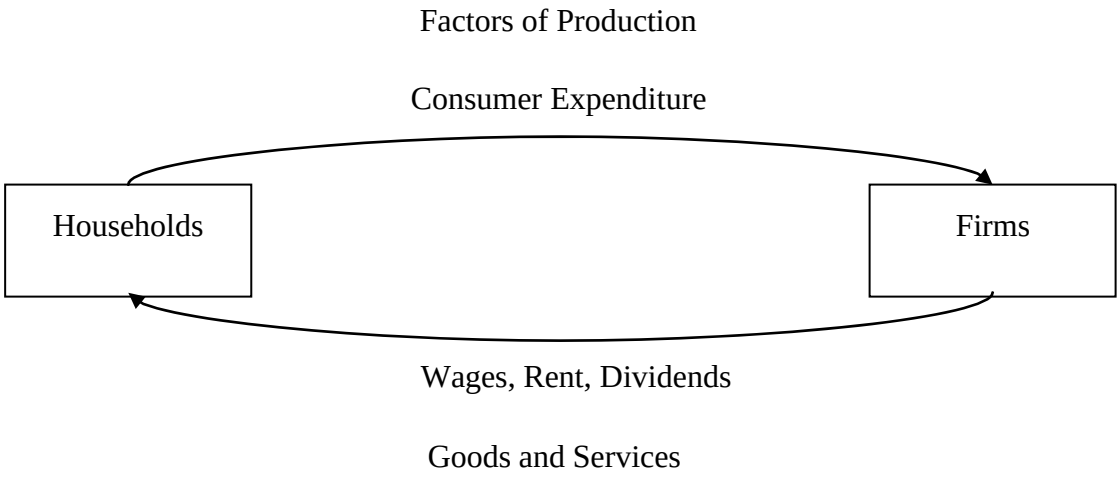


Figure 2.1 Circular Flow of Income

The transactions can be simply expressed mathematically as:

$Y = C$, where Y is Income and C is consumption

However, in reality, households do not spend all their income. They save a part of their income. This saved part of income is called savings.

So, $Y = C + S$, where Y is Income, C is consumption and S is savings

An increase in savings decreases the circular flow of money. This is called as *leakage* from the circular flow of income. However, household save their money in banks. The banks forward these savings to the firms in the form of loans which can be termed as investment. Investments increase the circular flow of money. This is called as *injection* to the circular flow of income.

So we can say in a simple economy Investment is identically equal to savings

i.e. $I = S$ where I is Investment and S is savings

Three Sector Economy

Given, any economy will have a Government. One of the primary sources of revenue for Government are taxes. Taxes are levied on both households and firms. Personal tax is

levied on households and corporate tax is levied on Firms. So when we pay taxes there is a leakage but government inject back the income by spending on defence, public welfare etc.

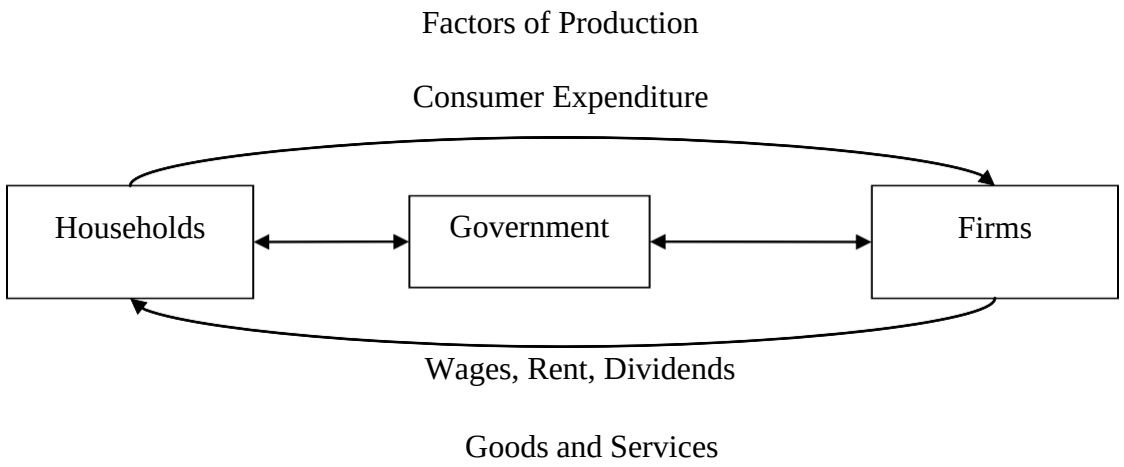


Figure 2.2 Circular Flow of Income in a three sector economy

Four Sector Economy

In modern world, no economy works in isolation. Hence the model is adjusted to comprise international business and transactions. When a country carries on international trade, it either imports or exports i.e. either some goods are purchased from abroad (import) or some goods are sold abroad (exports). Imports lead to outflows of income from the country and exports cause inflows of income, into the country. Therefore, imports will cause a leakage in the circular flow whereas exports will inject.

Check your Progress

1. In circular flow of income and expenditure, Leakages are_____, _____and_____.
   a. investment, savings, government expenditure
   b. savings, taxes, imports
   c. consumption, investment, government expenditure
   d. consumption, taxes, imports

2. In circular flow of income and expenditure, Injections are_____,
_____and_____.
   a. consumption, investment, exports
   b. investment, exports, transfer payments
   c. investment, government expenditure, exports
   d. taxes, exports, transfer payments
3. In ideal circular flow of income, leakages_____injections
   a. <
   b. =
   c. >
   d. Has no relation with

Activity

1. Collect and discuss the major sources of income and expenditure of the Central Government. Try doing the same for your respective State Government.

5. National Income: Concepts

National Income is defined as the total of all the goods and services produced in a country, in a certain period of time. Generally the time period is of one year duration. National income is also known as National Income at factor cost.

Definitions

"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 and net income due on account of foreign investments must be added in. This is the true net National income or Revenue of the country or the national dividend." - Alfred Marshall

"The national dividend or income consists solely of services as received by the ultimate consumers, whether from their material or from human environments. Thus, a piano or an overcoat made for me this year is not a part of this year"s income, but an addition to capital. Only the services rendered to me during this year by these things are income." - Irving Fisher

“National Income is the sum of factor income earned by the normal residents of a country in the form of wages, rent, interest and profit in an accounting year.” - Central Statistical Organization

The above definitions explain the way in which national income can be viewed as an aggregate or a sum of various component flows. Normally, these component flows signify several transactions in the economy. These transactions can be clustered, depending on requirement. Hence, each groups of the various component flows gives escalation to a specific aggregate in which certain flows are included while some others are excluded in view of the specific purpose for which the cumulative may be required. Consequently, there are several measures of collective incomes varying in their scope and coverage.

Let us study the most complete and broad-based measure of total income widely known as Gross National Product at Market Prices or GNP at Market Prices. It shows the market value of the aggregate final product before the conclusion of provisions for the consumption of fixed capital, attributable to the factors of production supplied by the common people of the given state. Two words used in the description of this aggregate are "Gross" and "National". Similarly, the idiom "At Market Prices" is also important since it states the criterion of estimate.

Gross and Net Concepts

Generally the fixed capital or assets meant for production fails a part of its value from erosion over a given period of time. It is normal, therefore, to make special grant for the using up of capital. Such grant, generally referred to as depreciation, and indicates the extent to which capital goods have been consumed in the process of production. Statisticians use the term "Gross" to highlight that no grant for principal consumption has been made or that depreciation has yet to be deducted. Conversely they use the term "Net" to indicate that provision for capital consumption has already been made or that depreciation has already been deducted. Thus the variance between the gross aggregate and the corresponding net aggregate is depreciation, i.e.,

Gross National Product=Net National Product + Depreciation.

Market Prices and Factor Costs

In an economy in which there are indirect taxes and subsidies, the market value of all final products will exceed the total income accumulating to the factors of production by an amount equal to the excess of indirect taxes over subsidies. The estimate of national product

at market prices indicates the total amount actually paid by the final consumers while the valuation of national product at factor cost is a measure of the total amount earned by the factors of production for their contribution to the final output. The relationship between the two types of assessments can be demonstrated with the help of the following identity:

GNP at Market Prices = GNP at Factor Cost + Indirect Taxes less Subsidies

National and Domestic Concepts

In the definition of gross national product at market prices, the term "national" denotes that the aggregate under consideration represents the total income which accrues to the inhabitants or normal residents of a country due to their participation in world production during the current year. Thus the term "national" is used to emphasise that the aggregate under consideration covers all types of factor incomes accruing to common residents of the country irrespective of whether the factors of production delivered by them are located at home or away.

As contrary to this, it is also possible to measure the value of the total output or income originating within the detailed geographical boundaries of a country known as "domestic territory". The subsequent measure is called "domestic product". It represents the total income attributable to factor services rendered to local producers of the country irrespective of whether they are supplied by common residents of the country or others. In other words, the distinction between the "national" and the "domestic" aggregates lies in the frame of reference that defines their scope, the former takes for its frame of reference the normal residents of a country rather than the geographical boundaries, whereas the latter takes a given geographical area rather than the national origin of the factors of production supplied.

From the viewpoint of measurement, national product varies from the corresponding domestic product by the amount of net factor income from abroad. The term "net" indicates that the flow of factor income from abroad is measured as the inflow of factor incomes from abroad minus the corresponding outflow. Therefore the relationship between national product and domestic product can be expressed in terms of the following identity:

National Product = Domestic Product + Net Factor Income from Abroad

where Net Factor Income from Abroad = Factor Income Received from Abroad - Factor Income Paid Abroad.

Check your Progress

4. Define national income.

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5. Explain the relationship between GNP at market prices and GNP at factor costs.---
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6. Define the relationship between national product and net product.----------
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Measures of National Income

There are numerous measures of National Income. The main conceptions of NI are: GDP, GNP, NNP, NI, PI, DI, and PCI. These different concepts explain about the phenomenon of economic activities of the many sectors of the economy.

Gross Domestic Product (GDP)

The most important notion of national income is Gross Domestic Product. Gross domestic product is the money value of all final goods and services produced within the domestic territory of a nation during a year.

Algebraic expression under product method is,

$$GDP = (P \times Q)$$

where, GDP = Gross Domestic Product

P = Price of goods and service

Q = Quantity of goods and service

denotes the summation of all values.

According to expenditure approach, GDP is the sum of consumption, net foreign exports, investment, government expenditure, of a country during a year.

Algebraic expression below expenditure approach is,

$$GDP = C + I + G + (X-M)$$

Where,

C = Consumption

I = Investment

G = Government expenditure

(X-M) = Export minus import

GDP includes customer goods and services, gross private domestic investment in capital goods, government expenditure and exports and imports.

Gross National Product (GNP)

Gross National Product is the total market value of all final goods and services produced every year in a country plus net factor income from overseas. Thus, GNP is the entire measure of the flow of goods and services at market value resulting from current production during a year in a country including net factor income from overseas. The GNP can be expressed as the following equation:

$$GNP = GDP + NFIA \text{ (Net Factor Income from Abroad)}$$

$$\text{or, } GNP = C + I + G + (X-M) + NFIA$$

GNP includes consumer goods and services, gross private domestic investment in capital goods, Government expenditure, Net exports (exports-imports), Net factor income from overseas.

Net National Product (NNP)

Net National Product is the market value of all final goods and services after allowing for depreciation. It is also called National Income at market price. When charges for depreciation are subtracted from the gross national product, we get it. Thus,

$$NNP = GNP - Depreciation$$

$$\text{or, } NNP = C + I + G + (X-M) + NFIA - Depreciation$$

National Income (NI)

National Income is also known as National Income at factor cost. National income at factor cost means the sum total of all incomes earned by suppliers for their contribution of land, labour, capital and organizational capability which goes into the ages of net production. Hence, the sum total of the income received by factors of production in the form of rent, wages, interest and profit is called National Income. Symbolically,

NI = NNP + Subsidies - Interest Taxes

or, GNP – Depreciation + Subsidies - Indirect Taxes

or, NI = C + G + I + (X-M) + NFIA – Depreciation - Indirect Taxes + Subsidies

Personal Income (PI)

Personal Income is the total money income received by individuals and households of a country from all possible sources before direct taxes. Therefore, personal income can be expressed as follows:

PI = NI - Corporate Income Taxes - Undistributed Corporate Profits - Social Security Contribution + Transfer Payments

Disposable Income (DI)

The income left after the payment of direct taxes from personal income is called Disposable Income. Disposable income means actual income which can be spent on consumption by individuals and families. Thus, it can be expressed as:

DI = PI - Direct Taxes

From consumption approach,

DI = Consumption Expenditure + Savings

Per Capita Income (PCI)

Per Capita Income of a country is derived by dividing the national income of the country by the total population of a country. Thus,

PCI = Total National Income/Total National Population

Check Your Progress:

7. Suppose an economy's expenditures are equal to Rs 15,000 billion. Income in

the economy is:

a. Rs 15,000 billion.
b. < Rs 15,000 billion.
c. > Rs 15,000 billion.
d. > Rs 15,000 billion and < Rs 20,000 billion.

8. Which one of the following is an example of a final good or service?

a. Wheat purchased by Baker to make bread.
b. Steel purchased for the manufacture of car.
c. A Motor Bike purchased as a gift.
d. Iron used in the production of equipmet.

9. Spending on capital equipment and inventories is referred to as:
a. Consumption expenditure.
b. Investment expenditure.
c. Government expenditure.
d. Expenditure on net exports.

10. The sale of illegal items:
a. are included in GDP under investment.
b. are included in GDP under services.
c. are included in GDP as a component of home production (non-market activity).
d. are not included in GDP.

Excercise:

1. If a used car dealer buys a car for Rs 3,00,000 and resells it for Rs 3,50,000, how much has been added to GDP?

a. Nothing.
b. Rs 3,00,000.
c. Rs 3,50,000
d. Rs 50,000.

2. Suppose the GDP at market price of a country in a particular year was Rs 3,000 crores. Net Factor Income from Abroad was Rs 500 crores. The value of Indirect taxes – Subsidies was Rs 350 crores and National Income was Rs 1850 crores. Calculate the aggregate value of depreciation.

3. Net National Product at Factor Cost of a particular country in a year is Rs 2,700 crores. There are no interest payments made by the households to the firms/government,

or by the firms/government to the households. The Personal Disposable Income of the households is Rs 1,800 crores. The personal income taxes paid by them is Rs 850 crores and the value of retained earnings of the firms and government is valued at Rs 400 crores. What is the value of transfer payments made by the government and firms to the households?

4. From the table below calculate GDP.

	In crores of rupees
Consumption	49,000
Investment	13,000
Transfer payments	10,500
Government expenditures	12,000
Exports	10,500
Imports	9500
Net foreign factor income	200

a. 62,000.
b. 74,000.
c. 75,000.
d. 84,500.

5. Calculate net exports using the table below.

	In crores of rupees
Consumption	36,000
Investment	8,000
Transfer payments	7,500
Government expenditures	1,0000
Exports	6,500
Imports	4,500
Net foreign factor income	-300

a. 1700
b. 2000
c. 4500
d. 6500

6. Suppose the Gross Domestic Product in a country is Rs 6000 crores and the population of that country is 120 crores. What is the per-capita GDP of that country?

a. Rs 600 crores.
b. Rs 60 crores.
c. Rs 6 crores.
d. Rs 50 crores.

Activity:

2. Collect the National Income Estimates of two developed countries, two developing countries and two under developed countries. Compare various estimates and discuss regarding the growth, standard of living and government policies of the respective countries.

6. Measurement of National Income

Within the wide framework of the given basic model, it is evident that the measurement of national income involves the measurement of the size of the circular flow. Mainly there are three ways of looking at the circular flow of income. It arises out of the process of activity-chain in which production creates revenue, revenue generates expenditure and expenditure in turn induces production.

Accordingly, there are three different ways in which we can measure the size of the circular flow. We can measure it either at the production stage by measuring the value of output; or at the income increase stage by measuring the amount of factor income earned; or at the expenditure stage by measuring the size of total expenditure incurred in the economy. These alternative ways of looking at the flow of income are known respectively as the Product Approach, the Income Approach and the Expenditure Approach to the measurement of national income.

Product Approach

The final output in a modern economy consists of a large number of goods such as apples, bread, shirts, pens, chairs, etc., and services such as medical, legal, educational, domestic, etc. Let us denote the amounts of each of these different types of final outputs in a given year as Q1, Q2, Q3……Qn and their respective market prices as P1, P2, P3……Pn where $\sum Q$ stands for the total number of final goods and services produced in the economy. Then according to the product approach, the size of national income (NI) will be equal to the sum total of the annual flow of final goods and services valued at their respective market prices, and can be represented as

$$NI = P1Q1 + P2Q2 + P3Q3 + \ldots ..... PnQn.$$

Income Approach

Following this income approach, national income can be measured by aggregating the annual flows of factor earnings produced by the production of the final output. The annual flow of factor earnings in form of wages, rents, interest and profits accrued from land, labour, capital and organisation are taken into account. Thus, National Income under income approach can be expressed as

$$PiQi = Wi + Ri + Ii + Pi$$

Where W, R, I and P stands for wages, rents, interest and profits respectively.

Expenditure Approach

Viewed from the expenditure angle, national income can be measured by aggregating the flow of total expenditures on the final goods and services in the economy. The flow of the total expenditure can be measured by aggregating the flows of expenditure on final goods and services incurred by each of the three main sectors involved, viz., the household sector, the business sector and the government sector. Thus from the viewpoint of the expenditure approach, national income can be measured by using the following equality:

$$NI = En + Eb + Eg$$

where En, Eb and Eg denote the annual flow of expenditure on final goods and services incurred by the household sector, the business sector and the government sector, respectively.

Check your Progress

11. How is national income represented in expenditure approach?----------
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    ---
12. PiQi = Wi + Ri + Ii + Pi is an expression of nation income under ----------
    ---
13. What does Pn and Qn represent in income approach of measuring national income?---
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7. Importance of Measuring National Income

There are numerous significant uses of national income measurement and, hence, it is an excessive need for a lot of groundwork. National income estimates offer not only a single digit showing the national income, but also supply the detailed statistics in regard to the various components of the national income. It is equally the digit of national income and the details regarding its numerous constituents that describe the functioning and performance of the economy.

The following are few of the significant uses of national income estimates:

(i) National income estimate discloses the overall production performance of the economy, as it seeks to quantify the level of production per annum. Per capita income, is an outcome by dividing the total national income by the population, gives us an indication about the average standard of living of the people. Economic welfare depends to a significant degree on the level of national income and the average standard of living of the people. Therefore, the facts of national income and per capita income indicate the level of economic welfare of the people of a country.

(ii) By relating national income estimates over a period of time, we can study whether the economy is growing, stagnant or declining. For example if the national income of an economy increases over a period of time, it indicates that the economy is growing and if the national income remains more or less unaffected, it indicates that economy is stagnant. But in case if the national income is declining over a period of time, it indicates that the economy is deteriorating. Whether or not the economy is growing, we can also review the rate of economic growth or development by measuring the rate of rise in national income. In Addition, by comparing the per capita income over a period of time, we can study the changes in the standard of living and economic welfare of the nation.

(iii) The national income estimates display the role played by the various sectors of the economy, such as agriculture manufacturing industry, trade, etc., to the national income. Therefore, the national income estimates of India disclose that about 50 per cent of the national income originates from agriculture. That states the importance of agriculture in the Indian economy.

(iv) National income estimates reveal the distribution of national income between various categories of income, such as rents, wages, profits, and interest. The distribution of national income among wages on the one side and profits, rent, interest on the other, is of special importance, as inequality in personal incomes depend on a large range on the share of working classes (i.e., wages) and the share of property owners (i.e., rents, profits and interest).

(v) National income estimates also comprise the facts of consumption, saving and investment in the economy. Data regarding consumption, saving and investment is crucial for any economic study relating to economic growth and planning. It is the rate of saving and investment in the economy that decides the rate of economic growth and adding investment to this constitute the level of aggregate demand on which the level of income or employment in a country.

(vi) With the estimates of national income of various countries, we can relate the standard of living in those countries. In other opinion, the facts of the 'real' national income per capita, we can relate the standards of living in different countries. Moreover, developed and underdeveloped countries are usually categorised on the basis of per capita income.

(vii) National income estimates help the governments in framing economic policies specifically in these days of development planning and dynamic government involvement in the economy. On the basis of these estimates the government can adopt methods to eradicate the inequalities in income distribution.

Check your Progress

14. Write any four points on the importance of national income estimates.----------
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8. Difficulties of Measuring National Income

Any serious attempt to measure the national income of a given country is invariably beset with many conceptual problems. Economists are faced with ambiguous, borderline areas where they have to take decisions regarding inclusion, exclusion or valuation as the case may be, before he can proceed further.

The ultimate solution to most of these problems inevitably involves an element of judgement which often tends to be somewhat arbitrary. This is precisely what makes each of the problems controversial and gives rise to divergent views on what national income should actually include or how it should be valued. We will now examine some of the major issues involved in national income accounting.

Any system is invariably prone to limitations. Similarly we have certain limitations in the three methods of measurement of national income. The limitations though are subject to debate in terms of inclusion and exclusion of certain flows.

1. Self-Occupied Houses: When a person rents a house to another, he earns a rental income, but if he lives in the same house himself, then also the amenities of the self-occupied house is counted in national income as if the owner sells to his own as a tenant of its services. For the purpose of national income accounts, the amount of impute rent is estimated as the sum for which the owner-occupied house could have been rented. The imputed net rent is calculated as that portion of the amount that would have accrued to the house-owner after deducting all expenses.

2. Self-employed Persons: In this case, it is very hard to discover the different inputs provided by the owner. He may have been contributing his capital, land, labour and his skills in the business. But it is difficult to estimate the cost of each factor input to production. So he gets a mixed income comprising of interest, wage, rent and profits for his services. This is incorporated in national income.

3. Goods and services intended for Self-consumption: In India, farmers possess a large portion of food and other goods produced for self-consumption. The difficulty is whether that share of the produce which is not sold in the market can be counted in in national income or not.

4. Wages and Salaries which include amenities: Some companies provide amenities to employees in the form of free food, lodging, dress and other facilities. Payments in theses form of amenities by employers are counted in national income.

5. Services of Homemakers: The valuation of the unpaid services of the homemaker in the national income presents a serious problem. A homemaker renders a number of useful services in the home to the family like preparation of meals, serving, tailoring, mending, washing, cleaning, bringing up children, etc. She is not a salaried employee and her services are not including in national income. Such services performed by servants are included in national income. So here the national income is underestimated by not including the services of a homemaker. Similarly, there are a number of goods and services which are difficult to be assessed in money terms for the reason stated above, such as painting, singing, dancing, etc. as hobbies.

6. Intermediate and Finished Goods: The greatest difficulty in estimating national income is the failure to discriminate properly in between intermediate and finished goods. There is a possibility of counting a good or service more than once, whereas only finished goods are included in national income estimates. This leads to the overestimation of national income.

7. Illegal Activities: Earnings from illegal activities like betting, trafficking, smuggling, etc. is not counted in national income. Such actions earn money and satisfy the requirements of the people but they are not reflected industrious from the view of society.

8. Second-hand Goods: Another difficulty arises with respect to the sale and purchase of second-hand goods. Many transactions take place daily on the purchase of ole scooters, cars, houses, machinery, etc. But they are not counted in national income because they were counted in the national product in the year they were manufactured. But the commission or fees charged by the brokers in the repurchase and resale of old shares, bonds, houses, cars or scooters, etc. are included in national income.

9. Consumers Service: There are a number of persons in society who render services to consumers but they do not produce anything tangible. They are the actors, dancers, doctors, singers, teachers, musicians, lawyers, barbers, etc. The problem arises about the inclusion of their services in national income since they do not produce tangible commodities. But as they satisfy human wants and receive payments for their services, their services are included as final goods in estimating national income.

10. Capital Gains: Capital gains rise when a capital asset such as a house or a property, stocks or shares, etc. is sold at greater price than the original price. Capital gains are excluded from national income because these do not arise from current economic activities.

11. Inventory Changes: All inventory changes are counted in national income. The process is to take changes in physical units of inventories for the year valued at average current prices paid. The value of changes in inventories may be positive or negative which is added or subtracted from the current production of the firm.

12. Depreciation: Depreciation is subtracted from GNP in order to reach at NNP. Thus depreciation drops the national income. Firms calculate the depreciation cost on the original cost of machines for their predictable life. This does not solve the difficulty because the prices of machines change every year.

13. Price Changes: National income is also calculated by the price of final goods and services at present market prices. As prices fall and rise estimates are not accurate. When the price level rises, the national income rises, even the national production might have dropped.

14. Government Services: In calculating national income by, expenditure method, the problem of estimating government services arises. Government provides a number of services, such as police and military services, administrative and legal services. There are many conflicting opinions on this subject. According to one opinion police, military, legal and administrative services protect the lives, property of the people so they are treated as final goods and therefore can be treated as part of national income. If they aid in the smooth functioning of the process by preserving peace and security, then they are treated like intermediate goods that do not come into national income. Therefore, all such services are regarded as final goods and are included in national income.

(15) Transfer Payments: Government payments in the form of pensions, unemployment allowance, subsidies, interest on national debt, etc. are not included in national income because they are paid without counting anything to the production process during the current year.

(16) Consumer durables: Consumer durable goods also pose a problem, such as scooters, cars, fans, TVs, furniture‟s, etc. are bought in one year but they are used for a number of

years. The expenditure on these goods are regarded as final consumption expenditure because it is not possible to measure their value of use for the following years.

(17) Public Expenditure: Government spends on police, military, administrative and legal services, parks, street lighting, irrigation, museums, education, public health, roads, canals, buildings, etc. Expenses on few of these facilities are consumption expenditure. Expenses on roads, canals, buildings, etc. are investment expenditure. Still, all such expenses including the salaries of armed personnel are counted in national income.

Check your Progress

15. Write any five limitations of national income measurement under all the three approaches

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Activity:

3. Collect the National Income Estimates of India for last 5 – 10 years (for example: as given in the table at the end of the chapter). Try to map each estimate on time line and discuss.

9. Summary

National Income is the most significant concept in macroeconomic analysis as it represents the most comprehensive measure of the level of aggregate economic activity in the economy. Hence, it is regarded as important yardstick of the overall performance of the economy.

To understand national income, the overall economic activity in an economy can be looked upon as the circular flow of income and expenditure and flow of goods and services between household sector and business sector.

There are numerous measures of National Income. The main conceptions of NI are: GDP, GNP, NNP, NI, PI, DI, and PCI. These different concepts explain about the phenomenon of economic activities of the many sectors of the economy.

There are three approaches to the measurement of National Income i.e. the Product Approach, the Income Approach and the Expenditure Approach. Even though there are several approaches to measure national income and there are several measures of national income these approaches are not limitations. However, national income estimates remains as the most significant source for providing insights into working of economy and its performance.

10. Glossary

1.	Gross National Product (GNP)	=	Gross national Expenditure (GNE)
2.	Gross Domestic Product(GDP)	=	GNP – Net Income from Abroad
3.	Net Domestic Product (NDP) at Market Prices	=	NNP at Market Prices – Net Factor Income from abroad
4.	GNP at Market Price	=	GNP at Factor Cost + Indirect Taxes – Subsidies
5.	NNP at Market Prices	=	GNP at Market Prices – Depreciation or Capital Consumption Allowance
6.	NNP at Factor Cost or National Income or National Product	=	NNP at Market Prices – Net Factor Income from Abroad
7.	NDP at Factor Cost or Domestic Income or Domestic Product	=	National Income – Net Factor Income from abroad
8.	Personal Income	=	Private Income – Saving of Private Corporate Sector – Corporate Tax
9.	Disposable Income	=	Personal Income – Direct Taxes Or Consumption Expenditure + Savings
10.	Per Capita Income	=	Total National Income / Total National Population

11. Self-Assessment Test

a. Describe various uses of Natinal Income Statistics
b. Explain the circular flow of income and expenditure in two-sector and three-sector model.
c. Distinguish between GDP and GNP.
d. Explain the limitations of national income accounting.

12. Suggested Readings/ Books:

a. Erold Soga, Macro Economics, Pearson Education.
b. Aggarwal, Macroeconomics Theory and Policy, Pearson Education.
c. Samuelson, Nordhaus, Chaudhri, Macroeconomics, Tata McGraw Hill
d. D. N Dwivedi, Macro Economics, McGraw Hill Education.
e. Mishra and Puri, Modern Macro-Economics Theory, Himalaya Publishing House.
f. Shapiro, Macro-Economics Analysis, McGraw Hill Education.
g. Mark Hirschey, Fundamentals of Managerial Economics, Cengage Learning.

13. Model Answers

Check your Progress

1. (b) savings, taxes, imports . Investment is an injection

2. (c) investment, government expenditure, exports

3. (b) „=“

4. National Income is defined as the total of all the goods and services produced in a country, in a certain period of time. Generally the time period is of one year duration. National income is also known as National Income at factor cost.

*You can write few definitions given by economists.

5. GNP at Market Price = GNP at Factor Cost + Indirect Taxes – Subsidies

6. Gross national product at market, price is the aggregate money value of all the final goods and services produced annually in a country plus net factor incomes from abroad. Thus Gross national product at market price = Gross domestic product at market price + Net factor income from abroad.

GNP at factor cost refers to income which the factors of production receive in return for their service alone.

GNP at FC = GNP at Market Price - Net Indirect Taxes + Subsidies

7. (a) Income = Expenditure. Hence if the expenditure is Rs 15,000 crores then income will be Rs 15,000 crores.

8. (c) A motor bike purchased as gift. Rest of options are intermediate goods.

9. (b) Investment Expenditure

10. (d) Sale of illegal items are not included in GDP.

11. Under Expenditure approach, national income can be measured by aggregating the flow of total expenditures on the final goods and services in the economy. The flow of the total expenditure can be measured by aggregating the flows of expenditure on final goods and services incurred by each of the three main sectors involved, viz., the household sector, the business sector and the government sector. Thus from the viewpoint of the expenditure approach, national income can be measured by using the following equality:

$$NI = En + Eb + Eg$$

where En, Eb and Eg denote the annual flow of expenditure on final goods and services incurred by the household sector, the business sector and the government sector, respectively.

12. Income Approach

Under Income approach, national income can be measured by aggregating the annual flows of factor earnings produced by the production of the final output.

13. Under Product Approach, different types of final outputs in a given year are represented as Q1, Q2, Q3……Qn and their respective market prices as P1, P2, P3….....Pn. Hence Pn represents the price of the n^{th} output.

14. (i) National income indicates the overall production performance of the economy. For example, Per capita income gives us an indication about the average standard of living of the people.

(ii) National income estimates helps us to understand whether the economy is growing, stagnant or declining. Increasing national income indicates growing economy, and a declining national income indicates deteriorating economy.

(iii) The national income estimates helps us in understanding the role played by the various sectors of the economy, such as agriculture manufacturing industry, trade, etc., to the national income.

(iv) National income estimates reveal the distribution of national income between various categories of income, such as rents, wages, profits, and interest.

(v) National income estimates reveals the facts of consumption, saving and investment in the economy. Data regarding consumption, saving and investment is crucial for any economic study relating to economic growth and planning.

(vi) With the estimates of national income of various countries, we can relate the standard of living in those countries. Developed and underdeveloped countries are usually categorised on the basis of per capita income.

(vii) National income estimates help the governments in framing economic policies specifically in these days of development planning and dynamic government involvement in the economy.

15. a. Self-Occupied Houses

b. Self-employed Persons

c. Goods and services intended for Self-consumption

d. Services of Homemakers

e. Intermediate and Finished Goods

Exercise

1. (d) Rs 50,000
2. Rs 1300 crores [Hint: $GDP_{FC} = GDP_{MP} – NIT$, $GNP_{FC} = GDP_{FC} + NFIA$, $GNP_{FC} = NNP_{MP}$ + Depriciation]
3. Rs 350 crores [Hint: Personal Income (PI) = Personal Disposable Income (POI) + Direct Taxes, Private Income = Personal Income + Retained Savings, NNP_{FC} = Private Income – Transfer Payments]
4. (c) 75,000
5. (b) 2000
6. (d) 50

For your Information: Components of Gross Domestic Product - India

Year	GDP at Factor Cost	Consum-ption of fixed capital	NDP at factor cost	Indirect taxes less subsidies	GDP at market prices	Net factor income from	GNP at factor cost	NNP at factor cost	GNP at market price	Per capita GNP at factor cost*	Per capita NNP at factor cost*

						abroad					
1	**2**	**3**	**4 (2-3)**	**5**	**6 (2+5)**	**7**	**8 (2+7)**	**9 (8-3)**	**10 (8+5)**	**11 (8/population)**	**12 (9/population)**
2000-01	23484.81	2441.16	21043.65	2112.3	25597.11	–238	23246.81	20805.65	25359.11	22813	20418
2001-02	24749.62	2599.44	22150.18	2082.28	26831.9	–213.71	24535.91	21936.47	26618.19	23592	21093
2002-03	25709.35	2733.67	22975.68	2143.23	27852.58	–189.6	25519.75	22786.08	27662.98	24166	21578
2003-04	27757.49	2910.27	24847.22	2284.41	30041.9	–206.93	27550.56	24640.29	29834.97	25700	22985
2004-05	29714.64	3198.91	26515.73	2707.45	32422.09	–223.75	29490.89	26291.98	32198.34	27081	24143
2005-06	32530.73	3508.93	29021.8	2901.71	35432.44	–248.96	32281.77	28772.84	35183.48	29188	26015
2006-07	35643.64	3857	31786.64	3071.25	38714.89	–295.15	35348.49	31491.49	38419.74	31505	28067
2007-08	38966.36	4276.29	34690.08	3543.11	42509.47	–171.79	38794.57	34518.29	42337.68	34090	30332
2008-09	41586.76	4689.04	36897.72	2576.74	44163.5	–253.84	41332.92	36643.88	43909.66	35817	31754
2009-10	45160.71	5219.06	39941.65	2747.76	47908.47	–277.57	44883.14	39664.08	47630.9	38362	33901
2010-11	49185.33	5703.01	43482.32	3638.53	52823.86	–546.47	48638.86	42935.85	52277.39	41011	36202
2011-12	52475.3	6278.34	46196.96	3855.2	56330.5	–463.67	52011.63	45733.29	55866.83	43271	38048
2012-13	54821.11	6878.84	47942.27	4177.36	58998.47	–654.52	54166.59	47287.75	58343.95	44508	38856
2013-14	57417.91	7536.74	49881.16	4540.51	61958.42	–679.34	56738.57	49201.83	61279.08	46017	39904

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India

Chapter: Theory of income and employment

Objectives

After studying this chapter, you should be able to:

- Understand the theory of income and employment
- Obtain information about the classical theory of output and employment
- Acquire knowledge of Say‟s law of markets
- Understand the Keynsian theory of income determination.

Structure

3.1 Introduction

There are two important theories for the determination of the level of income and employment

1. The classical theory of income determination and
2. Keynesian theory of income determination.

Both these theories are based on the assumption of short run. In short run the labor is assumed to be the only variable factor of production. In other words the level of income is determined by the level of employment. If the employment increases the level of income also increases. In short period the theories of the determination of income and employment are the same.

The great depression set the stage for Keynesian revolution. The Keynesian revolution was sparked by the publication of “The General theory of Employment, Interest and Money”, in 1936. The basic merits of Keynes theory is that it explains the functioning of an economy, irrespective of the level of employment. In this chapter you will learn about the classical theory of output/income and employment, Keynesian theory of income and employment and theory of income determination.

3.2 Classical Theory of output and employment

Classical theory of income/output and employment is not a contribution of any single economist. The theory has been built on the basis of the thoughts of different classical and neo classical economists in respect of employment. The term classical was associated with economists by Karl Marx, first of all. This term derived from Latin language and means "The best". Lord Keynes has used the term classical theory in a broad sense. The term classical theory was used by him to denote the thoughts of classical economists like Adam Smith, Ricardo, J. B. Say, Marx and neo classical economists like Marshall Pigou etc., on employment.

The modern economists have however, reinterpreted postulates of the economists, collected pieces of economic thoughts, and reconstructed the classical macroeconomics. The reconstructed macroeconomics is constituted broadly of the classical theories of output and employment and the quantity theory of money. Here you will learn the classical theory of output and employment

Postulates of classical theory:

The classical economists had, in their approach to macroeconomics issues; assume certain aspect of macroeconomics in the economy. They provided deductive logic but little empirical support to their assumptions. Their assumptions were called by Keynes as „postulates of the classical economics". The main postulates are described below.

1. **There is always Full Employment:** The classical economists postulated that all employable resources- labor and capital – of the country are always fully employed in the long run. If there is unemployment at anytime, then there is tendency towards full employment, provided there is no external or government interference with the functioning of the economy. In the classical view, full employment does not mean that all the resources are fully employed; there might be frictional and voluntary unemployment in the state of full employment. Full employment is a situation in which all those who want to work at the existing rate of wage get work without any difficulty. According to classical economist, even under full employment situation following kinds of unemployment could be possible
   a) Voluntary unemployment: When a laborers are not ready to work at existing rate of wage.
   b) Frictional unemployment: Unemployment arises because of shortage of raw material, immobility of labor.
   c) Seasonal Unemployment: Change in season, fashion, and taste.
   d) Structural unemployment: Because of structural changes in economy, like change in export trades etc.
   e) Technical unemployment: It is caused due change in technology of production.
2. **The Economy is always in the State of Equilibrium:** The classical economists postulated that an economy is always in the state of

equilibrium. They believe that full employment of resources generates not only income but also goods and services. The value of goods and services is always equal to incomes. The income earners spend their entire income that implies that the entire output of goods and services is sold out. There is no general overproduction and no general underproduction. To put it in the Keynesian terminology, the aggregate demand is always equal to aggregate supply in the long run, and the economy remains in stable equilibrium.

Necessary Assumptions: The classical postulates of full employment and equilibrium are based on the assumption that the economy works on the principles of *laissez-faire*. A laissez –faire system is one which:

a) There is complete absence of government control or regulation of private enterprise, except to ensure free competition;
b) There is complete absence of monopolies and restrictive trade practice – if there is any, it is eliminated by law;
c) There is complete freedom of choice for both the consumers and the producers;
d) The market forces of demand and supply are fully free to take their course.

3. **Money does not matter:** The classical economists treated money only as a medium of exchange. In their opinions, the role of money is only to facilitate the transactions. It does not play any significant role in determining the output and employment. The levels of output and employment are determined by the availability of real resources i.e., labor and capital.

Check your progress:

Fill in the blanks:

1. The role of_____in classical theories was to facilitate the transaction.
2. A situation in which all those who are able to work and are willing to work at the existing wage rate are getting work is called _____
3. A system in which there is absence of government, monopolies and restrictive trade practice is called as _____

3.3 Keynesian theory of Income/Output and Employment

Theory of income and employment: Determination of theory of income and employment is equilibrium level income in an economy. Equilibrium level of income in an economy can be determined by the level of effective demand. Level of effective demand is the level of income where aggregate demand is equal to aggregate supply. Thus, you can analyze the equilibrium level of income with the help of aggregate demand and aggregate supply analysis.

The Principle of Effective Demand

The principle of effective demand is the heart of the Keynesian theory of income and employment. Keynes attributes unemployment to "a lack of effective demand". That is why Keynes theory of employment is also referred as "Demand Deficiency theory". Effective demands comprises

1. Consumption demand – demand for the consumption goods
2. Investment demand – demand for capital goods.

As the real income of the society increases, consumption will also increase but by less than the increase in income. The imbalance creates a gap which can be filled up by raising investment. Lack of effective demand will result in unemployment. Thus, employment can be increased by increasing effective demand through increase of investment expenditure in the economy.

All demands are not effective, only that level of demands is effective which is fully met with the corresponding supply, so that the entrepreneurs have a tendency neither to reduce not to expand production.

An effective demand denotes money actually spent by people on the products of industry. The money, which the entrepreneurs receive, is paid in the form of rent, wages, interest, and profit. As such effective demand equals national income.

Thus, $ED = Y = C + I = O$ = Employment

Where,

ED = Effective demand

Y = National income

C = Consumption expenditure

I = investment expenditure

O = National output

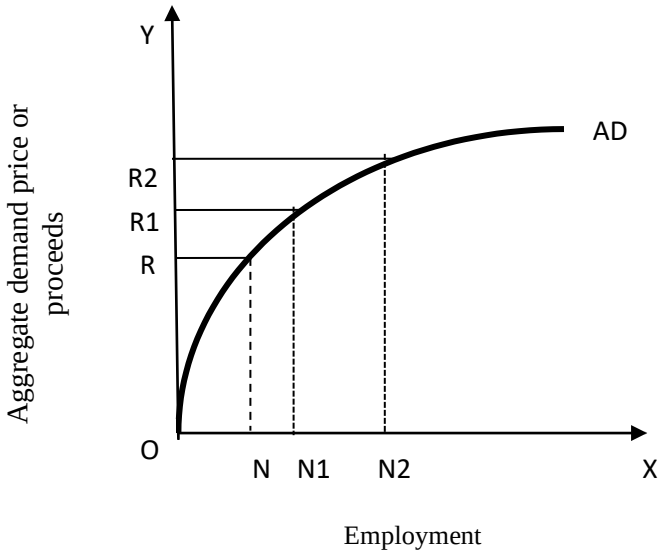
Determinants of effective demand: According to Keynes the level of effective demand in an economy is determined by the interaction of Aggregate supply and Aggregate demand.

Aggregate Demand

When a certain quantity of labor is employed by an entrepreneur, they will produce some level of output. The values of this output are called as aggregate demand price. According to Dillard "The aggregate demand price for the output of any given amount is the total sum of money, or process which is expected from the sale of output of varying amounts of employment".

If D refers the proceeds which entrepreneur expects to receive from the employment of N men, the relationship between D and N can be written as D

= *f*(N). It is called as aggregate demand function. This implies that as the level of employment rises, the output increases and proceeds from the sale of output becomes larger. It is important to note that when output increases as a result of rise in employment, aggregate demand also increase, but at a diminishing rate. This exactly explains why the aggregate demand curve (AD) diminishes as it moves upward to the right. In this figure AD is the aggregate demand curve, where aggregate demand price increases or decreases with an increase and decrease in the volume of employment. Aggregate demand curve increases at an increasing rate at the beginning and then increases at a decreasing rate. This shows that as income increases owing to increase in employment, expenditure of the economy at a decreasing rate.



Aggregate Supply

In the economy as a whole, all entrepreneurs, taken together, employ a certain number of laborers, who in turn produce a certain quantity of output. The total cost of producing the output by that number of laborers is known as the aggregate supply price.

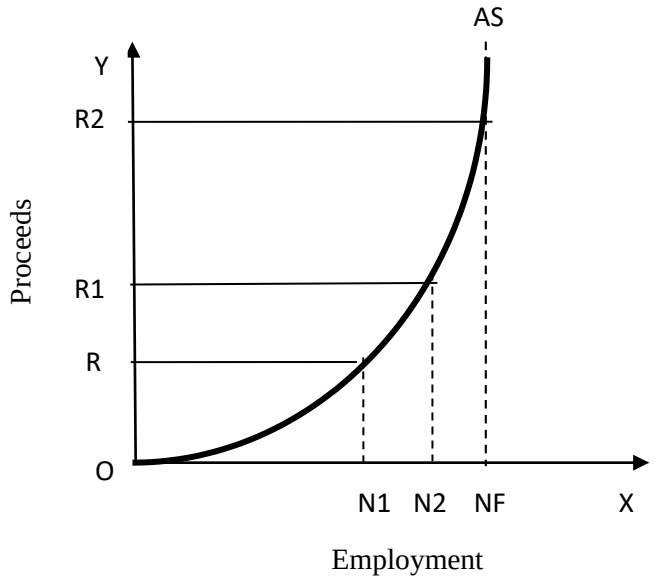
Dillard states that "To induce producers to offer any given aggregate amount of employment, a certain minimum amount of proceeds will be necessary. This minimum price or proceeds which will just induce employment on a given scale is called the aggregate supply price of that amount of employment.

The aggregate supply is a schedule of the minimum amounts of proceeds which the entrepreneurs must receive at various levels of employment.

Let Z be the aggregate supply price of the output from employing N workers, then the relationship between Z and N can be expressed as Z = g (N).

Aggregate supply is an increasing function of the size of employment. As the amounts of proceeds increase, more employment will be offered. The shape of

aggregate supply curve depends entirely on technical conditions of production. For our analysis we may assume that technical conditions of production are given. In this figure AS is the aggregate supply curve. When the level of employment increases, the aggregate supply price also increases. A point may come when all the workers in the economy are employed, i.e., there will be full employment, after which aggregate supply price will increase, but there is no further increase in employment.



Equilibrium Level of income/Output

Equilibrium level of income/output referred to that level of income /output where,

AS = AD (Aggregate Supply = Aggregate Demand)

AS referred to the desired level of output in the economy. It is the level of GDP (Gross Domestic Product) that the entrepreneur wishes to produce (or plan to produce) during an accounting year.

AD on the other hand, referred to the level of GDP that the consumers (buyers) wish to buy during the accounting year. The equilibrium GDP means that level of GDP where what the producers wish to produce is exactly equal to what the buyers wish to buy during an accounting year. So that there is no excess production (or unwanted stocks with the producers) OR, there is no shortage of output in relation to its demand.

There is another angle of looking at the equilibrium GDP. You know that,

AS = C + S, and

AD = C + I

So that equilibrium is struck when

C + S = C + I

Or. Equilibrium is struck when, S = I

When you recall the knowledge of circular flow of income in chapter 2, where S is a withdrawal (saving) from the circular flow, while I is an injection (investment) into the circular flow. Thus, we can say that equilibrium level of income is achieved when savings = investment.

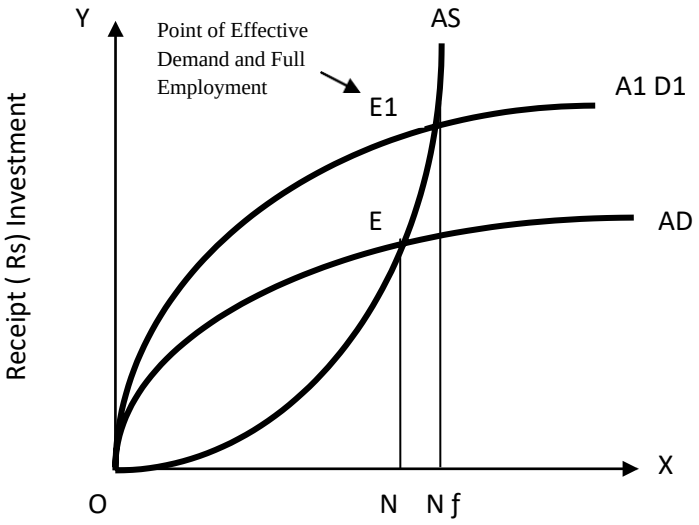
The relationship between saving and investment and its impact on income, output and employment may be summarized as follows:

If, S = I → No change in income, output and employment

If S > I→ Fall in income, output and employment

If S < I → Increase in income, output and employment

According to Keynes under- employment equilibrium in a free enterprise economy is due to a low consumption (Or a high saving), high liquidity preference and limited investment opportunities. So, Keynes advocated government spending to lift economy to full employment level through effective demand.



Level of Employment

Importance of Effective Demand: The concept of effective demand is the soul of the Keynesian theory of employment, which is useful as:

1. **Determination of Employment:** Effective demand determines the level of employment in the economy. When effective demand increases employment also increase and a decline in effective demand decrease the level of employment.
2. **Full Employment:** According to Keynes, full employment equilibrium is only accidental and abnormal and under employment equilibrium is the

normal phenomenon in the economy. In a capitalist economy supply fails to create its own demand because the whole of the earned income is not spent on consumption. A part of the income is saved which is a leakage. As a result, the existence of full employment is not possibility and the point of effective demand at any time represents under employment equilibrium.

3. **Role of investment in Employment:** The principle of effective demand highlights the crucial role of investment in determining the level of employment in the economy. When income increase consumption expenditure also increases but further increase in income does not increase in consumption. Thus, there arises the gap level between the two which leads to decline in the volume of employment. This gap can be bridge by an increase in either consumption expenditure or investment expenditure in the economy.

Check your Progress:

Multiple choices Question:

4. Keynes General theory was published in
   a) 1926 b)1933 c)1930 d) 1936
5. The logical starting point of Keynes theory of income and employment is the
   a) Principle of Multipliers
   b) Principle of Economics
   c) Principle of Acceleration
   d) Principle of Effective demand
6. In the Keynesian theory of income and employment the economy is producing the equilibrium output when
   a) Total spending equal to total output
   b) Total income equal to total savings
   c) Total saving exceeds total investment
   d) Surplus inventories are maximized
7. Keynes attributes unemployment to
   a) Lack of effective supply
   b) Lack of effective demand
   c) Lack of both
   d) None of the above

3.4 Says Law of Market

Say‟s Law of markets is also another important base of classical theory of employment. The law states, “Supply creates its own demand”. It means that the entire production made by the producers in an economy will be sold out. As such, problem of over production will not arise. If, in an economy, unemployment

situation does arise, then wage rate will fall. On account of fall in wage rates, profits of the producers will rise. This will include producing more, believing in Say‟s Law of Markets that whatever amount of output is produced it will be sold entirely. More production will promote more employment. Thus, employment will continue to rise till full employment is achieved. Such a situation will be an equilibrium situation. According to classical theory of employment, it is only under full employment situation that economy can be in equilibrium.

J.B Say who refused to believe that, general overproduction and unemployment are common occurrences. Many economists of the early nineteenth century accepted this law as a true explanation of the working of any economic system. Some assumptions, of Say‟s law are as follows:

1. The income, which the households receive, is spent on goods and services. Hence, the average propensity to consume is one. This obviously implies that savings will be zero.

2. The government does not perform any economic functions. This implies that there are no government expenditures, no taxation or subsidies or government borrowings.

3. The economy is a closed economy. This implies that there is no trade or any other links with the rest of the world.

4. The prices are flexible in that they can rapidly adjust upwards or downwards.

Basically, there are only two sectors in the economy which are under consideration. These two sectors the firms and the households, are engaged in production and consumption, respectively. There is a circular flow of money from firms to households and from households to firms.

Say‟s law states that “Supply creates its own demand”, by the very act of production, each producer aims at either the direct satisfaction of his wants or to exchange the goods he produces for the other goods that he needs. Thus, production of goods itself involves a creation of demand for them.

In a barter economy, there is no doubt that this law will function. When a producer produces a good, he does so with the specific purpose of exchanging it for another good. Thus, the production or supply of goods creates a direct demand for the good in a barter economy.

In a money economy, goods are sold in the market for a price which is expressed in terms of money. According to classical economists the producers of the goods, once they receive the money for the goods sold, use this money to buy more factors of production. The only function of money, according to the classical school, is to facilitate the process of exchange or to solely act as a medium of

exchange. Its purpose is to avoid the problems faced in a barter economy. Thus it is obvious that in any economy the supply of any commodity implies a demand for the other commodities in the economy. Hence the aggregate of the demand in all the markets will always be equal to the aggregate of the supply. It is possible that for an individual market, the equality between supply and demand may not hold. But an excess supply or over production in one market will necessarily be accompanied by an excess demand or underproduction in the other market for the Say‟s law to hold.

Check your progress:

Fill in the blanks:

8. Say‟s law will function in_____economy
9. "Supply creates its own demand" is given by _____
10. According to Say‟s law the economy is a_____economy.

3.5 Keynesian theory of income determination

According to Keynesian theory of income determination, the equilibrium of national income is determined at a level where aggregate demand (C+ I) equals the aggregate supply of income (C+S). That is the national equilibrium is determined where:

Aggregate demand = Aggregate supply

C+I = C+S

Keynes argued that there is no reason for the aggregate demand to be always equal to the aggregate supply. According to Keynes, aggregate demand depends on household plan to consume and save. Aggregate supply depends on the producers plan to produce goods and services. For the aggregate demand and the aggregate supply to be always equal, the households plan must always coincide with producers plan. Keynes argued that there is no reason to believe:

(i) That consumers consumption plan always coincides with producers production plan and

(ii) That producers plan to invest matches always with households plan to save.

Therefore, there is no reason for C+I and C+S to be always equal. According to Keynes, however there is a unique level of output and income at which aggregate demand equals the aggregate supply. The unique point exists where consumers plan matches with producers plan. It is here the equilibrium level of income and

output determined. A formal model of income and out determination is given below.

Model of income Determination

In this you will analyze income determination process

Keynesian theory of income at equilibrium is Aggregate demand is equal to aggregate supply

C+I = C+S ..... (1)

Since C is common to both sides of equation (1) the equilibrium condition for the national income can also be expressed as:

I = S ..... (2)

Note that this condition holds only at equilibrium, i.e., where

C + I = C + S

Equation (1) tells that at equilibrium level of national income

Y = C+I ..... (3)

We have assumed that C = a + b Y and I is constant at $\bar{I}$. By substituting a + b Y for C and $\bar{I}$ in equation (3), the equilibrium level of national income can be expressed as:

Y = a + b Y + $\bar{I}$ ..... (4)

Equation (4) may now be solved to find the equilibrium level of national income (Y) and Consumption (C)

Y = a + b Y + $\bar{I}$

Y – b Y = a + $\bar{I}$

Y (1- b) = a + $\bar{I}$

$Y = a + \bar{I}/$ 1-b

Y = 1/ 1-b (a +$\bar{I}$)… ..... (5)

Determination of Consumption: Having obtained the equilibrium level of Y, i.e., the total personal income, you can work out the equilibrium level of consumption as:

C = a + b Y

By substituting Equation (5) for Y in the consumption function you get

C = a+ b [1/1-b] (a+ $\bar{I}$)…. (6)

$C = a + b/1-b\ (a+ \bar{I})$

Numerical Example:

The equilibrium level of Y and C can be determined numerically by assuming a hypothetical consumption function and a given level of $\bar{I}$. Let us suppose the consumption function as :

$C = 100 + 0.75\ Y$….. (7)

And $\bar{I} = 200$

By substituting these value for C and $\bar{I}$, in equation (5) you get equilibrium level of Y as

$Y = 100 + 0.75\ Y + 200$…. (8)

$Y\ (\ 1-0.75) = 100+200$

$Y = 1/\ 1-0.75\ (\ 300)$

$Y = 120$

Thus given the consumption function as $C = 100 + 0.75\ Y$ and $\bar{I} = 200$, the equilibrium level of national income is determined at 1200.

Once the equilibrium level of national income is determined the equilibrium level of consumption (C) can be obtained by substituting 1200 for Y in the consumption function (7). Thus,

$C = 100 +0.75\ (1200) = 1000$….. (9)

Since, you have computed the equilibrium values of Y and C, you can easily obtain the equilibrium level of saving (S) as follows.

$S= Y – C$……. (10)

By substituting the actual values of Y and C you get

$S = 1200 – 1000$

$S = 200$

The final equilibrium now be presented as

Aggregate demand = Aggregate supply = National income

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

$1000+200 = 1000 + 200 = 1200.$

Check your progress

11. Suppose structural equations of an economy are given as follows:
    $Y = C + I$

C = 100 + 0.75 Y, and I = 100
Find the equilibrium values for Y and C

_____

_____

_____

3.6 Summary

In this chapter you have learnt about the classical theories of income and employment, which refers to a school of thought based on the writing on Adam smith, David Ricardo, J. S. Mills Karl Max etc., which dominated economic thinking before the publication of Keynes General theory in 1936. They believed that the economy automatically tended towards the full employment level of output. Keynes also explained that the income and employment theory through the study of effective demand which can be analyzed by the aggregate demand and aggregate supply at equilibrium point. You have also understood about the Say"s law of market which states "Supply creates its own demand". We have also discussed the calculation of income through Keynes theory of income determination.

3.7 Glossary

Aggregate Demand: The aggregate demand refers to the total demand of all goods and services in the economy during the period of an accounting year.

Aggregate Supply: The flow of producing the output is equal to the income generated is known as the aggregate supply

Slope of Aggregate Demand Curve: Aggregate demand curve slope is downwards, where aggregate demand price increases or decreases with an increase and decrease in the volume of employment. Aggregate demand curve increases at an increasing rate at the beginning and then increases at a decreasing rate. This shows that as income increases owing to increase in employment, expenditure of the economy at a decreasing rate.

Slope of Aggregate Supply Curve: Aggregate supply curve is upwards. When the level of employment increases, the aggregate supply price also increases. A point may come when all the workers in the economy are employed, i.e., there will be full employment, after which aggregate supply price will increase, but there is no further increase in employment.

Equilibrium Level: When aggregate demand is equal to aggregate supply

Effective demand: An effective demand denotes money actually spent by people on the products of industry. The money, which the entrepreneurs receive, is paid

in the form of rent, wages, interest, and profit. As such effective demand equals national income.

Full employment: A situation in which all those who are able to work and are willing to work at the existing wage rate are getting work

3.9 Self Assessment Questions

1. What are the assumptions of classical theory of income and employment?

2. Explain the concept of Effective demand?

3. Narrate the importance of effective demand?

4. Explain the equilibrium analysis of the income and employment theory of Keynes?

5. Explain Say‟s Law of market?

6. Discuss Keynes theory of income determination?

3.9 Further Reading

M. Maria John Kennedy, " Macroeconomic Theory", PHI Learning Private Limited- New Delhi, 2011

D.N Dwivedi " Macro economics Theory and Policy" Tata McGraw Hill Publishing company Limited New Delhi, 2005

3.10 Model Answers

Model answers to check your progress questions

Following are the answer to the Check your progress questions given in the chapter

1. **Money**

   The classical economists treated money only as a medium of exchange. In their opinions, the role of money is only to facilitate the transactions. It does not play any significant role in determining the output and employment.

2. **Full employment**

A situation in which all those who are able to work and are willing to work at the existing wage rate are getting work is called as full employment. It can also be said in term like when aggregate demand and aggregate supply reach at equilibrium point is also called full employment

3. A lasses faire system

A laissez –faire system where, there is complete absence of government control or regulation of private enterprise, except to ensure free competition, absence of monopolies and restrictive trade practice, complete freedom of choice for both the consumers and the producers and the market forces of demand and supply are fully free to take their course.

4. D

The Keynesian revolution was sparked by the publication of "The General theory of Employment, Interest and Money", in 1936.

5. D

The principle of effective demand is the heart of the Keynesian theory of income and employment.

6. A

In the Keynesian theory of income and employment the economy is producing the equilibrium output when total spending equal to total output

7. C

Keynes attributes of unemployment is "a lack of effective demand". Effective demand includes aggregate demand and aggregate supply

8. Barter Economy

In a barter economy, there is no doubt that Say"s law will function. When a producer produces a good, he does so with the specific purpose of exchanging it for another good. Thus, the production or supply of goods creates a direct demand for the good in a barter economy.

9. Say's Law

The Say"s law states, "Supply creates its own demand". It means that the entire production made by the producers in an economy will be sold out. As such, problem of over production will not arise. If, in an economy, unemployment situation does arise, then wage rate will fall. On account of fall in wage rates, profits of the producers will rise. This will include producing

more, believing in Say‟s Law of Markets that whatever amount of output is produced it will be sold entirely.

10. Closed economy

Says Law believed that the entire production made by the producers in an economy will be sold out if unemployment situation does arise, then wage rate will fall. On account of fall in wage rates, profits of the producers will rise and further producer produce more, there is no requirement of export and import. So Says law will only function in closed economy where amount of output is produced it will be sold entirely which implies there is no trade or any other links with the rest of the world.

11. The equilibrium level of national income is given as

$Y = 1/1-b (a + I)$

$a = 100, b = 0.75$, and $I = 100$, By substitution

$Y = 1/1-0.75 (100 +100) = 4(200) = 800$

$C = a+ b Y$ By substitution

$C = 100 + 0.75 (800) = 700$

Consumption

Structure

1. Introduction
2. Objectives
3. Consumption function: meaning, determinants and importance.
4. Theory of consumption: absolute income hypothesis, relative income hypothesis, permanent income hypothesis, life cycle hypothesis.
5. Summary
6. Glossary
7. Self-Assessment Tests
8. Suggested Reading/reference Material
9. Model Answers

1. Introduction

In previous chapters we discussed about national income, theory of income and employment. In this chapter we will consumption, some important theories on consumption and importance of consumption.

Consumption is an integral part of all economic activities. All economic activities and related to production and consumption. Hence, consumption has become a favourite topic among economists. However, many theories have been proposed on consumption. Here in this chapter we will be focusing four main theories on consumption i.e. Absolute income hypothesis, Relative income hypothesis, Permanent income hypothesis and Life cycle hypothesis.

2. **Objectives:** After studying this chapter, you should be able to:

- Define Consumption and its importance
- Define average propensity to consume and marginal propensity to consume.
- Explain Keynes‟s absolute income hypothesis.
- Explain the relative income hypothesis.
- Explain the permanent income hypothesis.
- Explain Life Cycle Hypothesis

3. Consumption Function

One of the assumptions of the Say's law is that supply creates its own demand. It is true that in a productive process, supply and demand are created i.e. supply is created by production and the payment made to the factors employed, generates demand. However, it is not compulsory that the value of the output will always be equal to the demand for the output.

Say's law holds true in a purely barter economy. But in money economy where savings are possible, the value of and the demand for output may not coincide.

The modern theory of income determination was basically developed by Keynes as presented in his work *General Theory of Employment, Interest and Money.* Keynes concentrated on aggregate demand or effective demand as the key to understanding the behaviour of an economy. He focused on the two important components of aggregate demand, consumption and investment and tried to explain the factors influencing these variables. In the Keynesian model of income determination, there are three building blocks, (1) consumption and its relation to income, (2) investment and the factors influencing it and (3) money market and the determination of interest rate. In this chapter we will study the first building block i.e. Consumption and its relation to income.

Consumption Function

We all know, though our daily experience, that consumption is dependent on income. So, technically speaking we can say that consumption is a function of (determined by) income. This relationship between consumption and income is termed as *consumption function* or the *propensity to consume.*

$C = \int (Y)$

Where C = Current Consumption and Y = Current Income

Average Propensity to Consume

The average propensity to consume (APC) refers to the percentage of income that is spent on goods and services rather than on savings. APC is the ratio of total consumption to total income. The inverse of the average propensity to consume is the average propensity to save (APS). So, APS is the ratio of total savings to total income. Since consumption plus savings equal income, APC and APS must add upto 1 at all income levels.

Marginal Propensity to Consume

When income increases there is an increase in the consumption. However this increase in consumption may not be exactly proportional to the increase in the income. Marginal Propensity to Consume (MPC) measures the change in consumption (ΔC) due to change in income (ΔI). Mathematically, MPC can be defined as $\Delta C/\Delta Y$. Similarly Marginal Propensity to Save (MPS) can be defined as change in savings (ΔS) due to change in income (ΔI) and can be represented as $\Delta S/\Delta Y$. MPC and MPS add to 1, similar to APC and APS.

Check your Progress

1. The consumption function is a causal relationship stating that a(n) _____in income_____consumption.

2. The most important factor determining people's consumption behavior is the level of their income. (T/F)

3. _____ is the ratio of total consumption to total income.

4. _____measures the change in consumption (ΔC) due to change in income (ΔI).

4. Absolute income hypothesis and Determinants of Consumption

Keynes' Consumption Function: The Absolute Income Hypothesis:

Keynes in his General Theory postulated that aggregate consumption is a function of aggregate current disposable income. The relation between consumption and income is based on his Fundamental Psychological Law of Consumption which states that when income increases consumption expenditure also increases but by a smaller amount.

The Keynesian consumption function is written as:

$C = a + cY$ a , $0 < c < 1$

Where „a" is the intercept which measures consumption at a zero level of disposal income; c is the marginal propensity to consume (MPC); and Y is the disposal income.

The above relation that consumption is a function of current disposable income whether linear or non-linear is called the Absolute Income Hypothesis.

Properties of the consumption function:

1. When income rises, average propensity to consume (APC = C/Y) falls.

2. The marginal propensity to consume (MPC) is positive but less than one ($0 < c < 1$); hence greater income leads to greater consumption.

3. The consumption expenditure increases (or decreases) with increase (or decrease) in income but not proportionally. This disproportional consumption function implies that in the short-run, average and marginal propensities do not coincide (APC > MPC).

4. The consumption function is steady in both short-run and the long-run.

This consumption function is depicted in Fig. 4.1 where $C = a + cY$ is the consumption function.

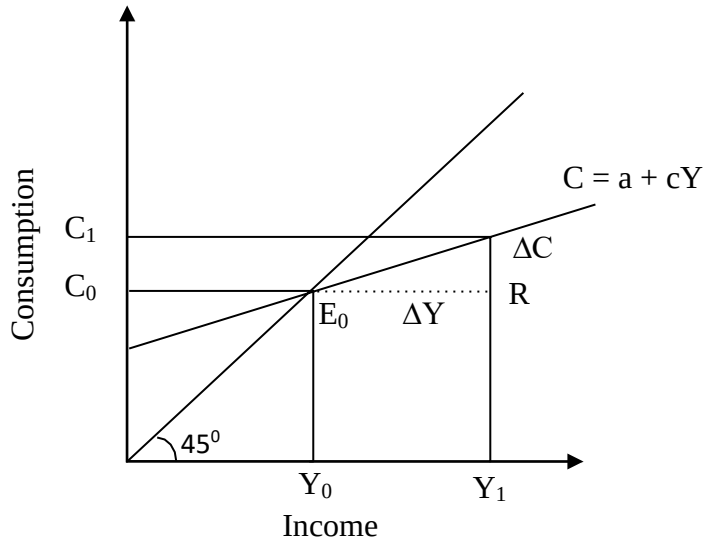


Figure 4.1

Determinants of Keynes Consumption Function

Income is the principal determinant of the Keynesian consumption function. However, apart from income, Keynes gave significance to other factors named "objective" and "subjective" or "psychological" factors that determine aggregate consumption. Objective factors are also known as "economic factors" which are quantifiable, subject to change in the short run. On the contrary, subjective factors are psychological and, hence, are not subject to approximation. Keynes opined that structural factors and fiscal policy variable also influence aggregate consumption spending.

1. Objective Factors:

(i) Interest Rate:

Classical economists assumed that savings and consumption depends on the rate of interest. This view was based on the observation that people prefer present goods when compared to future goods. People save for future only when they have a high prospects for future. The belief was; at higher rates of interest, the households tend to save more and consume less.

(ii) Wealth:

Another factor that is considered to influence consumption behavior is the total wealth position of consumers. Wealth like shares, bonds, house property, etc., influence consumption decisions. A household with large accumulated wealth is expected to spend a larger part of its present income on consumption rather than saving since they are already own these assets. People who do not own assets aim to save more and consume less now in order to have assets in future.

(iii) Price level:

The nominal value of wealth or cash balances increases or decreases with the decrease or increase in general price level. If these real cash balances are considered as net financial assets of the economy, changes in the price level will bring about a change in net wealth position of the economy. For example, if price level falls, the real cash balances would rise, net wealth would increase and consumption spending would rise. This is called as Pigou effect or real balance effect.

(iv) Terms of Consumer Credit:

The installment or EMI purchase system of buying durable consumer goods has become popular in these days. However, such spending depends on the terms and conditions of credit. If consumer credit is available on reasonable terms i.e. size of required down-payments, the length of the period over which the balances must be repaid, some sort of spending spree will develop.

(v) Deferred Payment:

Sometimes, mainly during war, consumer spending declines due to control on spending. Once such controls are removed, backlog of pent- up consumer demand might get exposure leading to a rise in spending.

2. Psychological Factors:

Psychological or subjective factors that remain constant in the short run determine the form of the consumption function.

Keynes gave importance to the psychological or subjective factors which includes basic values, attitudes, perception etc. These are not quantifiable or precise like economic factors. According to Keynes, motivations to consume are enjoyment, generosity, short-sightedness, extravagance and ostentation. However, these elements do not change significantly in the short run. These subjective factors are capable of changing the shape and the level of the consumption.

3. Structural Factors:

Structural factors like income distribution, demographic factors, etc., do have some bearing on the aggregate consumption spending in the long run. The first important structural factor is the income distribution. It is said that the marginal propensity to consume (MPC) is high of low- income families and low for high-income families. Thus, if there is a redistribution of income in favour of the poor-income families, aggregate consumption would rise since the MPC of these people is high.

Secondly, demographic factors are responsible for differences in consumption spending with identical incomes. Demographic factors include size of family, stage in the family life cycle, place of residence, occupation, race, etc. It is true that large families or families with more children and aged persons consume more than small families.

4. Fiscal Policy:

Tax policy of the government can effect the consumption spending. If wealthy people are asked to pay more taxes and if these revenues are given to poor people as subsidies, aggregate consumption would rise. High taxes restrict consumption by decreasing disposable income. Now, if subsidies like old age pension, distribution of food grains at a subsidised rate, etc. are given, consumption spending of the beneficiaries of these subsidies would rise.

One of the serious drawbacks of the Keynes absolute income hypothesis is that it is based more on introspection than on observed facts. Several studies were carried out after world war II aimed at resolving this. There are theories that modify Keynesian absolute income hypothesis. We will discuss three prominent theories that modify Keynesian absolute income hypothesis.

a. James S. Duesenberry opined that consumption depends on relative income. He proposed that consumption spending of a household is largely influenced by incomes earned by the neighbouring households. In other words, it is the relative income that determines consumption. Duesenberry‟s hypothesis is known as „relative income hypothesis‟. He argues that in the long run MPC = APC, as opposed to Keynes‟ short run consumption function hypothesis that MPC < APC.
b. Milton Friedman opines that consumption depends on permanent income. Unexpected and temporary incomes have little effect on permanent consumption. Friedman asserts that permanent consumption is always associated with permanent income. Friedman‟s hypothesis is known as „permanent income hypothesis‟ and also argues that in the long run, MPC tends to equal APC, i.e., MPC=APC
c. R.E. Brumberg , F.A. Ando and Modigliani argued that people devise their expenditure plans in accordance with their expected incomes over lifetime i.e., some perception of lifetime incomes. While making consumption decisions, individuals estimate the total income to be earned over their lifetime. Their theory popularly known as „life cycle hypothesis‟ also proposes that in the long run MPC = APC.

Check your Progress

5. Keynes's absolute income hypothesis asserts that as national income increases, consumption increases, but at an increasing rate. (T/F)

6. Keynes believed that the marginal propensity to consume is constant. (T/F)

7. Keynes's absolute income hypothesis cannot be correct because studies have shown that
   a. as disposable income increases, consumption increases at a diminishing rate
   b. the marginal propensity to consume is constant
   c. rich households save a larger fraction of additional income than poor households
   d. income is never absolute and thus a hypothesis can't be formed
   e. autonomous consumption is zero

8. Apart from income, Keynes gave significance to other factors named _____ and _____ or “psychological” factors that determine aggregate consumption.

Activity 1

You must be knowing an approximate income and consumption of few of your friends and relatives. Ask those friends and relatives "Why do you Save"? Try to relate your knowledge of their approximate income and consumption with their idea of savings.

5. Relative income hypothesis

James Duesenberry proposed the Relative Income Hypothesis. He rejected two fundamental assumptions of the consumption theory of Keynes. Duesenberry stated that:

(1) every individual‟s consumption behaviour is not independent but interdependent of the behaviour of every other individual, and

(2) that consumption relations are irreversible and not reversible in time.

Duesenberry stated "A real understanding of the problem of consumer behaviour must begin with a full recognition of the social character of consumption patterns." By the "social character of consumption patterns" he meant the tendency in human beings not only "to keep up with the Joneses" but also to better the Joneses. By "Joneses" Duesenberry meant rich neighbours.

A rich person will have a lower APC because he needs a smaller portion of his income to maintain his consumption pattern. On the other hand, a relatively poor man will have a higher APC because he tries to match his consumption standards with his rich neighbours or associates.

This provides the explanation of the steadiness of the long-run APC because lower and higher APCs would balance out in the aggregate. Hence, even if the total income of a country increases, the APC for the economy as a whole at the higher absolute level of income would be constant. But when income decreases, consumption does not fall in the same proportion because of the Ratchet Effect.

The Ratchet Effect

Duesenberry theory explains the short-run fluctuations in the consumption function through "past peak of income" hypothesis and disproves the Keynesian assumption that consumption relations are adjustable.

The hypothesis states that during a period of prosperity, consumption will increase and gradually adjust itself to a higher level. Once people reach a particular peak income level and become accustomed to this standard of living, they are not prepared to reduce their consumption pattern during a recession.

As income decreases, consumption declines but proportionately less than the decrease in income because the consumer reduces his savings to maintain consumption. On the other hand, when income increases during the recovery period, consumption rises gradually with a rapid increase in saving. Economists call this the Ratchet Effect. The Ratchet Effect is depicted in Figure 4.2.

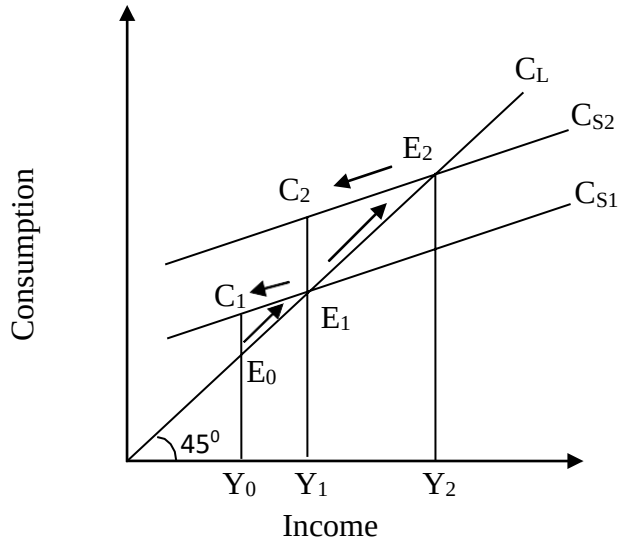


Figure 4.2 Ratchet Effect

Criticisms:

Every theory has limitations and so does Duesenberry‟s theory.

1. This hypothesis assumes direct relation between consumption and income. But experience has contradicted that Recessions do not always lead to decrease in consumption. This was proved during the recessions of 1948-49 and 1974-75 in US.

2. The relative income hypothesis assumes a proportional increase in income and consumption. But at full employment level, rise in income does not always lead to proportional rise in the consumption.

3. One of the assumptions of the Duesenberry‟s theory is that consumer preferences are interdependent where a consumer‟s expenditure is related to the consumption patterns of his rich neighbour. This may not be always correct. In his emphirical study, George Katona concluded that expectations and attitudes play an important role in consumer spending.

4. Another assumption of this hypothesis is that changes in consumer‟s expenditure are related to his previous peak income. The theory neglects other factors that influence consumer spending such as wealth, urbanisation, changes in age-composition, the appearance of new consumer goods, etc. According to Micheal Evants, “The consumer behaviour is slowly reversible over time, instead of being truly irreversible. Then previous peak income would have less effect on current consumption, the greater the elapsed time from the last

peak.” Even if we know how a consumer spent his previous peak income, it is not possible to know how he would spend it now.

5. The relative income hypothesis assumes that the distribution of income remains almost unchanged with the change in the aggregate level of income. If with increases in income, redistribution occurs towards greater equality, the APC of all persons belonging to the relatively poor and relatively rich families will tend to be reduced. Thus the consumption function will not shift upward from C_{S1} to C_{S2} when income increases.

Check your Progress

9. Explain Ratchet Effect.

_____
_____
_____
_____

10. The relative income hypothesis states that the marginal propensity to consume is
    a. the same across different social classes
    b. lower for people with high incomes than for people with low incomes
    c. decreasing as income is increasing
    d. a function of transitory income

11. The relative income hypothesis suggests that the rich have relatively high MPCs and the poor have relatively low MPCs. (T/F)

6. Permanent income hypothesis

The absolute income hypothesis states household consumption to the current absolute income and the relative income hypothesis states it to the current relative income. So, Both the hypotheses relate consumption to current income—absolute or relative. The 'current income hypotheses' was rejected by Milton Friedman and he proposed his theory of consumption, prevalently known as permanent income hypothesis.

The permanent income hypothesis asserts that, it is the permanent income and not the current income, which determines the level of current consumption expenditure. Permanent income can be defined as, the mean of all the incomes anticipated in the long run. The method of estimating permanent income, can be described as an estimate of incomes anticipated from all human and non-human wealth (or capital). Simply, it means labour income plus capital incomes. If all human and non-human sources of income are termed as wealth, then the permanent income of the current year can be defined as

$Yp = rW$

where Yp is the permanent disposable income with reference to the current year and r is the rate of return.

Further to the permanent income, the households make some temporary incomes. For example, special bonus to factory workers, lottery prizes etc. Like temporary incomes, there is temporary loss of incomes due to temporary loss of job or unemployment, unpaid sick leaves, no wages due to lock-outs and labour strikes, fire and theft etc. The temporary incomes are addition to and temporary income losses are deductions from the permanent income. In the long-run analysis, however, temporary income gains and losses are assumed to cancel out. The permanent income hypothesis assumes no correlation between permanent and temporary incomes.

Similar to temporary income gains and losses, there are certain temporary purchases. The households sometimes make once-in-a-while purchase of the goods which they do not need for immediate consumption. Normally, these purchases are made due to attractive prices or anticipated scarcity of a commodity. Likewise, some regular purchases are postponed by the households due to insufficient funds, abrupt increase in the price or a lower price expected in future. The purchases postponed are treated as negative temporary purchases. The permanent income hypothesis assumes that there is no relationship between income and temporary positive and negative purchases.

Friedman rejected the usage of "current income" as the element of consumption expenditure and instead divides both consumption and income into "permanent" and "transitory" (temporary) components, so that

Ym or $Y=Y_p+Y_1$ …(1)

and $C = C_p+ C_1$ …(2)

Where p refers to permanent, t refers to transitory, Y to income and C to consumption. Permanent income is defined as "the amount a consumer unit could consume (or believes that it could) while maintaining its wealth intact."

Friedman argued that it is the main income of a family unit which in turn depends on time and foresight. "It includes non-human wealth that it owns, the personal attributes of earners in the unit…the attributes of the economic activity of the earners such as the occupation followed, the location of economic activity, and so on."

The consumer"s measured income or current income Y, can be larger or smaller than his permanent income in any time period. This differences between measured and permanent incomes are due to the transitory component of income (Y_t).

Transitory income may increase or decrease with windfall gains or losses and cyclical variations. If the transitory income is positive due to a sudden gain, the measured income will increase above the permanent income. If the transitory income is negative due to theft, the measured income falls below the permanent income. The transitory income can also be zero in which case measured income equals permanent income.

Permanent consumption can be defined as “the value of the services that is planned to be consumed during a particular period.” Measured consumption is classified as permanent consumption (C_P) and transitory consumption (C_t).

Measured consumption or current consumption may differ from or equal to permanent consumption depending on the transitory consumption which can be positive, negative or zero. Permanent consumption (C_p) is a multiple (k) of permanent income, Y_p .

$C_p = kY_p$

and $k = f(r, w, u)$

Therefore, $C_p = k\ (r, w, u)\ Y_p$

where k is a function of the rate of interest (r), the ratio of property and non-property income to total wealth or national wealth (w), and the consumer‟s propensity to consume (u). The equation states that over long run, consumption increases in proportion to the change in Y_p. This can be attributed to a constant k ($=C_p/Y_p$) which is independent of the size of income. Hence, k is the permanent and average propensity to consume and APC = MPC.

Friedman proposed that permanent income depends partly on current income and partly on previous period‟s income. This can be measured as

$Y_{pt} = aY_t + (1\text{-}a)\ Y_{t\text{-}1}$

where Y_{pt} = permanent income in the current period, Y_t = current income in the current period, Y_{t-1} = previous period‟s income, a ratio of change in income between current period (t) and previous period (t-1).

The equation articulates that permanent income is the sum of current period‟s income (Y_t) and previous periods income (Y_{t-1}) and the ratio of income change between the two. If the current income increases all of a sudden, there will be a proportionate but small increase in permanent income. For the permanent income to increase, income will have to be raised constantly for many years. Then only people will think that it has increased. By integrating previous equations, short-run and long-run consumption function can be explained as

$C_t = kY_{pt} = kaY_t + k\ (1\text{-}a)\ Y_{t\text{-}1}$

Where C_t = current period consumption, ka = short-run MPC, k = long-run MPC and k (1-a) Y_{t-1}, is the intercept of short-run consumption function.

According to Friedman, k and ka are different from one another and k > ka. Further, k = 1 and ka = 0

The equation states that consumption depends both on previous income and current income. Previous income is important for consumption because it helps in estimating the future income of people.

Assumptions:

Friedman assumed certain relationships between permanent and transitory components of income and consumption.

1. There is no correlation between permanent income and transitory income.

2. There is no correlation between transitory income and transitory consumption.

3. There is no correlation between permanent consumption and transitory consumption.

4. Change in permanent income affects consumption systematically.

5. Individual estimates of permanent income are based on backward looking of expectations.

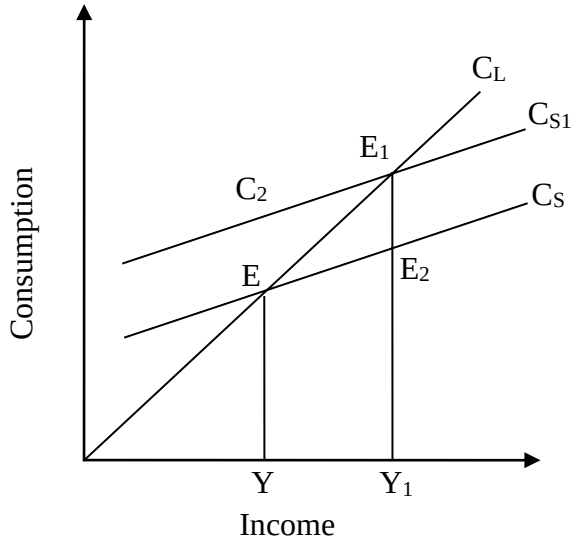


Figure 4.3

Criticisms:

1. Economists argue that Friedman‟s assumption of no correlation between transitory components of income and consumption is unrealistic. This assumption of Friedman suggests that with the increase or decrease in the measured income of the household, there is neither any increase nor decrease in his consumption, because he either saves or dissaves accordingly. Economists, however, claim that this is different to actual consumer behaviour. A person who has a sudden profit does not deposit the entire amount in his bank account but enjoys the whole or part of it during his current consumption. Likewise, a person who has lost his money suddenly would definitely cut or postpone his present consumption rather than rush to the bank to withdraw the same amount of money to meet his requirements.

2. Friedman‟s hypothesis assumes that the APC of all families, whether rich or poor, is the same in the long-run. However, economists argue that this is against the observed normal behaviour of households. A well-known fact is that low-income families do not have the capacity to save the equal fraction of their incomes as the high income families. This is not only due to their small incomes but their tendency to prefer present consumption when compared to future consumption. Hence, the consumption of low-income families is relative

to their incomes whereas the saving of high-income families is relative to their incomes. Even at the same level of permanent income, the level of saving differs from person to person and so does consumption.

3. The use of the terms like “permanent”, “measured” and “transitory” by Friedman are likely to confuse the theory. Economists argue that in this hypothesis concept of measured income wrongly combines permanent and transitory income and permanent and transitory consumption.

4. Another drawback of the permanent income hypothesis is that Friedman does differentiate between human and non-human wealth and includes income from both in a single term.

5. The estimates of permanent income are founded on forward looking expectations and not on backward-looking expectations. In fact, expectations are rational because fluctuations in consumption are due to unexpected changes in income that lead to changes in permanent income.

In spite of the drawbacks stated above, Friedman‟s hypothesis has been widely used. Micheal Evans stated that “that the evidence supports this theory and that Friedman‟s formulation has reshaped and redirected much of the research on the consumption function.”

Check your progress

12. Milton Friedman proposed the
    a. permanent income hypothesis
    b. life-cycle hypothesis
    c. absolute income hypothesis
    d. relative income hypothesis

13. Friedman's theory of consumption focuses on:
    a. Past income
    b. Current income
    c. Disposable income
    d. Permanent income

14. The permanent income hypothesis distinguishes between _____ income and_____income and states that consumption is dependent on_____income.

15. Write any four assumptions of Permanent Income Hypothesis.
    _____
    _____
    _____
    _____

7. Life cycle hypothesis.

The Life Cycle Hypothesis was proposed by Ando and Modigliani. According to life cycle hypothesis, consumption is a function of lifetime expected income of the consumer. According to this theory, consumer‟s consumption depends on the resources available to him, the rate of return on capital, the spending plan, and the age at which the plan is made. The present value of consumer‟s resources comprises of income from assets or wealth or property and from current and expected labour income. Therefore a consumer‟s total resources consist of his income and wealth.

Assumptions:

1. Price level does not change during consumer‟s lifetime.

2. Interest rate paid on assets is zero.

3. The consumer‟s net assets are the product of his own savings and he/she does not inherit any assets.

4. Consumer‟s current savings decide future consumption.

5. Individual consumer has an intention to consume his total lifetime earnings along with his/her current assets.

6. Consumer does not plan any inheritances i.e. he/she has no plan to gift his/her assets to anyone.

7. The consumer is certain about his present and future flow of income.

8. The consumer has a certain idea of life expectancy.

9. The consumer is aware of the future emergencies, opportunities and social pressures which will impact his/her consumption.

10. The consumer is rational.

Explanation

The life cycle hypothesis states that with the assumptions, the intention of the consumer is to maximise his utility over his lifetime which, in turn, depends on the total resources available to him during his lifetime. Given the life-span of an individual, his/her consumption is proportional to these resources. However, the amount of resources that the consumer intends to spend will depend on whether the spending plan is formulated during the early or later stage of his life. A well-known fact is that an individual‟s average income is relatively low at the beginning of his life and also at the end of his life. The reason can be attributed to the fact that in the early stages of his life, he has little assets (wealth) and during the late stages, his labour income is low. However, his income is high during the middle stages of his life as his income comes from both assets and labour.

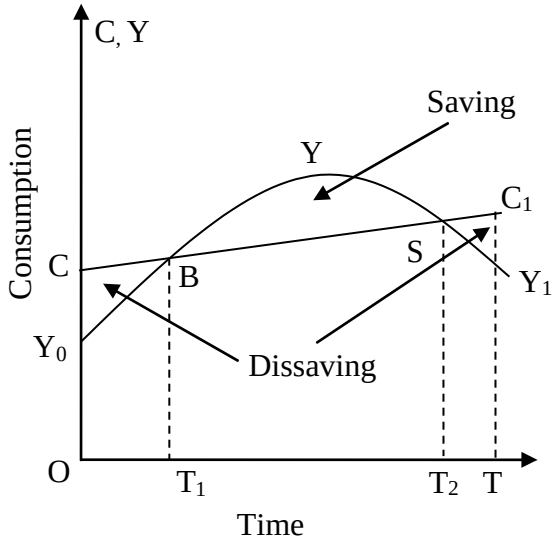


Figure 4.4

Consequently, the consumption level of the individual throughout his life is somewhat constant or slightly increasing CC_1, as shown in Fig. 4.4. The consumer‟s income stream during his lifetime T is shown by the curve Y_0YY_1.

In the early stage of a consumer‟s life represented by T_1 in the figure 4.4, he/she borrows or dissaves CY_0B amount of money to have his consumption level CB which is nearly constant. During the middle stages of his/her life represented by T_1T_2, he/she saves BSY amount to repay his/her debt and for the future. During the final stages of his life represented by T_2T_1 he dissaves SC_1T_1 amount.

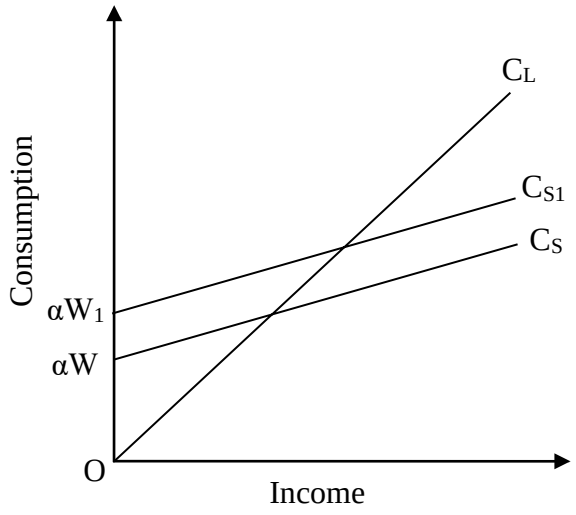


Figure 4.5

1. According to life cycle hypothesis, intercept αW (Fig. 4.5) measures the effect of wealth. The life cycle consumption function looks similar to the Keynesian consumption function as C_S. But it holds in the short run only when wealth is constant. When wealth grows (αW_1), the consumption function shifts upward as C_{s1}. The shifting of the C_s to C_{s1} maps the long-run consumption function, C_L.

2. The life cycle hypothesis states that the consumer‟s savings change over the life time. When a consumer begins his life during adulthood with no wealth, he will save and accumulate wealth during his working years. However at retirement, he will dissave and use his accumulated wealth. Thus, the life cycle hypothesis suggests that the consumer wants a steady and continuous consumption over his lifetime. He/she saves during working years and dissaves when he retires.

3. The life cycle hypothesis also suggests that a smaller proportion of income is consumed by high-income family than a low-income family. During peak earning years, (shown as portion BSY in Fig. 4.4), a consumer‟s income is more than his/her consumption and APC is the lowest. However in the case of a retiree family and low-income family, the APC is high.

Criticisms:

1. The argument of life cycle hypothesis that a consumer plans his consumption over his lifetime is impractical because a consumer concentrates more on the present rather than on the future which is uncertain.

2. The life cycle hypothesis assumes that consumption is in direct relation to the assets of an individual. When assets grow, there is an increase in his consumption and vice versa. This assumption may not be true because an individual may limit his consumption to increase assets.

3. Attitude towards life influences consumption. Given the same set of assets and income, consumption of one person may differ from the other.

4. Another assumption of this hypothesis is that consumer is rational and has information about his income and future lifetime. This is unrealistic because not all consumers are fully rational and knowledgeable.

5. Economists argue that this theory rests on many variables such as current income, assets value, expected future income, etc., and estimating so many variables is very difficult and not possible.

6. Economists argue that this hypothesis does not recognise the existence of liquidity constraints for a consumer. Even though, a consumer has certain information about his future income, he may have limited borrowing capacity in the capital market on the basis of expected future income. Subsequently, consumption may react more to changes in current income than predicted on the basis of the life cycle hypothesis.

7. The life cycle theory neglects the part of blocked savings in consumption. This theory assumes that savings is a pool from which people spend on consumption over their lifetime.

However, the savings of the individuals are blocked when made in provident funds, pension plans, insurance etc.

Inspite of the criticisms, economists consider the life cycle hypothesis to be better than other hypotheses with respect to the consumption function because it includes not only wealth as a variable in the consumption function but also explains why APC is constant in the long-run and APC > MPC in the short-run.

Check your progress

16. The life-cycle hypothesis on consumption behavior suggests that people at various stages of the life cycle,
    a. spend everything they earn so saving ends up at zero
    b. increase their marginal propensity to consume as income increases
    c. decrease their marginal propensity to consume as income increases
    d. have differing MPCs, which is still consistent with a constant MPC for the economy

17. The life-cycle hypothesis suggests that consumption fluctuates less than income over a person's life. (T/F)

Activity 2

Duesenberry, Friedman, and Modigliani presented different hypotheses to explain consumption behavior. Apply each theory to your own family‟s experience. Which theory fits better than the others?

8. Importance of Consumption

Prof. Meyers, states that “Consumption is the direct and final use of goods and services in satisfying the wants of human beings.” In the second chapter we discussed about circular flow of income and expenditure. The firms produce goods and services which are consumed by individual households, governments and even firms. We can see that consumption is an integral part of all economic activities. We all consume goods like food items, petrol, clothes, furniture etc.

Before we move ahead, we need to understand the consumption of final goods and intermediate. Both final goods and intermediate goods are consumed but the purpose of the consumption differs. In case of consumption of final goods, the purpose is to satisfy needs and wants. However, in case of consumption of intermediate goods, the purpose is to create

or produce other goods or services. So, we can say consumption of final goods are unproductive whereas consumption of intermediate goods are productive. However, we should be careful with this concept of productive and unproductive as sometimes we consume services like education, medical, legal etc. which may not be directly productive but facilitate in increasing the efficiency of production. Similarly there are situations of public consumption like defence, municipal services etc. which are paid by the government by are indirectly funded by the public money in the form of taxes.

We also need to understand that not all consumptions are recorded or accounted for. For example, services by homemaker or vegetables grown in the backyard etc. We have discussed this in the limitations of national income measurement in the second chapter.

Consumption has become a favourite subject among economists today and high importance is being given to it in economics. In modern times, consumption is treated as an inducement on which the economic system of a country rests. The importance of consumption is explained as under.

1. Consumption is an integral part of all economic activities. All human beings have needs and wants and they make efforts to satisfy those needs and wants. Similarly firms make efforts to produce products and services to address the needs and wants of the human beings. For example a farmers produces crops with an intention that someone will buy it or consume it. Hence, the main aim of every production activity is that people consume goods and services and production is done for consumption, which constitute economic activities. Therefore Consumption is the beginning of all economic activities. Not only that Consumption is beginning of all economic activities; it is also the end of all economic activities. Once needs and wants are satisfied consumption stops and with it economic activities stop. Again when need or want arises, consumption begins.

2. Just like the national income estimates help us understanding the standard of living of the people similarly, consumption patterns of individuals like what he buys regularly, what does he consider necessary goods and what as luxurious goods etc. helps in understanding the standard of living of the individuals.

3. Adam Smith said, “Consumption is the sole purpose of all production.” If consumption increases Production also increases so that supply can match with demand.

5. Many laws have been formulated in Micro Economics like Law of Demand, Law of Diminishing Marginal Utility, Consumer Surplus based on Consumption.

6. Many of the Government policies like taxes, minimum wages etc are determined by keeping consumption requirement of general public. The government also makes assessments of production of essential commodities based on consumption.

7. In his theory of Income and Employment Keynes describes that “if consumption does not increase the demand for goods will decrease and then production will fall. It may lead to unemployment.” Hence consumption plays a vital role in theories of income, output and employment.

Check your progress

18. Match the Following

1	Consumption function	____	a	an individual‟s consumption spending is related to his or her permanent income
2	Transitory income	____	b	when national income increases, consumption spending increases at a constant rate
3	Absolute income hypothesis	____	c	normally, a person‟s MPC is high during young adulthood, decreases during the middle-age years, and increases when the person retires
4	Marginal propensity to consume	____	d	the sudden gain or loss of income that a person experiences
5	Permanent income	____	e	as national income increases, consumption spending increases, but by diminishing amounts
6	Saving	____	f	the ratio of the change in consumption spending to a given change income
7	Relative income hypothesis	____	g	the change in saving brought by a change in income
8	Marginal propensity to save	____	h	the relationship between consumption and income
9	Permanent income hypothesis	____	i	that part of national income not spent on consumption
10	life-cycle hypothesis	____	j	the regular income a person expects to earn every year.

9. Summary

Consumption is an important phenomenon in any given economy. Hence, study of production and consumption become a priority as their relation effects a country's economy. For example, if production is more than consumption, then inventories accumulate and firms will probably reduce production, causing an increase in unemployment. On the other hand, if consumption is more than production, then firms will increase production, hire more workers, and cause employment to increase. So it is important to understand how households make consumption decisions.

Economists opine that a relationship exists between people‟s consumption and their disposable income. The consumption function is written as C = f(Y), that is to say, consumption is a function of income. Keynes developed the absolute income hypothesis,

which states that as national income increases, consumption increases, but by diminishing amounts. Keynes believed that the marginal propensity to consume (MPC) decreased as the absolute level of income increased. However, as situations changed, regular studies were done on consumption and new theories were proposed including the relative income hypothesis, the permanent income hypothesis, and the life-cycle hypothesis.

10. Glossary

Consumption function: The graph or table that shows the amount households spend for goods and services at different levels of disposable income.

Saving: The part of disposable income households do not spend for consumer goods and services.

Dissaving: The amount by which personal consumption expenditures exceed disposable income.

Marginal propensity to consume (MPC): The change in consumption resulting from a given change in real disposable income.

Marginal propensity to save (MPS): The change in saving resulting from a given change in real disposable income.

11. Self-Assessment Tests

a. Describe Keynesian theory of Absolute Income Hypothesis.

b. Explain Relative Income Hypothesis.

c. Compare Permanent Income Hypothesis and Life Cycle Hypothesis and write your views.

d. Explain the importance of consumption in any given economy.

12. Suggested Reading/reference Material

i. Chapter 9, D. N Dwivedi, Macro Economics, McGraw Hill Education.
ii. Chapter 9, Macroeconomics: A Contemporary Approach by William A. McEachern, South-Western Cengage Learning
iii. Chapter 5, Macroeconomics: Theory and Applications,2e, by G S Gupta, Tata McGraw Hill
iv. Chapter 9, Macroeconomics: Theory and Policy by Vanita Agarwal, Pearson
v. Chapter 7, Macroeconomics by K.R. Gupta, R.K. Mandal & Amita Gupta, Atlantic Publishers

13. Model Answers

Check your Progress

1. Increase; increases
2. True

3. Average Propensity to Consume.
4. Marginal Propensity to Consume
5. False. The absolute income hypothesis states that as national income increases, consumption increases at a decreasing rate.
6. False. Keynes believed that the marginal propensity to consume decreases as income increases.
7. (b) the marginal propensity to consume is constant
8. Objective; Subjective
9. The Relative Income hypothesis states that during a period of prosperity, consumption will increase and gradually adjust itself to a higher level. Once people reach a particular peak income level and become accustomed to this standard of living, they are not prepared to reduce their consumption pattern during a recession. As income decreases, consumption declines but proportionately less than the decrease in income because the consumer reduces his savings to maintain consumption. On the other hand, when income increases during the recovery period, consumption rises gradually with a rapid increase in saving. Economists call this the Ratchet Effect.
10. (b) Lower for people with high incomes than for people with low incomes.
11. False. The relative income hypothesis suggests that the poor have high MPCs and the rich have relatively low MPCs.
12. (a) permanent income hypothesis
13. (d) Permanent income
14. permanent; transitory; permanent
15. Permanent Income Hypothesis assumptions
    a. There is no correlation between permanent income and transitory income.
    b. There is no correlation between transitory income and transitory consumption.
    c. There is no correlation between permanent consumption and transitory consumption.
    d. Change in permanent income affects consumption systematically.
    e. Individual estimates of permanent income are based on backward looking of expectations.
16. (d) have differing MPCs, which is still consistent with a constant MPC for the economy
17. True
18. Match the following

1	h	6	i
2	d	7	b
3	e	8	g
4	f	9	a
5	j	10	c

Chapter: Theory of Investment

Objectives

After studying this chapter, you should be able to:

- Understand investment and different types of investment
- Analyze the determinants of investment
- Understand marginal efficiency of capital and its uses
- Acquire knowledge about net present value and its calculation method
- Identify the importance of calculating internal rate of return on investment.

Structure

5.1 Introduction

Investing in various types of assets is an interesting activity that attracts people from all walks of life irrespective of their social status, occupation, education etc. When a person has money then he requires for current consumption, he would plan for investing money at potential assets. The investors who have extra money could invest in assets like, gold real estate, shares or could simply deposit it in his bank account. The companies that have extra income may like to invest it in the

extension of the existing firm or undertake new business/ venture. All these activities are called as investment.

Investment:

Investment is the employment of funds on assets with the aim of earning income appreciation. Investment has two attributes time and risk. Present consumption is sacrificed to get a return in future. The risk is undertaken with a view to reap some return in future which is uncertain. Investing in anything requires some degree of skill. It is important to remember that few investments are a sure thing but there is a risk of losing your money.

To the economist investment is the net addition made to the nation‟s capital stock that consists of goods and services that are used in the production process. A net addition to the capital stock means increase in the building, equipment etc, which are used in production. Financial investment is the allocation of money to assets that are expected to yield some gain over a period of time. It is an exchange of financial claims such as stocks and bonds for money, which is expected to yield returns.

The financial and economic meaning of investment is related to each other because the savings of the individual flow into the capital market as financial investment, to be used in economic investment.

Before you jump right in, it is better to find out more about investing and how it all works. What do you hope to achieve with your investment? Will you be funding a college education? Buying a home or land? Retiring? Before you invest a single penny, really think about the achievement of the investment. Knowing what your goal is will help you make smarter investment decisions.

You should consider talking to financial planner before making any investments. Your financial planner can help you determine what type of investing is timely (take longer time for returns) and what are risky.

Thus, in this chapter you will study about the different types of investments, the determinants of investment and different methods of calculation of the yield of investments.

5.2 Types of Investment

In this section we shall discuss the different types of investments and the various ways of investing money. We would examine these various ways of investing money with the aim of adding value to those who want to participate in investments. The different types of investment that we would discuss in this section are not complete. There could be other types that may not be mention here; however, you are free to look outside. But the ultimate reason of investing your money is the expectation of additional yield or profit. For you to invest and succeed, you need to know the different options that are available and capable of

yielding you much value. The following are some of the ways people invest their money to get additional yield.

1. **Investing in the Banking Sector:** The banking sector is a well known area where many people invest their hard earned money with the expectation of profit or additional yields. Some use the banks as a means of collecting their hard earned income. For those who use bank as a means of collecting their salaries, you are the one paying the bank for the services they are rending to you consequently, you pay commission on turn-over on every amount that is proceed in your account.
   For those investing their money and expecting profit and added values, basically there are two ways you can invest in the bank
   a) **Saving accounts:** For saving your money in the bank, you are making money available to the bank for distribution to others investors who come to the bank for loans and advances. Since the bank uses your money to provide loans and advances in which it charges interest, the bank in turn pay you interest for using your money. Though this interest might not be much.
   b) **Fixed deposits:** Fixed deposit account is not subjected to withdrawal during the agreed fixed period which range from thirty days to one year. You are expected to keep your money with the bank until it matures before you can collect it or continue depending on the interest agreed upon.
2. **Investing in the Capital Market:** Another area people prefer investing their money and expecting return and adding value is the stock or capital market. The capital market basically made up of the primary and the secondary markets. The primary market creates an enabling environment for individuals and institutions to purchase shares of companies directly from institutions authorized to issue the shares of Initial Public Offers (IPOs) of organization while secondary market enables stockbrokers to purchase and sell on the floor of the market. Share represents ownership of a company. Any time you buy shares you become a part owner or shareholder of a company. There are basically two types of shares, ordinary shares and preferential shares.
   a) **Preferential share:** are the shares that entitle the holder a fixed dividend, whose payment takes priority over that of ordinary shareholder.
   b) **Equity / Ordinary shareholders:** are the risk-takers of the business. They share the profits and losses of the business. If the business fails and goes bankrupt or folds up, its assets are liquidated and the proceeds are used to pay its creditors and suppliers.

   As a private investor, you cannot buy directly from the stock market you have to go through a stockbroker. The stockbroker is licensed to trade shares in the floor of the stock exchange. The stockbroker charges you a commission called brokerage fees that are regulated by the Security and Exchange board of India (SEBI). To buy shares you need to open an account with the stock broking firm called Demat account. Broker

provides you with investment advice and may also offer to manage your investment

3. **Investing in the Real Estate:** Another area a lot of people prefer investing and expecting high yield and adding values is the real estate sector. This area is viable area as money invested in this sector would always appreciate in value. You can build houses and buy land for future development. There are certain critical things that would make you succeed in real estate.
    a) **Ability to find property:** You may not see these properties if you do not have the right information concerning them. The right information would lead you the best properties in town. This real estate business is one the ventures that bring in a lot of profit due to the appreciation of landed properties. Easiest way of gathering information is through classified advertisement estate magazines, friend of the industry etc.
    b) **Ability to fund the purchase:** Knowing the location and identifying the property is not enough, your ability to source and obtain funds to purchase the property counts. You should have back up plan for it, either you should posses the fund or you can get the funds from any venture capitalist.
    c) **Ability to develop and sell the land at appropriate time and price**: Developing the property yields more profits and selling it at appropriate time and price is also an art of real estate investor.

Check your progress:

Choose the correct Answers:

1. Purchasing the share from the stock broker is the_____investment
    a) Investment in real estate
    b) Investment in banking
    c) Investment in capital market
2. Purchasing the share from IPO is_____market
    a) Primary market
    b) Secondary market
3. The person who is licensed to trade shares in the floor of the stock exchange is called
    a) Stock broker
    b) Stalk broker
    c) Trade broker
4. The stockbroker charges you a commission called_____that are regulated by the SEBI.
    a) Stock fee
    b) Brokerage fee
    c) Share fee

Activity 1 : Assume that you have Rs. 1, 00,000 which you want to invest. Based on the information you have where do you invest your amount and why?

Answer: _____

5.3 Determinants of Investment:

Profits provide the basic motive driving investment. Individuals or firms that wish to spend money on investment expect that investment yield profit over all its cost. Some of the main variables that affect investment spending are

1. **Future expected profits:** Expectations of future profits exerts a strong effect on investment decisions. Profit expectation in turn depends on expectation of future demand conditions and cost conditions. Expected demand conditions matter because the profitability of any investment depends on being able to sell the output of the capital goods and to sell it at a favorable price. So when businesses expect future profits to be higher, they are willing to invest more.
2. **The Real interest rate and availability of credits:** The rate of interest measures the cost of capital to the firm. If the firm borrows money to spend on investment, it must pay rate of interest to its creditors in return for these funds. If the firm uses its own funds, it must forgo the revenue that it could have obtained by lending out those funds to others and earning the rate of interest in return. The real interest rate reflects the real cost of this borrowing. The higher the real borrowing cost, the lower investment spending will be. In general, the lower is the rate of interest, the greater the number of investment opportunities that will be profitable.
3. **Optimism about the future:** When businesses are optimistic about the future, they speed up their investment spending. And when they are pessimistic, they postpone investments.
4. **The Accelerator effect:** The development of new techniques for producing existing products is called process innovation, while the development of new products is called product innovation. Capital produces goods and services. So the demand for new capital depends upon new products and services that is the increase in products and services. Therefore, changes in output can increase investment; this is termed as the accelerator effect.
5. **The State of the capital stock:** During a recession, capital improvement and additions are postponed. Once the recession is over, they are speeded

up. Thus the state of capital stock can affect how much new investment will be needed.

Check your progress:

Fill in the Blanks:

5. The development of new techniques for producing existing products is called_____
6. Changes in output can increase investment, this is termed as the _____
7. The higher the real borrowing cost, the lower _____
8. Profit expectation in turn depends on expectation of future_____and _____conditions

5.4 Marginal Efficiency of Capital:

Investment occupies an important place in Keynesian Theory of Employment. Investment is governed by two factors: (i) Marginal efficiency of Capital and (ii) Rate of interest. In the short period, rate of interest remains constant. Hence, investment is mainly influenced by marginal efficiency of capital. Changes in investment are mainly the result of changes in marginal efficiency of capital. Thus to fully comprehend the theory of employment, a detailed study of marginal efficiency of capital is quite necessary.

In 1930, Irving Fisher was the first economist who made use of the concept of marginal efficiency of capital. He gave it the name of Rate of Return over Cost. In simple words, marginal efficiency of capital means, "expected rate of profitability of new investment". Term Efficiency has been used to mean rate of income. In other words, marginal efficiency of capital means income received after deducting the cost from the return of an additional unit of capital. It refers to rate of expected profitability from a new capital asset.

Definition of Marginal Efficiency of Capital:

According to Stonier and Hague, "The Marginal Efficiency of any asset shows what an entrepreneur expects to be able t o earn from acquiring one more asset of that kind compared with what he has to pay to buy it."

According to Kurihara, "Marginal Efficiency of Capital is the ratio between the prospective yield of additional capital goods and their supply price".

In the words of W.C. Peterson, "The rate of return over cost relates the expected yield of a capital good to its supply price. It is the relationship that Keynes calls MEC

Its calculation depends on two factors: (i) The amount of profit which is expected by investing one more unit of capital asset and (ii) cost of capital asset. Marginal efficiency of capital (MEC) can be calculated by deducting from total income of capital asset its cost. Supposing, the price of a machine is Rs. 20,000. The duration of life of this machine is 10 years. During this period of 10 years, it is expected to yield an income of Rs. 40,000. Thus, the total profit of machine is Rs. 40,000 – Rs. 20,000 = Rs. 20,000 only. This profit is expected over a period of 10 years, hence average profit per year will be = Rs.20,000/ 10 = Rs. 2,000. This profit is earned on an investment of Rs. 20,000. Marginal efficiency of capital, therefore, will be

$Rs.\,2{,}000 / Rs.\,20{,}000$ X 100 = 10%

Determinants of Marginal Efficiency of Capital:

Marginal efficiency of capital is governed by the expected yield of a capital asset and its supply price. In technical term they are called as (i) Prospective Yield and (ii) Supply Price. Thus the determination of marginal efficiency of capital depends on prospective yield and supply price.

Prospective Yield: The prospective yield of an asset is the aggregate net return expected from it during its whole life. In order to determine prospective yield, annual return of the capital asset is worked out. Aggregate of annual return expected from a capital asset over its life time is called total prospective yield.

$P_n = Q_1 + Q_2 + Q_3 + Q_4 \ldots\ldots\ldots + Q_n$

(Here P_y = Prospective Yield; Q_1, Q_2,Q_3, Q_4 and Q_n = net revenue received in the first, second , third, fourth and nth year)

Supply Price: The supply price of a capital asset is the cost of producing a new asset of that kind, not the supply price of an existing asset. Hence, the supply price of a capital asset is called as Replacement cost. It remains fixed in the short period.

Determining Marginal Efficiency of Capital: Marginal efficiency of capital is determined by Prospective yield and supply price. It can be expressed in terms of an equation. A capital asset actually remains operative for more than one year. Hence, its total prospective yield is the aggregate of annual prospective yield

throughout its life period. Prospective yield can be found out like compound interest from the principal amount, i.e., supply price of capital asset and marginal efficiency of capital. Hence in the first year,

$P_y = SP\ (1+m)$ or $SP = \frac{P_{y1}}{(1+m)}$

(Here P_y = Prospective Yield; SP = Supply Price; m = MEC)

In the second year P_Y1 becomes the principal amount. Hence,

$P_{y2} = P_{y1}\ (1+m)$

Because, $P_{y1} = SP\ (1+m)$, hence,

$P_{y2} = SP\ (1+m)\ (1+m) = SP\ (1+ m)^2$

$$SP = {}^{P_{y_2}}/_{(1+m)^2}$$

$$SP = \frac{P_{y2}}{(1+m)^2}$$

In the third year P_{y2} becomes the principal amount. Hence,

$P_{y3} = P_{y2}\ (1+m)$

$P_{y2} = SP\ (1+m)^2$, Hence

$P_{y3} = SP\ (1+m)^2\ (1+m) = SP\ (1+m)^3$

$$SP = \frac{P_{y3}}{(1+m)^3}$$

Supposing, the life time of a capital asset is five years. In these five years, the aggregate of net return expected by the use of capital asset will be calculated as „n" years, we can know supply price of a capital asset

$$SP = \frac{P_{y1}}{(1+m)^1} + \frac{P_{y2}}{(1+m)^2} + \frac{P_{y1}}{(1+m)^3} + \ldots\ldots + \frac{P_{y_n}}{(1+m)^n}$$

If the life time of a machine is „n" years and its total prospective yield is P_y and supply price is SP, then the above equation can be expressed as:

$SP = \frac{P_y}{(1+m)^n}$ or $(1+m)^n\ SP - P_y$

Or $(1+m)^n = \frac{P_y}{SP}$ or $1+m = \sqrt[n]{\frac{P_y}{SP}}$

Or $m = \sqrt[n]{\frac{P_y}{SP}} - 1$

When supply price and total prospective yield are known, then marginal efficiency of capital can be calculated through the above equation.

Example:

Suppose price of a machine is Rs.1, 000. Its life time is 2 years. Total prospective yield of the machine in these two years is Rs. 1210. Find out the marginal efficiency of that capital asset.

Solution:

$m= \sqrt[n]{\frac{P_y}{SP}} - 1$

(Here n = 2, SP = Rs. 1000 P_y = Rs. 1210)

Hence $m = \sqrt[2]{\frac{1210}{1000}}$ -1

$= \sqrt[2]{\frac{121}{100}}$ -1

$= \frac{11}{10}$ -1

$= \frac{1}{10} = 0.1\ 0$

Or MEC = 10%

Check your progress:

9. Suppose, supply price of a machine is Rs. 10,000. Its life span (n) is 5 years. In these five years prospective yield of Rs. 15,000 will be received. Find out the marginal efficiency of capital of the said machine.

Solution:

5.5 Net Present Value (NPV)

The net present value of an investment proposal is determined by comparing the present value of all cash inflows with the cost of the investment proposal. The investment proposal must have a positive net present value to be attractive, i.e., the present value of the cash inflow must be equal to or larger than the cost of the investment. When comparing two alternatives the one with larger net present value would be selected, providing the enterprise has the funds for the investment.

The present value of these cash inflow and outflow are then calculated at the rate of return acceptable to the management. This rate of return is considered as the cut-off rate and is generally determined on the basis of cost of capital suitably adjusted to allow for the risk element involved in the investment proposal. In other words The procedure of finding present values is called as discounting. It is concerned with determining the present value of a future amount, assuming that the decision maker has an opportunity to earn a certain return on his money. This return is designated as discount rate/costof capital or opportunity cost. The equation of calculating NPV is as follows:

$$\text{NPV: } \left[\frac{I\,1}{(1+K)^1} + \frac{I\,2}{(1+K)^2} + \frac{I\,3}{(1+K)^3} + \frac{I\,n}{(1+K)^n}\right]$$

Where: NPV = Net Present Value, I = Cash Outflows time, K = Cost of Capital or discount Rate.

(The compounding of interest can be calculated by the following equation:

$$A = P\,(1+i)^n \cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (1)$$

In which A = Amount at the end of the period, P = Principle at the beginning of the period, i = rate of interest and n= number of year)

The net present value can be used as accept or reject criterion. In case the NPV is positive (present value of cash inflows is more than present value of cash outflows) the proposal should be accepted. However, if the NPV is negative (present value of cash inflows is less than the present value of cash outflows) the project should be rejected.

NPV > Zero = Accepted the proposal

NPV < Zero = Rejected the proposal

Present Value tables: In order to simplify the present value calculation, tables are readily available for various ranges of 1 and n.

Example: Mr. X has given an opportunity to receive Rs. 1060 one year from now. He knows that he can earn 6 percent interest on his investments. The question is what amount will he be prepared to invest for this opportunity?

To answer this question we must determine how many rupees must be invested at 6 percent today to have Rs. 1060 one year after

Let us assume that P is unknown amount but we have P = (1 +0.06) = Rs.1.06)

Solving the equation for P_1 [P = 1060/ 1.06 = Rs1, 000]

Thus, Rs 1000 would be the required investment to have Rs. 1060 after the expiry of one year.

Check your progress:

10. Example: Calculate the net present value for the small sized project requiring an initial investment of Rs. 20,000 and which provides net cash inflow of Rs.6,000 each year for six years. Assume the cost of funds to be 8% per annum.

Solution :

5.6Internal Rate of Return (IRR)

Internal Rate of Return is that rate at which the sum of discounted cash inflows equals to sum of discounted cash outflows. In other words, it is the rate which discounts the cash flows to zero. It can be stated in the form of a ration as follows

$$\frac{Cash\ Inflows}{Cash\ Outflows} = 1$$

Method I

Thus, in case of this method the discount rate is not known but the cash outflows are known. For example, if a sum of Rs. 800 invested in a project becomes Rs. 1,000 at the end of a year, the rate of return comes to 25%, calculated as follows:

$$I = \frac{R}{1+r}$$

Where

I = Cash Outflow i.e., Initial Investment, R= Cash inflow, r = Rate of return yielded by the Investment (IRR)

Thus:

$800 = \frac{1000}{1+r}$ or 800r +800 = 1000

Or 800r = 200

Or r = $\frac{200}{800}$ = .25 or 25 %

In case of return is over a number of years, the calculation would take the following pattern in case of conventional cash flows:

$I = [\frac{R_1}{(1+r)^1} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} + \frac{R_n}{(1+r)^n}]$

Where

R = Cash inflows at different time period, r = Rate of return yielded by the investment (IRR)

Since I and R are known factors, r is the only factor to be calculated. However, calculations will become very difficult over a long period if worked out according to the above equations. Tabulated values (Net present value table) are used. Where the initial investment is divided by the average annual cash inflow, the value we get will be checked in PV table to obtain the PV discount rate in percentage

Method II

In this method the evaluator selects any discount rate (Fake) to compute present value of cash inflows. Otherwise cost of capital is taken as first trial. If calculated PV of cash inflows is higher than the PV of cash out flows then evaluator has to try at higher discount rate. On the other hand if the PV of cash inflow is lower than the PV of cash outflows then evaluator has to try lower discount rate. This process will be repeated till the present value of cash inflow is equal to present value of cash outflows. Generally IRR may lies between two discounting factors in that case this formula of IRR to be used:

$IRR = LDF\ \% + [\Delta DF\frac{PV\ LDF - COF}{PVLDF - PVHDF}]$

Where,

LDF = Lower discount rate

ΔDF = Different between low and high discounting factor

PVLDF = Present value of cash inflows at low discounting factor

PVHDF = Present value of cash inflows at high discounting factor

COF = Cash Outflow

While evaluating two or more projects, a project giving higher internal rate of return would be preferred. Acceptance or reject rule of the project decides based on the calculated IRR and Cost of Capital

Accepted: IRR > Cost of capital

Reject: IRR < Cost of capital

Check your progress:

11.An equipment involves an initial investment of Rs. 6,000. The annual cash flow is estimated at Rs. 20,000 for 5 years. Calculate IRR

Solution:

Activity: 2

XYZ Company is considering the following projects P and Q.

Year	0	1	2	3
P	25,000	5,000	5,000	25,640
Q	28,000	12,672	12,672	12,602

Calculate NPV and IRR of both projects [Answer: NPV: P -1700, Q- 2436, IRR P -15% Q -17 %]

Answer:

5.7 Summary

In this chapter you have learn about the investment where the extra money could be invested in assets like, gold real estate, shares or could simply deposit it in his bank account. You have also learnt about the different determinants which effects the investment decisions. Here in this chapter you also understood the calculation methods of the investment like marginal efficiency of capital. You also understood how to analyze the projects or proposal through the net present value method and internal rate of return method.

5.8 Glossary

Investment: money invested in production, property, bank, services which has the increased future value.

Saving accounts: are maintained by financial institutions like banks that pay interest but cannot be used directly as money in the narrow sense of a medium of exchange

Fixed Deposits: Fixed deposit account is not subjected to withdrawal during the agreed fixed period which range from thirty days to one year. Money has to be kept with the bank until it matures

Capital Market: The division of a financial system concerned with enhancing capital by investing in shares, bonds, and other long-term investments.

Yield: The income return on an investment. This refers to the interest or dividend received from a security based on the investments cost or face value

Prospective Yield: The prospective yield of an asset is the aggregate net return expected from it during its whole life

Supply Price: The supply price of a capital asset is the cost of producing a new asset of that kind, not the supply price of an existing asset.

Preference share: The share which entitles the holder to a fixed dividend, whose payment takes priority over that of ordinary share dividends.

Equity share: These share represents the form of fractional or part ownership in which a shareholder, as a fractional owner, undertakes the maximum entrepreneurial risk associated with a business venture.

Marginal efficiency of capital: The Marginal Efficiency of any asset shows what an entrepreneur expects to be able t o earn from acquiring one more asset of that kind compared with what he has to pay to buy it

Net Present Value: It is the difference between the present value of cash inflows and the present value of cash outflows

Internal Rate of Return: It is defined as the discount rate at which the present value of all future cash flow is equal to the initial investment or in other words the rate at which an investment breaks even.

5.9 Self Assessment

1. What is an investment? What are the different determinants of investment?

2. What is marginal efficiency of capital? How it is useful in investment?

3. What is Net Present value? Explain the calculation of NPV acceptance or rejection of a project.

4. What is the present value of Rs.40, 000 due three years hence at a discount rate of 10%?

5. Explain in detail about the different types of investment?

6. Differentiate between investment in capital market and banking?

5.10 Further Reading

1. Preeti Singh " Investment Management" Himalaya Publishing House
2. D. N. Dwinvedi " Macroeconomics Theory and Policy" Tata McGraw-Hill Publishing Company Limited
3. G. Sudarsana Reddy " Financial Management Principles and Practices", Himalaya Publishing House.

5.11 Model Answer:

1. (c)

2. (a)

3. (a)

4. (b)

5. Process Innovation

6. Accelerator Effect

7. Investment spending

8. Future demand and Cost conditions

9. Solution:

$m = \sqrt[n]{\frac{P_y}{SP}} - 1 = \sqrt[5]{\frac{15000}{10000}} - 1$

$= \sqrt[5]{\frac{3}{2}} - 1$

= 1.084-1 = 8.4%.

10. Solution:

The present value of annual of Rs.1 for 6 year at 8% per annum interest is Rs. 4.623 in (Present value table)

Hence, the present values of Rs.6, 000 comes to

6,000 X 4.623 = Rs. 27,738

Less initial investment=Rs. 20,000

Net Present Value (NPV) = Rs, 7,738.

11. Solution

Fake Payback Period = (Initial investment / Average Annual cash inflows)

= (6000/ 2000) = 3

Referring to the PV of an annuity of one rupee table, we find that the fake payback period of 3 lies in between 19 % (3.058) and 20 % (2.991) in the line of 5 years;

Calculation of PV of cash inflows

PV of cash inflows at 19% = 2000 X 3.058 = Rs. 6,116

PV of cash inflows at 20 % = 2000 X 2.991 = Rs. 5,982

Calculation of IRR:

IRR = LDF % + [ΔDF$\frac{PV\ LDF-COF}{PVLDF-PVHDF}$]

IRR = 19% + [1$\frac{6,116-6000}{6116-5982}$]

IRR = 19 + [1$\frac{116}{134}$] = 19 + 0.86 = 19.86 %

Please insert NPV table

Table A-1 Future Value Interest Factors for One Dollar Compounded at *k* Percent for *n* Periods: $FVIF_{k,n} = (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0100	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	1.0201	1.0404	1.0609	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456	1.4400	1.5376	1.5625	1.6900
3	1.0303	1.0612	1.0927	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.3676	1.4049	1.4429	1.4815	1.5209	1.5609	1.7280	1.9066	1.9531	2.1970
4	1.0406	1.0824	1.1255	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5181	1.5735	1.6305	1.6890	1.7490	1.8106	2.0736	2.3642	2.4414	2.8561
5	1.0510	1.1041	1.1593	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.6851	1.7623	1.8424	1.9254	2.0114	2.1003	2.4883	2.9316	3.0518	3.7129
6	1.0615	1.1262	1.1941	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.8704	1.9738	2.0820	2.1950	2.3131	2.4364	2.9860	3.6352	3.8147	4.8268
7	1.0721	1.1487	1.2299	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.0762	2.2107	2.3526	2.5023	2.6600	2.8262	3.5832	4.5077	4.7684	6.2749
8	1.0829	1.1717	1.2668	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.3045	2.4760	2.6584	2.8526	3.0590	3.2784	4.2998	5.5895	5.9605	8.1573
9	1.0937	1.1951	1.3048	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.5580	2.7731	3.0040	3.2519	3.5179	3.8030	5.1598	6.9310	7.4506	10.604
10	1.1046	1.2190	1.3439	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	2.8394	3.1058	3.3946	3.7072	4.0456	4.4114	6.1917	8.5944	9.3132	13.786
11	1.1157	1.2434	1.3842	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.1518	3.4785	3.8359	4.2262	4.6524	5.1173	7.4301	10.657	11.642	17.922
12	1.1268	1.2682	1.4258	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.4985	3.8960	4.3345	4.8179	5.3503	5.9360	8.9161	13.215	14.552	23.298
13	1.1381	1.2936	1.4685	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	3.8833	4.3635	4.8980	5.4924	6.1528	6.8858	10.699	16.386	18.190	30.288
14	1.1495	1.3195	1.5126	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.3104	4.8871	5.5348	6.2613	7.0757	7.9875	12.839	20.319	22.737	39.374
15	1.1610	1.3459	1.5580	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	4.7846	5.4736	6.2543	7.1379	8.1371	9.2655	15.407	25.196	28.422	51.186
16	1.1726	1.3728	1.6047	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	5.3109	6.1304	7.0673	8.1372	9.3576	10.748	18.488	31.243	35.527	66.542
17	1.1843	1.4002	1.6528	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545	5.8951	6.8660	7.9861	9.2765	10.761	12.468	22.186	38.741	44.409	86.504
18	1.1961	1.4282	1.7024	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	6.5436	7.6900	9.0243	10.575	12.375	14.463	26.623	48.039	55.511	112.455
19	1.2081	1.4568	1.7535	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	7.2633	8.6128	10.197	12.056	14.232	16.777	31.948	59.568	69.389	146.192
20	1.2202	1.4859	1.8061	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	8.0623	9.6463	11.523	13.743	16.367	19.461	38.338	73.864	86.736	190.050
21	1.2324	1.5157	1.8603	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	8.9492	10.804	13.021	15.668	18.822	22.574	46.005	91.592	108.420	247.065
22	1.2447	1.5460	1.9161	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	9.9336	12.100	14.714	17.861	21.645	26.186	55.206	113.574	135.525	321.184
23	1.2572	1.5769	1.9736	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	11.026	13.552	16.627	20.362	24.891	30.376	66.247	140.831	169.407	417.539
24	1.2697	1.6084	2.0328	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	12.239	15.179	18.788	23.212	28.625	35.236	79.497	174.631	211.758	542.801
25	1.2824	1.6406	2.0938	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.835	13.585	17.000	21.231	26.462	32.919	40.874	95.396	216.542	264.698	705.641
30	1.3478	1.8114	2.4273	3.2434	4.3219	5.7435	7.6123	10.063	13.268	17.449	22.892	29.960	39.116	50.950	66.212	85.850	237.376	634.820	807.794	*
35	1.4166	1.9999	2.8139	3.9461	5.5160	7.6861	10.677	14.785	20.414	28.102	38.575	52.800	72.069	98.100	133.176	180.314	590.668	*	*	*
36	1.4308	2.0399	2.8983	4.1039	5.7918	8.1473	11.424	15.968	22.251	30.913	42.818	59.136	81.437	111.834	153.152	209.164	708.802	*	*	*
40	1.4889	2.2080	3.2620	4.8010	7.0400	10.286	14.974	21.725	31.409	45.259	65.001	93.051	132.782	188.884	267.864	378.721	*	*	*	*
50	1.6446	2.6916	4.3839	7.1067	11.467	18.420	29.457	46.902	74.358	117.391	184.565	289.002	450.736	700.233	*	*	*	*	*	*

Table A-2 Future Value Interest Factors for a One-Dollar Annuity Compounded at *k* Percent for *n* Periods: $FVIFA_{k,n} = [(1 + k)^n - 1] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	1.0000	1.0200	1.0300	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600	1.2000	1.2400	1.2500	1.3000
2	2.0100	2.0200	2.0300	2.0400	2.0500	2.0600	2.0700	2.0800	2.0900	2.1000	2.1100	2.1200	2.1300	2.1400	2.1500	2.1600	2.2000	2.2400	2.2500	2.3000
3	3.0301	3.0604	3.0909	3.1216	3.1525	3.1836	3.2149	3.2464	3.2781	3.3100	3.3421	3.3744	3.4069	3.4396	3.4725	3.5056	3.6400	3.7776	3.8125	3.9900
4	4.0604	4.1216	4.1836	4.2465	4.3101	4.3746	4.4399	4.5061	4.5731	4.6410	4.7097	4.7793	4.8498	4.9211	4.9934	5.0665	5.3680	5.6842	5.7656	6.1870
5	5.1010	5.2040	5.3091	5.4163	5.5256	5.6371	5.7507	5.8666	5.9847	6.1051	6.2278	6.3528	6.4803	6.6101	6.7424	6.8771	7.4416	8.0484	8.2070	9.0431
6	6.1520	6.3081	6.4684	6.6330	6.8019	6.9753	7.1533	7.3359	7.5233	7.7156	7.9129	8.1152	8.3227	8.5355	8.7537	8.9775	9.9299	10.980	11.259	12.756
7	7.2135	7.4343	7.6625	7.8983	8.1420	8.3938	8.6540	8.9228	9.2004	9.4872	9.7833	10.089	10.405	10.730	11.067	11.414	12.916	14.615	15.073	17.583
8	8.2857	8.5830	8.8923	9.2142	9.5491	9.8975	10.260	10.637	11.028	11.436	11.859	12.300	12.757	13.233	13.727	14.240	16.499	19.123	19.842	23.858
9	9.3685	9.7546	10.159	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.164	14.776	15.416	16.085	16.786	17.519	20.799	24.712	25.802	32.015
10	10.462	10.950	11.464	12.006	12.578	13.181	13.816	14.487	15.193	15.937	16.722	17.549	18.420	19.337	20.304	21.321	25.959	31.643	33.253	42.619
11	11.567	12.169	12.808	13.486	14.207	14.972	15.784	16.645	17.560	18.531	19.561	20.655	21.814	23.045	24.349	25.733	32.150	40.238	42.566	56.405
12	12.683	13.412	14.192	15.026	15.917	16.870	17.888	18.977	20.141	21.384	22.713	24.133	25.650	27.271	29.002	30.850	39.581	50.895	54.208	74.327
13	13.809	14.680	15.618	16.627	17.713	18.882	20.141	21.495	22.953	24.523	26.212	28.029	29.985	32.089	34.352	36.786	48.497	64.110	68.760	97.625
14	14.947	15.974	17.086	18.292	19.599	21.015	22.550	24.215	26.019	27.975	30.095	32.393	34.883	37.581	40.505	43.672	59.196	80.496	86.949	127.913
15	16.097	17.293	18.599	20.024	21.579	23.276	25.129	27.152	29.361	31.772	34.405	37.280	40.417	43.842	47.580	51.660	72.035	100.815	109.687	167.286
16	17.258	18.639	20.157	21.825	23.657	25.673	27.888	30.324	33.003	35.950	39.190	42.753	46.672	50.980	55.717	60.925	87.442	126.011	138.109	218.472
17	18.430	20.012	21.762	23.698	25.840	28.213	30.840	33.750	36.974	40.545	44.501	48.884	53.739	59.118	65.075	71.673	105.931	157.253	173.636	285.014
18	19.615	21.412	23.414	25.645	28.132	30.906	33.999	37.450	41.301	45.599	50.396	55.750	61.725	68.394	75.836	84.141	128.117	195.994	218.045	371.518
19	20.811	22.841	25.117	27.671	30.539	33.760	37.379	41.446	46.018	51.159	56.939	63.440	70.749	78.969	88.212	98.603	154.740	244.033	273.556	483.973
20	22.019	24.297	26.870	29.778	33.066	36.786	40.995	45.762	51.160	57.275	64.203	72.052	80.947	91.025	102.444	115.380	186.688	303.601	342.945	630.165
21	23.239	25.783	28.676	31.969	35.719	39.993	44.865	50.423	56.765	64.002	72.265	81.699	92.470	104.768	118.810	134.841	225.026	377.465	429.681	820.215
22	24.472	27.299	30.537	34.248	38.505	43.392	49.006	55.457	62.873	71.403	81.214	92.503	105.491	120.436	137.632	157.415	271.031	469.056	538.101	*
23	25.716	28.845	32.453	36.618	41.430	46.996	53.436	60.893	69.532	79.543	91.148	104.603	120.205	138.297	159.276	183.601	326.237	582.630	673.626	*
24	26.973	30.422	34.426	39.083	44.502	50.816	58.177	66.765	76.790	88.497	102.174	118.155	136.831	158.659	184.168	213.978	392.484	723.461	843.033	*
25	28.243	32.030	36.459	41.646	47.727	54.865	63.249	73.106	84.701	98.347	114.413	133.334	155.620	181.871	212.793	249.214	471.981	898.092	*	*
30	34.785	40.568	47.575	56.085	66.439	79.058	94.461	113.283	136.308	164.494	199.021	241.333	293.199	356.787	434.745	530.312	*	*	*	*
35	41.660	49.994	60.462	73.652	90.320	111.435	138.237	172.317	215.711	271.024	341.590	431.663	546.681	693.573	881.170	*	*	*	*	*
36	43.077	51.994	63.276	77.598	95.836	119.121	148.913	187.102	236.125	299.127	380.164	484.463	618.749	791.673	*	*	*	*	*	*
40	48.886	60.402	75.401	95.026	120.800	154.762	199.635	259.057	337.882	442.593	581.826	767.091	*	*	*	*	*	*	*	*
50	64.463	84.579	112.797	152.667	209.348	290.336	406.529	573.770	815.084	*	*	*	*	*	*	*	*	*	*	*

Table A-3 Present Value Interest Factors for One Dollar Discounted at *k* Percent for *n* Periods: $PVIF_{k,n} = 1 / (1 + k)^n$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	0.9803	0.9612	0.9426	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.8116	0.7972	0.7831	0.7695	0.7561	0.7432	0.6944	0.6504	0.6400	0.5917
3	0.9706	0.9423	0.9151	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7312	0.7118	0.6931	0.6750	0.6575	0.6407	0.5787	0.5245	0.5120	0.4552
4	0.9610	0.9238	0.8885	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6587	0.6355	0.6133	0.5921	0.5718	0.5523	0.4823	0.4230	0.4096	0.3501
5	0.9515	0.9057	0.8626	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5935	0.5674	0.5428	0.5194	0.4972	0.4761	0.4019	0.3411	0.3277	0.2693
6	0.9420	0.8880	0.8375	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5346	0.5066	0.4803	0.4556	0.4323	0.4104	0.3349	0.2751	0.2621	0.2072
7	0.9327	0.8706	0.8131	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4817	0.4523	0.4251	0.3996	0.3759	0.3538	0.2791	0.2218	0.2097	0.1594
8	0.9235	0.8535	0.7894	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4339	0.4039	0.3762	0.3506	0.3269	0.3050	0.2326	0.1789	0.1678	0.1226
9	0.9143	0.8368	0.7664	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3909	0.3606	0.3329	0.3075	0.2843	0.2630	0.1938	0.1443	0.1342	0.0943
10	0.9053	0.8203	0.7441	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3522	0.3220	0.2946	0.2697	0.2472	0.2267	0.1615	0.1164	0.1074	0.0725
11	0.8963	0.8043	0.7224	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.3173	0.2875	0.2607	0.2366	0.2149	0.1954	0.1346	0.0938	0.0859	0.0558
12	0.8874	0.7885	0.7014	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2858	0.2567	0.2307	0.2076	0.1869	0.1685	0.1122	0.0757	0.0687	0.0429
13	0.8787	0.7730	0.6810	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2575	0.2292	0.2042	0.1821	0.1625	0.1452	0.0935	0.0610	0.0550	0.0330
14	0.8700	0.7579	0.6611	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2320	0.2046	0.1807	0.1597	0.1413	0.1252	0.0779	0.0492	0.0440	0.0254
15	0.8613	0.7430	0.6419	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.2090	0.1827	0.1599	0.1401	0.1229	0.1079	0.0649	0.0397	0.0352	0.0195
16	0.8528	0.7284	0.6232	0.5339	0.4581	0.3936	0.3387	0.2919	0.2519	0.2176	0.1883	0.1631	0.1415	0.1229	0.1069	0.0930	0.0541	0.0320	0.0281	0.0150
17	0.8444	0.7142	0.6050	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1696	0.1456	0.1252	0.1078	0.0929	0.0802	0.0451	0.0258	0.0225	0.0116
18	0.8360	0.7002	0.5874	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1528	0.1300	0.1108	0.0946	0.0808	0.0691	0.0376	0.0208	0.0180	0.0089
19	0.8277	0.6864	0.5703	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1377	0.1161	0.0981	0.0829	0.0703	0.0596	0.0313	0.0168	0.0144	0.0068
20	0.8195	0.6730	0.5537	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1240	0.1037	0.0868	0.0728	0.0611	0.0514	0.0261	0.0135	0.0115	0.0053
21	0.8114	0.6598	0.5375	0.4388	0.3589	0.2942	0.2415	0.1987	0.1637	0.1351	0.1117	0.0926	0.0768	0.0638	0.0531	0.0443	0.0217	0.0109	0.0092	0.0040
22	0.8034	0.6468	0.5219	0.4220	0.3418	0.2775	0.2257	0.1839	0.1502	0.1228	0.1007	0.0826	0.0680	0.0560	0.0462	0.0382	0.0181	0.0088	0.0074	0.0031
23	0.7954	0.6342	0.5067	0.4057	0.3256	0.2618	0.2109	0.1703	0.1378	0.1117	0.0907	0.0738	0.0601	0.0491	0.0402	0.0329	0.0151	0.0071	0.0059	0.0024
24	0.7876	0.6217	0.4919	0.3901	0.3101	0.2470	0.1971	0.1577	0.1264	0.1015	0.0817	0.0659	0.0532	0.0431	0.0349	0.0284	0.0126	0.0057	0.0047	0.0018
25	0.7798	0.6095	0.4776	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0736	0.0588	0.0471	0.0378	0.0304	0.0245	0.0105	0.0046	0.0038	0.0014
30	0.7419	0.5521	0.4120	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0437	0.0334	0.0256	0.0196	0.0151	0.0116	0.0042	0.0016	0.0012	*
35	0.7059	0.5000	0.3554	0.2534	0.1813	0.1301	0.0937	0.0676	0.0490	0.0356	0.0259	0.0189	0.0139	0.0102	0.0075	0.0055	0.0017	0.0005	*	*
36	0.6989	0.4902	0.3450	0.2437	0.1727	0.1227	0.0875	0.0626	0.0449	0.0323	0.0234	0.0169	0.0123	0.0089	0.0065	0.0048	0.0014	*	*	*
40	0.6717	0.4529	0.3066	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0154	0.0107	0.0075	0.0053	0.0037	0.0026	0.0007	*	*	*
50	0.6080	0.3715	0.2281	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0054	0.0035	0.0022	0.0014	0.0009	0.0006	*	*	*	*

Table A-4 Present Value Interest Factors for a One-Dollar Annuity Discounted at *k* Percent for *n* Periods: $PVIFA = [1 - 1/(1 + k)^n] / k$

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	20%	24%	25%	30%
1	0.9901	0.9804	0.9709	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.9009	0.8929	0.8850	0.8772	0.8696	0.8621	0.8333	0.8065	0.8000	0.7692
2	1.9704	1.9416	1.9135	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.7125	1.6901	1.6681	1.6467	1.6257	1.6052	1.5278	1.4568	1.4400	1.3609
3	2.9410	2.8839	2.8286	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4437	2.4018	2.3612	2.3216	2.2832	2.2459	2.1065	1.9813	1.9520	1.8161
4	3.9020	3.8077	3.7171	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.1024	3.0373	2.9745	2.9137	2.8550	2.7982	2.5887	2.4043	2.3616	2.1662
5	4.8534	4.7135	4.5797	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6959	3.6048	3.5172	3.4331	3.3522	3.2743	2.9906	2.7454	2.6893	2.4356
6	5.7955	5.6014	5.4172	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.2305	4.1114	3.9975	3.8887	3.7845	3.6847	3.3255	3.0205	2.9514	2.6427
7	6.7282	6.4720	6.2303	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.7122	4.5638	4.4226	4.2883	4.1604	4.0386	3.6046	3.2423	3.1611	2.8021
8	7.6517	7.3255	7.0197	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	5.1461	4.9676	4.7988	4.6389	4.4873	4.3436	3.8372	3.4212	3.3289	2.9247
9	8.5660	8.1622	7.7861	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.5370	5.3282	5.1317	4.9464	4.7716	4.6065	4.0310	3.5655	3.4631	3.0190
10	9.4713	8.9826	8.5302	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.8892	5.6502	5.4262	5.2161	5.0188	4.8332	4.1925	3.6819	3.5705	3.0915
11	10.368	9.7868	9.2526	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	6.2065	5.9377	5.6869	5.4527	5.2337	5.0286	4.3271	3.7757	3.6564	3.1473
12	11.255	10.575	9.9540	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.4924	6.1944	5.9176	5.6603	5.4206	5.1971	4.4392	3.8514	3.7251	3.1903
13	12.134	11.348	10.635	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.7499	6.4235	6.1218	5.8424	5.5831	5.3423	4.5327	3.9124	3.7801	3.2233
14	13.004	12.106	11.296	10.563	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.9819	6.6282	6.3025	6.0021	5.7245	5.4675	4.6106	3.9616	3.8241	3.2487
15	13.865	12.849	11.938	11.118	10.380	9.7122	9.1079	8.5595	8.0607	7.6061	7.1909	6.8109	6.4624	6.1422	5.8474	5.5755	4.6755	4.0013	3.8593	3.2682
16	14.718	13.578	12.561	11.652	10.838	10.106	9.4466	8.8514	8.3126	7.8237	7.3792	6.9740	6.6039	6.2651	5.9542	5.6685	4.7296	4.0333	3.8874	3.2832
17	15.562	14.292	13.166	12.166	11.274	10.477	9.7632	9.1216	8.5436	8.0216	7.5488	7.1196	6.7291	6.3729	6.0472	5.7487	4.7746	4.0591	3.9099	3.2948
18	16.398	14.992	13.754	12.659	11.690	10.828	10.059	9.3719	8.7556	8.2014	7.7016	7.2497	6.8399	6.4674	6.1280	5.8178	4.8122	4.0799	3.9279	3.3037
19	17.226	15.678	14.324	13.134	12.085	11.158	10.336	9.6036	8.9501	8.3649	7.8393	7.3658	6.9380	6.5504	6.1982	5.8775	4.8435	4.0967	3.9424	3.3105
20	18.046	16.351	14.877	13.590	12.462	11.470	10.594	9.8181	9.1285	8.5136	7.9633	7.4694	7.0248	6.6231	6.2593	5.9288	4.8696	4.1103	3.9539	3.3158
21	18.857	17.011	15.415	14.029	12.821	11.764	10.836	10.017	9.2922	8.6487	8.0751	7.5620	7.1016	6.6870	6.3125	5.9731	4.8913	4.1212	3.9631	3.3198
22	19.660	17.658	15.937	14.451	13.163	12.042	11.061	10.201	9.4424	8.7715	8.1757	7.6446	7.1695	6.7429	6.3587	6.0113	4.9094	4.1300	3.9705	3.3230
23	20.456	18.292	16.444	14.857	13.489	12.303	11.272	10.371	9.5802	8.8832	8.2664	7.7184	7.2297	6.7921	6.3988	6.0442	4.9245	4.1371	3.9764	3.3254
24	21.243	18.914	16.936	15.247	13.799	12.550	11.469	10.529	9.7066	8.9847	8.3481	7.7843	7.2829	6.8351	6.4338	6.0726	4.9371	4.1428	3.9811	3.3272
25	22.023	19.523	17.413	15.622	14.094	12.783	11.654	10.675	9.8226	9.0770	8.4217	7.8431	7.3300	6.8729	6.4641	6.0971	4.9476	4.1474	3.9849	3.3286
30	25.808	22.396	19.600	17.292	15.372	13.765	12.409	11.258	10.274	9.4269	8.6938	8.0552	7.4957	7.0027	6.5660	6.1772	4.9789	4.1601	3.9950	3.3321
35	29.409	24.999	21.487	18.665	16.374	14.498	12.948	11.655	10.567	9.6442	8.8552	8.1755	7.5856	7.0700	6.6166	6.2153	4.9915	4.1644	3.9984	3.3330
36	30.108	25.489	21.832	18.908	16.547	14.621	13.035	11.717	10.612	9.6765	8.8786	8.1924	7.5979	7.0790	6.6231	6.2201	4.9929	4.1649	3.9987	3.3331
40	32.835	27.355	23.115	19.793	17.159	15.046	13.332	11.925	10.757	9.7791	8.9511	8.2438	7.6344	7.1050	6.6418	6.2335	4.9966	4.1659	3.9995	3.3332
50	39.196	31.424	25.730	21.482	18.256	15.762	13.801	12.233	10.962	9.9148	9.0417	8.3045	7.6752	7.1327	6.6605	6.2463	4.9995	4.1666	3.9999	3.3333

Interest Rate Determination

Structure

1. Objectives

After studying this chapter, you should be able to:

- Define Interest
- Explain Classical Theory of Interest
- Explain Loanable Funds Theory
- Discuss Liquidity Preference Theory
- Explain the differences between the three theories.
- Discuss the short comings of all the three theories.

2. Introduction

In the second chapter while discussing circular flow of income and expenditure we discussed that income is equal to expenditure. Similarly in fourth chapter while discussing consumption, we discussed why and how people consume. In circular flow of income and expenditure we learned that savings are called as leakage as money is taken out of circulation. Regarding savings a question arises “Why should we save rather than consuming?” Individuals save for various reasons for example, for unpredicted future needs, due to availability of surplus income etc. In economics, we can say that *Interest* is the price paid for encouraging people with money to save it rather than spend it, and to invest in assets rather than holding cash. This *Interest* which is usually expressed as a percentage, usually per annum, is called as Rate of Interest or Interest Rate.

Some economists view interest as the rate of return on capital as the savings of individuals come back to the circular flow through various institutions as investment. Certain classical economists classified interest rate as natural or real rate of interest and the market rate of interest. Natural rate or real rate is used to express a rate of return earned on capital as a factor of production and market rate refers to the price which is paid by the borrowers to lenders for the use of their saving funds. So simply, real rate of interest is rate of return on investment whereas market rate of interest is the rate at which funds can be borrowed in the market. Based on the classifications, economists believe that when the real rate of interest is greater than the market rate of interest, then there will be greater investment in capital.

However, it is important to note the difference between the real rate of interest and nominal rate of interest. The real rate of interest is the nominal rate of interest corrected for inflation (i.e. rise in the general price level) in the economy. Thus:

Real rate of interest = Nominal rate of interest – rate of inflation

Activity 1 Banks give different interest rates for different types of accounts like Fixed Deposits, savings accounts etc. Try to find out why and how they calculate this interest rate.

For understanding the determination of interest rate, we will study three theories.

a. Classical Theory of Interest which describes interest as determined by saving and investment.
b. Loanable Funds or Neo-Classical Theory of interest as proposed by neo-classical economists such as Wicksell, Ohlin, Haberler, Robertson, Viner.
c. Liquidity Preference Theory as proposed by Keynes.

The classical economists consider that interest rate is determined by the interaction of monetary and non-monetary forces. In their view, monetary factors along with the real factors determine the interest rate. However, loanable funds theory is partly a monetary theory of interest and Keynes‟ popularly known as liquidity preference theory of interest is purely monetary theory.

Interestingly, all these theories of interest try to explain the determination of interest rate through the equilibrium between the forces of demand and supply. In simple words, all these theories are demand and supply theories. The difference between the three theories of interest rests on the variables they considered for demand and supply.

According to the classical theory, interest rate is determined by demand for savings to make investment and the supply of savings whereas Loanable-funds theory seeks to explain the determination of the interest rate through the equilibrium between demand for and supply of loanable funds. Apart from savings, loanable funds also consist of funds derived from other sources. On the other hand, the liquidity preference theory of interest explains the determination of interest rate through the equilibrium between demand for and supply of money.

Let‟s discuss the three theories in detail. We will focus on two issues in all the three theories. One, “why does interest arise?” and other “how interest rate is determined?”

Check your Progress

1. The Fisher equation states that

    a. the nominal interest rate equals the real interest rate plus the expected rate of inflation.
    b. the real interest rate equals the nominal interest rate less the expected rate of inflation.
    c. the nominal interest rate equals the real interest rate less the expected rate of inflation.
    d. All the above

2. The nominal interest rate minus the expected rate of inflation

    a. defines the real interest rate.
    b. is a less accurate measure of the incentives to borrow and lend than is the nominal interest rate.
    c. is a less accurate indicator of the tightness of credit market conditions than is the nominal interest rate.
    d. defines the discount rate.

3. What are three prominent theories on Interest Rate determination.

3. Classical Theory of Interest

The Classical Theory of Interest tries to explain the determination of the interest rate through the interaction between the demand for savings to make investment and the supply of savings. The classical theory of interest is also known as Real Theory of Interest as this theory explains the determination of the interest rate by real forces such as thriftiness, time preference and productivity of capital.

Classical economists have differed considerably from each other in respect of their views about interest. Few of them laid emphasis on the forces governing the supply of savings as they considered interest as a price for abstinence or waiting or time preference. Few others thought that interest rate is determined by the marginal productivity of capital, which is a force that operates on the demand side of savings.

Fisher and Bohm-Bawerk pointed out that the basic common assumption of all classical economists is full employment of resources. Hence, according to classical economists‟ models if more resources are to be devoted to investment i.e. to the production of capital goods, some resources have to be withdrawn from the production of consumers‟ goods.

As per this theory, money that is lent out to the entrepreneurs for investment in capital goods is made available by those who save from their incomes. So, instead of consuming, they release resources for the production of capital goods. Hence, to motivate people to save and refrain from consuming a part of their incomes, they must be offered some reward in the form of interest. To encourage them to save more, the higher interest rate has to be offered. The classical economists are in congruence regarding the basics of interest however they differed in detail about the nature of interest. We will discuss some of their views.

Interest is a price for waiting or abstinence

Nasau Senior proposed that saving involved a sacrifice in the form of abstinence and the price for this sacrifice is „interest". Senior opined that if interest is not paid as compensation for the sacrifice, the individuals may not like to sacrifice. However, the idea of sacrifice or abstinence was criticised by some economists, especially by Karl Marx, who argued that the rich people who are the main source of savings are able to save without making any real sacrifice of abstinence.

Karl Marx argued that the rich people save because something is left over after their consumption. To negate this criticism Marshall substituted the word „waiting" for "abstinence". According to Marshall, when a person saves money and lends it to others, he just postpones consumption rather than abstaining from consumption forever. However, the individual who lends his savings has to wait until he gets back the money.

Interest is paid due to time preference (Fisher"s Theory)

Irving Fisher stressed on time preference as a cause of interest. But, along with time preference he also proposed the role of marginal productivity of capital for which he proposed the term „rate of return over cost" as a factor that also determines interest. Interest rate arises because people favour present satisfaction to future satisfaction i.e. people are eager to spend their incomes in the present. So, Fisher proposed that interest is a compensation for the time preference of the individual. Stronger the preference of individuals for the present consumption, higher the interest rate so as to induce them to lend money.

According to Fisher, the degree of impatience to spend income in the present depends upon four things: the size of the income, the distribution of income over time, the degree of certainty regarding enjoyment in the future and the temperament and character of the individual.

Individuals whose incomes are large are likely to have their present wants more fully satisfied. Hence, these rich people will discount the future at a relatively lower interest rate (that is, their time preference will be less) and will be required to be paid a relatively lower interest rate.

Regarding distribution of income over time, there are three possible situations. The income may be unvarying throughout one"s life or may increase with age or decrease with age. If the income is uniform, the degree of impatience to spend in the present will be determined by the size of the income and the temperament of the individual. If income increases with age, it means the future is well taken care for and the degree of impatience to spend money in the present i.e. time preference will be greater. On the other hand, if income declines with age, the degree of impatience to spend money at present will be less.

Regarding the certainty of enjoyment in the future, if a person is sure of enjoyment of income in the future, other things remaining the same, the impatience to spend money in the present will be less, that is, the degree of time preference will be smaller.

Lastly, the character and the temperament of an individual will also determine his time preference. A man of far-sightedness will be less impatient to spend income in the present, that is, his rate of time preference will be less as compared to that of an extravagant. The rate of time preference is also influenced by life expectancy. If a man expects to live long, his preference for spending income in the present will be comparatively low.

One important thing to note is that Fisher introduced risk and uncertainly in his theory. According to him, individuals have choices which causes the interest rate fluctuation every year.

Determination of the Interest rate in the Classical Theory

According to the classical theory interest rate is determined by the supply of savings and demand for savings to invest. Higher the interest rate, more the people will be motivated to make savings. Moreover, at higher interest rate, people with strong time preference will also be induced to save. Hence, the supply curve of savings will slope upward to the right.

In contrast, the demand for savings comes from the firms which desire to invest in capital goods. Capital goods are wanted because they can be used to produce further goods which can be sold to earn income. A capital asset contributes returns for many years. However, the future is uncertain and the firms have to evaluate the uncertainties of the future and estimate potential income from a capital asset after making allowance for maintenance and operating costs. The firms have to calculate the net expected return of a capital asset. This net expected return is expressed as percentage of the cost of capital asset. More the capital assets of a given kind, less the income will be expected to accrue from a marginal unit of it. Hence, the marginal revenue productivity curve of capital slopes downward to the right.

The cost of money invested in capital assets is the interest rate which an individual has to pay on the borrowed funds. Firms will continue to make investment in capital assets as long as the expected net rate of return is greater than the interest rate. As the marginal revenue product curve of capital slopes downward, it will become profitable to purchase more capital goods as the interest rate falls.

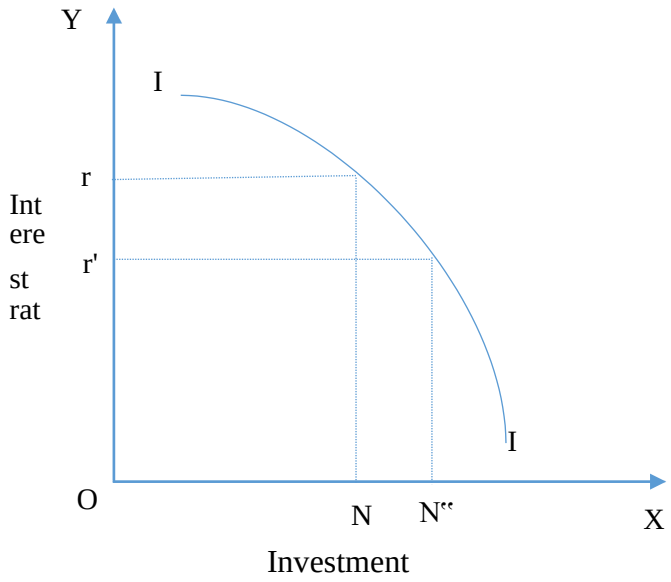


Fig. 6.1 Investment Demand Curve

The method in which the investment demand increases as the interest falls is illustrated in Fig.6.1 where I is the investment demand curve showing the falling marginal revenue productivity of capital. When the interest rate is Or, investments by firms will be up to ON because the marginal net expected return is equal to Or interest rate when ON investment is made. If the interest rate falls to Or‟, then more capital projects will become profitable to be undertaken. Therefore, as a result of the fall in the interest rate to Or‟, investment increases to ON‟. It is evident that with a change in the interest rate, there will be a change in investment.

Equilibrium between Demand and Supply

According to the classical theory, the intersection of the investment demand curve and the supply of savings curve determines the interest rate. The method in which the interest rate is determined by the intersection of investment demand and supply of savings is depicted in Fig. 6.2 where I is the investment demand curve and S is the supply of savings curve. Investment demand curve I and the supply of savings curve S intersect at point E and thus determine Or as the equilibrium interest rate.

In this equilibrium position, ON is the amount of savings and investment. If there is any change in the demand for investment and supply of savings, the curves will shift accordingly and thereby changing the equilibrium interest rate.

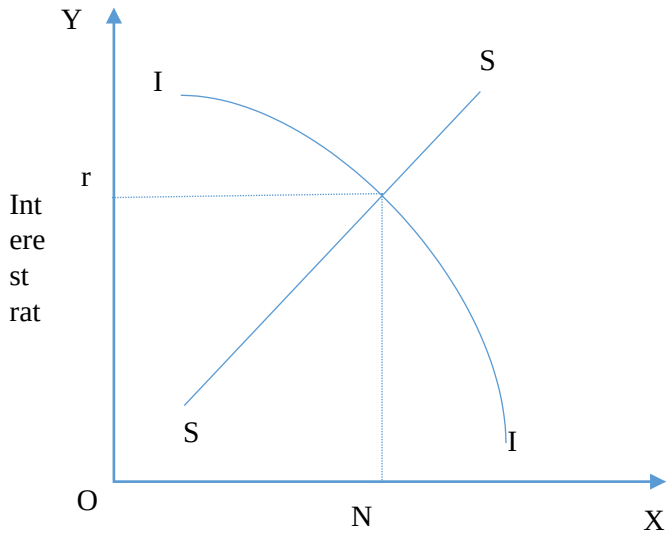


Fig. 6.2 Classical Theory: Interest Determination

Critical Appraisal of the Classical Theory of Interest

Classical theory of interest has been criticised on several grounds. Some of the criticisms levelled against the classical theory of interest are discussed below.

Assumption of Full Employment

Classical theory of interest has been critcised for its assumption of full employment of resources which is thought to be unrealistic. In the case of full employment of resources, more investment (i.e., production of more capital goods) can take place only by curtailing consumption and there by releasing resources from the production of consumption goods.

Hence, when full employment of resources exists, people have to be paid interest so as to motivate them to abstain from consumption so that more resources should be allotted to the production of capital goods. However, when large scale of unemployed resources are found there is no need for paying people to abstain from consumption or to postpone consumption and wait. More investment can be undertaken by employing the unemployed or un-utilised productive resources.

Changes in Income Level Overlooked

With the assumption of full employment, the classical theory ignored the changes in income level and their effect on savings and investment. Classical theory states a direct functional relationship between interest rate and the volume of savings; with a rise in interest rate, there will be a rise in savings. However, at the higher interest rate investment demand will be less with the result that interest will tend to fall to the level where savings and investment are in equilibrium.

But this is not so practical, as the direct functional relationship between savings and the interest rate is doubtful, and moreover when more savings take place as a result of the rise in

the interest rate, these more savings should lead to more investment, as according to classical theory investment is governed by savings.

But, change in income is not at all been considered by the classical theory in the whole process of adjustment. In fact, when the interest rate rises and investment shrinks, as a result, income will decline. With the decline in income, the savings will decline. Therefore, the equality between savings and investment are brought about not through changes in the interest rate but through changes in income.

Therefore, in classical theory more investment cannot take place even at lower rates of interest, because of the scarcity of savings at lower rates of interest. But this is not what really happens. At a lower interest rate, more investment will be undertaken and increase in the investment will lead to the increase in income through multiplier. Then through increased income more would be saved. Again the tendency to equalise savings and investment is brought about by changes in income. Thus, the lower interest rate through the increase in investment and income leads to the rise in savings. But this is quite conflicting to the classical theory wherein at the lower interest rate small savings are made.

From the above analysis it follows that by overlooking the changes in income, the classical theory has an erroneous view of the interest rate as the factor which brings about the equality of savings and investment. The classical theory ignores the changes in income level since it assumes full employment of resources.

For example, according to classical theory, if investment demand curve I shifts downward to the dotted position I‟ (Fig. 6.3) because the profit prospects have diminished, then according to classical theory, the new equilibrium interest rate is Or‟ where the new investment demand curve I intersects the supply curve S which remains unchanged.

However this is quite weak. As a result of the fall in investment, income will decline. Since the supply curve of savings is drawn with a given level of income, when income falls, there will be less savings than before and as a result savings curve will shift to the left. But then the classical theory does not take into account changes in the income level as a result of changes in investment and regards the savings schedule as independent of investment schedule which is not correct and realistic.

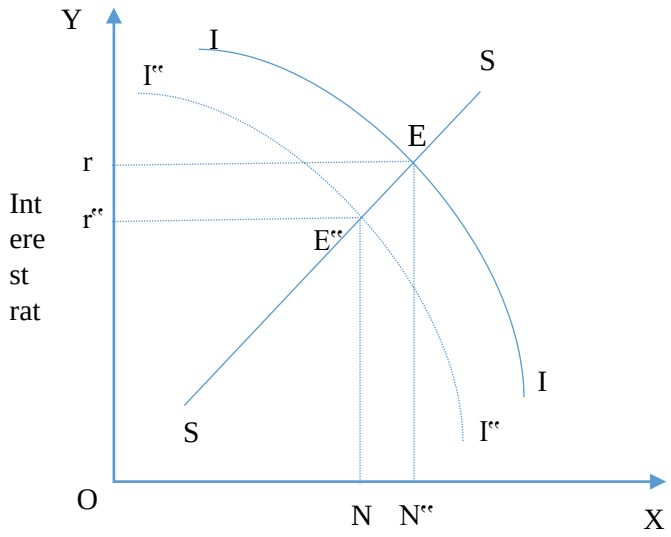


Fig. 6.3 As per Classical Theory, investment schedule can vary without affecting the savings schedule.

Indeterminateness

Keynes argues that the classical theory is indeterminate. Position of the savings curve differs with the level of income. There will be dissimilar savings schedules for different levels of income. As income rises, the savings curve will shift to the right and as income falls the savings curve will shift to the left.

Thus, we cannot know the position of the savings curve unless we already know the level of income, and if we do not know the position of the savings curve, we cannot know the interest rate. Thus we cannot know what the interest rate will be unless we already know what the income level is. However we cannot know the income level without already knowing the interest rate because with the changes in the interest rate, investment will change, which will in turn bring changes in the income level. The classical theory, therefore, offers no determinate solution to the problem of interest rate determination and is indeterminate.

Disincentive Effect of Lesser Consumption on Investment Ignored

According to the classical theory, more investment can happen only by reducing consumption. More the reduction in consumption, the greater the increase in investment in capital goods. However we all know the demand for capital goods is a derived demand i.e. it is derived from the demand for consumer goods.

Therefore, the decrease in demand for consumer goods, will adversely affect the demand for capital goods and will thus reduce the inducement to invest. The disincentive effect of the fall in consumption on investment is polished over by the classical theory.

We have seen some of the criticisms of the classical theory of interest. Some of the drawbacks of the classical theory were removed by the loanable funds theory.

Check your progress

4. In classical theory, interest rates are determined
    a. by the price level and unemployment
    b. strictly by the money supply
    c. by the supply and demand for money
    d. by saving and investment
5. What are the criticisms of Classical Theory of Interest

4. Neo Classical Theory - Loanable Funds Theory of Interest.

Building on the drawbacks of classical theory, several economists like Wicksell, Bertil Ohlin, Robertson, Myrdal, Lindahl, Viner, etc contributed to the development of loanable funds theory. Loanable Funds theory proposed that not only real forces, such as thriftiness, waiting, time-preference and productivity of capital help to determine the interest rate but monetary forces such as hoarding and dishoarding of money, money created by banks, monetary loans for consumption purposes also play a role in interest rate determination.

Therefore the advocates of the loanable funds theory proposed the interaction of monetary and non-monetary forces in the determination of the interest rate. This is the reason we see that loanable funds theory is a monetary theory of interest, even though it is only partly monetary as it also recognises the importance of real forces such as thriftiness and productivity of capital in the determination of the interest rate.

According to this theory, interest rate is determined by demand for and supply of loanable funds. The demand for loanable funds is comprised of the demand for investment, demand for consumption and demand for hoarding money and the supply of loanable funds is comprised of savings out of disposable income, dishoarding, money created by the banks and disinvestment.

Let‟s see these several sources of supply and demand of loanable funds.

Supply of Loanable Funds

Savings

The most important source of the supply of loanable funds is the savings by individuals and households. In the loanable funds theory, savings are considered in two ways. First, savings planned by individuals and households in the beginning of a period in anticipation of expected incomes and expenditures on consumption, and second, the difference between the income of the earlier period (which becomes disposable in the present period) and consumption of the present period.

In both of these savings it is assumed that the quantity of savings varies with interest rate. Additional savings will be upcoming at higher interest rates and vice versa. It is a known fact that savings by individuals and households mainly depend upon the size of their income. However, given the income level, savings vary with the interest rate; the higher the interest rate, the greater the volume of savings. For that reason, supply curve of savings slopes upward to the right.

Similar to individuals, business concerns also save. When the business is single proprietorship or partnership, a part of the profit (income) from the business is used for consumption purposes and a part is reserved for further expansion of the business. When the business is joint stock Company, a part of the profit (income) is distributed as dividends to the shareholders and a part is retained as reserves and surplus.

Business savings partially depends upon the current interest rate. A higher interest rate is expected to encourage business savings as a substitute for borrowing from the loan market. These savings are typically used for investment purposes by the business firms and, therefore, most of them do not enter into the market for loanable funds.

But these savings influence the interest rate since they serve as substitute for borrowed funds and, therefore, reduce the market demand for loanable funds. In Fig. 6.4, the curve S indicates the supply curve of savings which slopes upward to the right.

Dishoarding

Hoarding money represents holding idle cash. Dishoarding is when the idle cash is brought back into economy. Dishoarding of the past accrued savings is another source of supply of loanable funds. When individuals dishoard, the idle cash balances become active cash balances in the current period and thus add to the supply of loanable funds People hoard money because of their preference for liquidity. At low interest rates, individuals may hold cash for the sake of holding liquidity as they don‟t loose much by holding cash. However, at a higher interest rate, individuals holding idle cash balances will be motivated to dishoard more money. Therefore, the curve of dishoarding slopes upwards to the right as is shown in Fig. 6.4 by curve DH.

Bank Money

Another important source of the supply of loanable funds are the banks and financial institutions. The banks and financial institutions advance loans to the entrepreneurs and firms for investment. Banks and financial institutions can also reduce the supply of loanable funds by restricting their lending. Banks and financial institutions also buy and sell securities and hence affect the supply of loanable funds. Practically, the banks and financial institutions would like to lend more money at higher rates of interest than at lower ones. Therefore,

supply curve of bank money also slopes upward to the right as is shown by the curve BM in Fig. 6.4.

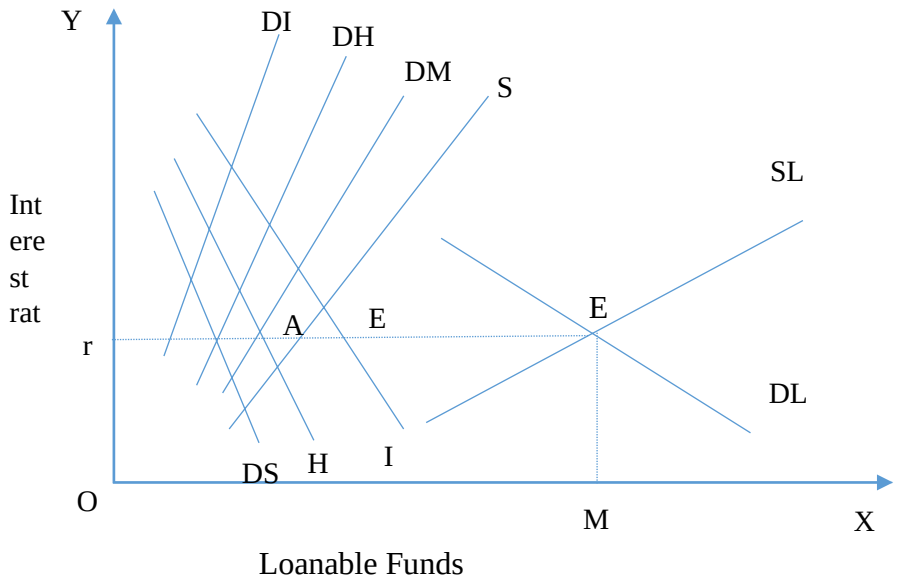


Fig. 6.4 Determination of Interest Rate

Disinvestment

Another source of the supply of loanable funds is Disinvestment. Disinvestment means disentangling of the present fixed and working capital. Normally, firms provide for depreciation reserves so as to replace the fixed asset when it is completely worn out. However, when there is a declining trend in certain industries, the entrepreneurs may let the existing stock of machines and other equipment belonging to those industries wear out without replacement.

Consequently, entrepreneurs may bring the depreciation reserves in the market for loanable funds. In the same way, working capital invested in business may also be withdrawn gradually and made available as loanable funds. When disinvestment decision is taken, then not only the depreciation reserves but a part of the revenue instead of going into capital replacement, also flows into the market for loanable funds. For that reason, disinvestment curve will also slope upward to the right, as is showed by the curve DI in Fig. 6.4.

By horizontally adding up the savings curve (S), dishoarding curve (DH), bank money curve (BM) and disinvestment curve (DI) we get the total supply curve of loanable funds SL which slopes upward to the right indicating that a greater amount of loanable fund will be available at higher rates of interest and vice versa.

Demand for Loanable Funds

Loanable funds theory differs from the classical theory in its explanation of the demand for funds also. The classical theory considers only the demand for funds for investment purposes, whereas the loanable funds theory also takes in account the demand of loans for consumption and demand for hoarding money, in addition to the demand of funds for investment.

Investment Demand

With a reduction in the interest rate, entrepreneurs find it profitable to increase investment in capital goods resulting in the raise of demand for loanable funds. Therefore at a low interest rate, there will be greater investment demand and vice versa. Hence, the curve of investment demand for loanable funds slopes downward to the right as is shown by the curve I in Fig. 6.4.

Consumption Demand

Another important source of demand for loanable funds is the loans taken by the people for consumption purposes. Loans for consumption purposes are demanded by the individuals when they desire to make purchases in excess to their current incomes and idle cash resources. The loans for consumption purposes are generally demanded for buying durable use goods such as automobiles, houses, television sets, refrigerators, air conditioners etc. Lower interest rates will encourage people to borrow more for consumption, whereas, higher interest rates will discourage borrowing for consumption. Hence, consumption demand for loanable funds slopes downward to the right as represented by the curve DS in Fig. 6.4.

Demand for Hoarding

Hoarded money represents idle cash balances. Individuals save money when they do not spend all their disposable income on consumption. With the savings, individuals can save in banks or purchase securities or lend to others or invest in assets or hold the cash. Holding of cash idly is known as hoarding. Individuals can also hoard money when they sell assets or securities but not spending the proceeds obtained there-from. Reason that can be attributed for hoarding money is that people like to take benefit of the changes in the interest rate or changes in the prices of securities in the future. At higher interest rates, individuals will hoard less money because money can be lent out to take advantage of the higher interest rates, whereas individuals will hoard money at lower interest rates because they will not lose much by hoarding money. Hence the curve of demand for hoarding money will slope downwards as is depicted by the curve H in Fig. 6.4.

By totalling up horizontally the investment demand curve I, dis-savings or consumption demand curve DS, and the hoarding demand curve H, we get DL as the total demand curve for loanable funds.

Equilibrium between Demand for and Supply of Loanable Funds

Under Loanable Funds Theory the interest rate is determined by the intersection of the demand for loanable funds curve DL and the supply of loanable funds curve SL, as is showed in Fig. 6.4. DL and SL curves transect at point E thus determining the equilibrium interest rate Or. At the equilibrium interest rate Or, the loanable funds supplied and demanded are equal to OM. At any other interest rate either the supply of loanable funds will exceed the demand for loanable funds or the demand for loanable funds will exceed the supply of loanable funds and consequently there will be a change in the interest rate till it reaches the level where demand for and supply of loanable funds are equal.

Please note that at the equilibrium interest rate where aggregate demand for and supply of loanable funds are equal, planned savings and investment may not be equal, as seen in Fig.

6.4. It will be seen from this figure that at equilibrium interest rate Or, investment is equal to rE, and savings are equal to rA.

When investment is greater than savings, income will increase. With the increase in income, there will in rise in savings curve S and consequently the aggregate supply curve SL will shift to the right. And this shift in the savings and supply of loanable funds curve SL will cause a change in the interest rate. Therefore we can see that the interest rate when determined by the demand for and supply of loanable funds will not be a stable one if there is a variation between savings and investment at that rate. This inequality will bring about a change in the income and thereby a change in the savings and supply of loanable funds. As a result, the interest rate will tend to change.

This can be simplified by using net of savings (i.e., savings minus dissavings), net of hoarding (i.e., hoarding minus dishoarding) and net of investment (i.e., investment minus disinvestment). We know that equilibrium interest rate is determined where

Supply of loanable funds = Demand for loanable funds

or $S + DH + BM + DI = I+DS + H$

By taking DH and DI to the right side and DS to the left side

$(S – DS) + BM = (1- DI) + (H-DH)$

Or Net S + BM = Net I + Net H

Or, Net savings + Bank money = Net Investment + Net hoarding

Therefore we see that the interest rate will be at the equilibrium level where the supply of net savings and bank money will be equal to the demand for investment and net hoarding. This is the essence of the loanable funds theory of interest.

Critical Evaluation of Loanable Funds Theory

Loanable funds theory is considered as an improvisation to classical theory of interest. It expanded the scope of the forces impacting the supply of and demands for loanable funds. Further, it‟s a comprehensive analysis of the determination of the interest rate and takes into account all the relevant factors which have an effect on the interest rate, i.e. saving or thriftiness, investment demand, hoarding and bank credit. However, loanable funds theory has its own limitations and has been criticised by Keynes and Keynesians.

Keynes argued that the concept of hoarding as used in loanable funds theory is quite doubtful. His argument was that hoarding simply cannot increase or decrease as long as the amount of money remains the same. Keynes idea was that money in circulation in any economy has to be in somebody‟s cash balances at any given time.

Keynes also criticised the loanable funds theory on the ground that similar to classical theory, it did not provide a determinate solution to the interest rate determination and involved what was called circular reasoning. According to him it is the level of income which determines savings and as savings is an important constituent of the supply of loanable funds, the supply

of loanable funds curve will vary with level of income. Hence, interest rate cannot be determined without knowing the income level. He argued that we cannot know the level of income unless we know the interest rate because interest rate affects investment which in turn determines the level of income.

Another criticism against the loanable funds theory is that it is based upon the assumption of full employment level of income which does not hold in the real world. Keynes theory claims superiority on the basis of its being based upon realistic assumption of less than full employment.

Check your progress

6. The basic price that equates the demand for and the supply of loanable funds in the financial markets is the_____.
   a. rate of inflation
   b. equilibrium rate
   c. interest rate
   d. capital interest rate

7. The loanable funds theory states that_____.
   a. the major factor that determines the volume of savings, corporate as well as individual, is
   b. the level of national income.
   c. interest rates are a function of the supply of and demand for loanable funds.
   d. money supply contracts and the level of current savings dictate the current interest rates.
8. Within the loanable funds framework, if the market interest rate exceeds the equilibrium interest rate, then
   a. the volume of loanable funds demanded exceeds the volume of loanable funds supplied and interest rates will tend to fall.
   b. the volume of loanable funds supplied exceeds the volume of loanable funds demanded and interest rates will tend to increase.
   c. the volume of loanable funds demanded exceeds the volume of loanable funds supplied and interest rates will tend to increase.
   d. the volume of loanable funds supplied exceeds the volume of loanable funds demanded and interest rates will tend to fall.
9. What constitutes Demand for Loanable Funds ?

5. Keynes's Liquidity Preference Theory of Interest

J.M. Keynes proposed Liquidity Preference Theory In his book, "The General Theory of Employment, Interest and Money". According to Keynes, interest is a purely a monetary phenomenon and as such it is determined by the demand for money (i.e., liquidity preference) and the supply of money. According to him, "interest is the reward for parting with liquidity for a specified period." Since he emphasised the role of liquidity preference in the determination of the interest rate, his theory is known as liquidity preference theory of interest.

According to him, "A man with a given income has to decide first how much he is to consume and how much to save" .This is, what Keynes calls, the propensity to consume. Given this propensity to consume, the individual will save a certain proportion of his given income. Then he has to take another decision regarding holding his savings i.e. how much of his resources will he hold in the form of ready money (cash or non-interest-paying bank deposits) and how much will he part with or lend depends upon what Keynes calls his "liquidity preference". Liquidity preference means the demand for money to hold or the desire of the public to hold cash.

Demand for Money or Motives for Liquidity Preference

Liquidity preference of a particular individual is influenced by several factors. The question is: Why should the people hold their resources liquid or in the form of ready money, when they can get interest by lending such resources?

The desire for liquidity can be caused by three motives:

(i) The transactions motive,

(ii) The precautionary motive, and

(iii) The speculative motive.

The Transactions Motive

The transactions motive relates to the need for cash or liquidity for the current and regular transactions of individuals and entrepreneurs. Individuals want to hold cash in order "to bridge the interval between the receipt of income and its expenditure". This is called the „Income Motive". Most of the people receive their incomes in the beginning of a month or fortnight or week whereas the expenditure goes on day by day. Therefore, certain amount of ready money is always kept in hand to make current payments for goods and services to be purchased. This amount will depend upon the size of the individual"s income, the frequency of income receipt and the methods of payment existing in the society.

Similarly, entrepreneurs or business persons also have to keep a proportion of their resources in ready cash in order to meet current needs of various kinds. They need money all the time in order to pay for raw materials and transport, to pay wages and salaries and to meet all other current expenses business. Keynes calls this as the „Business Motive" for keeping money.

Precautionary Motive

Precautionary motive for holding money refers to the intent of individuals to hold cash balances for unforeseen contingencies. People hold a certain amount of money to provide for the danger of sickness, accidents, unemployment, sickness or any other uncertain emergencies. The amount of money held under this motive will depend on the nature of the individual and on the conditions in which he lives.

Speculative Motive

The speculative motive relates to the desire to hold one‟s resources in liquid form in order to take advantage of market movements with respect to the changes in the interest rate. Keynes was the first person to propose the idea of holding money for speculative motive. Money held under the speculative motive serves as a store of value as money held under the precautionary motive does. But this store of money is meant for a different purpose. The cash held under this motive is used to make speculative gains by trade in bonds whose prices fluctuate.

Therefore, the demand for money under speculative motive is a function of the current interest rate, increasing with a fall in interest rate and decreasing with the rise in interest rate rises. Therefore, demand for money under speculative motive is a decreasing function of the interest rate as shown in Fig.6.5.

The perfectly elastic portion of liquidity preference curve indicates the position of absolute liquidity preference of the people. That is, at a very low interest rate people will hold any amount of money they have with them as inactive balances. This portion of liquidity preference curve with absolute liquidity preference is called liquidity trap by some economists.

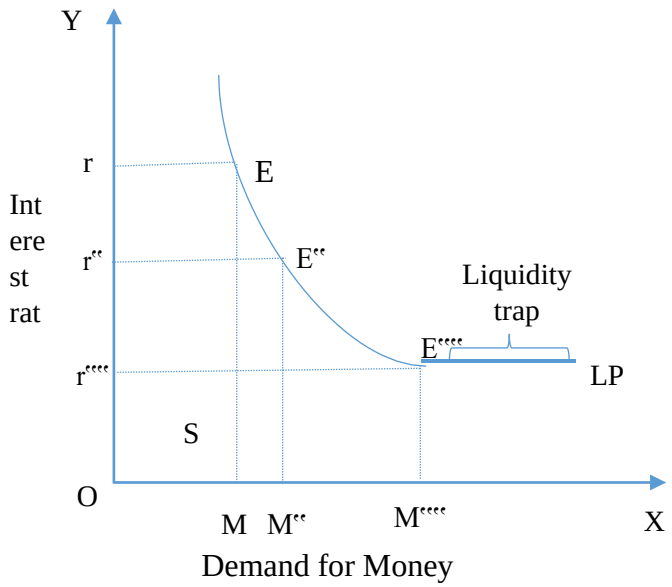


Fig. 6.5

Determination of the Interest rate: Interaction of Liquidity Preference and Supply of Money

According to Keynes, interest rate is determined by the demand for money, i.e., the liquidity preference and supply of money. In fact, it is the liquidity preference for speculative motive which along with the quantity of money determines the interest rate. As for the supply of money, it is determined by the policies of the Government and the Central Bank of the country. The total supply of money consists of coins plus notes plus bank deposits. The interest rate determination by the equilibrium between the liquidity preference for speculative motive and the supply of money is shown in Fig. 6.6.

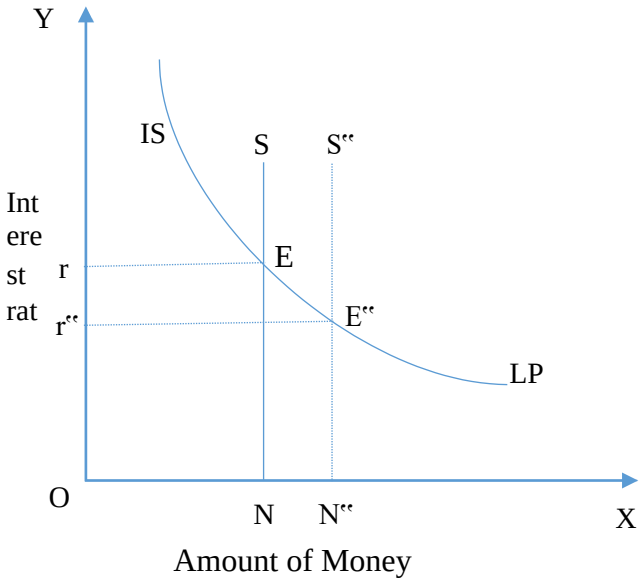


Fig. 6.6 Determination of Interest Rate and Effect of Expansion in Money Supply

In Fig. 6.6, the liquidity preference for speculative motive is represented by the curve LP. ON is the quantity of money available for satisfying liquidity preference for speculative motive. Interest rate will be determined where the speculative demand for money is equal to the fixed supply of money ON. We can see from the figure, that speculative demand for money is equal to ON quantity of money at Or interest rate.

Hence Or is the equilibrium interest rate. Assuming that there is no change in expectations, any increase in the quantity of money (say through open market operations by central bank of a country) for the speculative motive will result in lowering the interest rate. In Fig. 6.6, when the quantity of money increases from ON to ON‟‟, the interest rate falls from Or to Or‟‟ because the new quantity of money ON‟‟ is in balance with the speculative demand for money at Or‟‟ interest rate. Therefore, given the curve of liquidity preference for speculative motive, an increase in the quantity of money brings down the interest rate.

However the act of increase in the quantity of money may cause a change in the expectations of the individuals and firms and thereby result in an upward shift in liquidity preference curve for speculative motive resulting in the rise of interest rate. However this is not true in all situations. New developments may only cause wide differences of opinion, leading to increased activity in the bond market without necessarily causing any shift in the aggregate speculative demand for money.

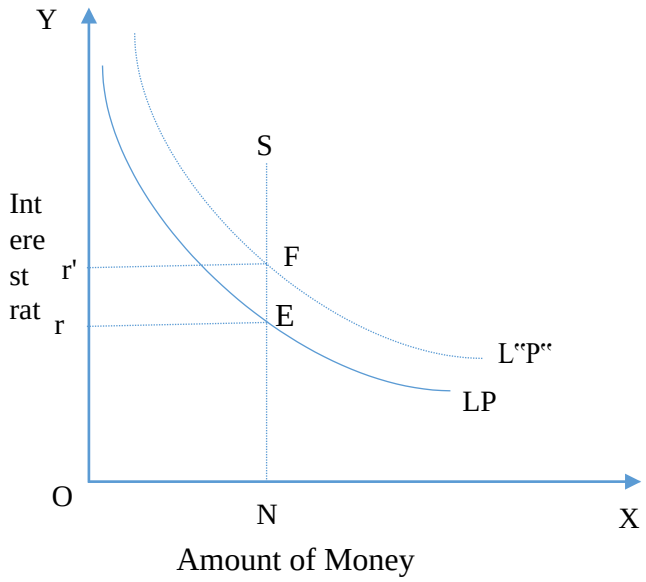


Fig. 6.7 Effect of Increase in the Liquidity preference on Interest Rate

The shift in liquidity preference curve can be caused by many other factors which affect expectations and might take place independently of changes in the quantity of money. Shifts in the liquidity function may be either downward or upward depending on the way in which the public interprets a change in events. If due to some change in events individuals expect a higher interest rate in the future than they had previously anticipated, the liquidity preference for speculative motive will increase which will bring about an upward shift in the curve of liquidity preference for speculative motive and will raise the interest rate.

In Fig. 6.7, assuming that the quantity of money remains unchanged at ON, the rise in the liquidity preference curve from LP to L"P", the interest rate rises from Or to Or" because at Or", the new speculative demand for money is in equilibrium with the supply of money ON.

Therefore, we see that Keynes viewed interest in terms of purely monetary forces and not in terms of real forces like productivity of capital and thriftiness times which formed the foundation-stones of both classical and loanable fund theories. According to Keynes, demand for money for speculative motive along with the supply of money determines the interest rate. He too approved that the marginal revenue product of capital tends to become equal to the interest rate but the interest rate is not determined by marginal revenue product of capital.

Further, according to Keynes, interest is not a reward for saving or thriftiness or waiting but for parting with liquidity. Keynes asserted that it is not the interest rate which equalizes saving and investment but is brought about through changes in the level of income.

Critical Appraisal of Keynes's Liquidity Preference Theory of Interest

Like any other theory, Keynes Liquidity Preference theory of Interest has also been subjected to some criticism.

1. Real factors in the determination of interest ignored

Economists have pointed out that interest rate is not purely a monetary phenomenon. Real forces like productivity of capital and thriftiness or saving also play an important role in the determination of the interest rate. Likewise, Keynes ignored the effect of the supply of savings on the interest rate. For instance, if the propensity to consume of the people increases, savings would decline. As a result, supply of funds in the market will decline which will raise the interest rate.

2. Liquidity theory of Interest is also indeterminate:

The basis of which Keynes rejected the classical and loanable funds theories applies to Keynesian theory itself. Economists argue that even Keynes‟s theory of interest is also indeterminate. According to Keynes, interest rate is determined by the speculative demand for money and the supply of money available for satisfying speculative demand. Given the total money supply, we cannot know how much money will be available to satisfy the speculative demand for money unless we know how much the transactions demand for money is. And we cannot know the transactions demand for money unless we first know the level of income.

Hence the Keynesian theory, like the classical, is indeterminate. “In the Keynesian case the supply and demand for money schedules cannot give the interest rate unless we ahead‟ know the income level; in the classical case the demand and supply schedules for saving offer no solution until the income is known. Exactly the same is true of loanable-fund theory.” Economists opined that “Keynes‟ criticism of the classical and loanable-fund theories applies equally to his own theory.”

3. No liquidity without Savings:

According to Keynes, interest is a reward for parting with liquidity and in not a compensation and motivation for saving or waiting. Economists argue that without saving funds cannot be made available to be kept as liquid. Eventually, there cannot be question of surrendering liquidity if one has not already saved money. Therefore, the interest rate is crucially connected with saving which is neglected by Keynes in the determination of interest.

We can see that even Keynesian theory of interest is also not without drawbacks. However, Keynes importance to liquidity preference as a determinant of interest is correct. As a matter of fact, the exponents of loanable funds theory incorporated the liquidity preference in their theory by laying greater stress on hoarding and dishoarding.

Activity 2

Conduct the following activity with the help from parents (if you are not the earning member of the family)

Request your parents to give details of the monthly budget. Calculate the total expenses (consumption) for the month. Then calculate the savings. Now evaluate how the savings are utilized i.e. how much goes into savings account, provident fund, insurance, home loans etc and how much is being held back as liquid cash.

Check your progress

10. What are the motives for Liquidity preference
11. According to the Liquidity preference theory, which of the following do not explain why people hold money?
    a. transaction motive.
    b. nominal Income motive.
    c. precautionary motive.
    d. speculative motive.
12. The speculative motive means that people hold money because
    a. of the desire to prepare for unforeseen expenditures.
    b. of the existence of the opportunity cost of holding money.
    c. it is needed to purchase goods and services.
    d. of constant increases in real income.
13. Higher interest rates
    a. encourage people to spend more.
    b. decreases the opportunity cost of holding money.
    c. increases the demand for money.
    d. increase the volume of money supplied.
14. A decrease in the money supply will cause
    a. interest rates to fall.
    b. interest rates to increase.
    c. has no effect on interest rates.
    d. the equilibrium money stock to rise.

6. Summary

Individuals save for various reasons for example, for unpredicted future needs, due to availability of surplus income etc. In economics, we can say that *Interest* is the price paid for encouraging people with money to save it rather than spend it, and to invest in assets rather

than holding cash. This *Interest* which is usually expressed as a percentage, usually per annum, is called as Rate of Interest or Interest Rate.

Real rate of interest = Nominal rate of interest – rate of inflation

In this chapter we studied three theories.

a. Classical Theory of Interest which describes interest as determined by saving and investment.
b. Loanable Funds or Neo-Classical Theory of interest as proposed by neo-classical economists such as Wicksell, Ohlin, Haberler, Robertson, Viner.
c. Liquidity Preference Theory as proposed by Keynes.

Classical Theory of Interest

The Classical Theory of Interest tries to explain the determination of the interest rate through the interaction between the demand for savings to make investment and the supply of savings. The classical theory of interest is also known as Real Theory of Interest as this theory explains the determination of the interest rate by real forces such as thriftiness, time preference and productivity of capital.

Classical theory of interest has been critcised for its assumption of full employment of resources which is thought to be unrealistic. With the assumption of full employment, the classical theory ignored the changes in income level and their effect on savings and investment. Classical theory states a direct functional relationship between interest rate and the volume of savings; with a rise in interest rate, there will be a rise in savings. Keynes argues that the classical theory is indeterminate and has ignored the disincentive effect of lesser consumption.

Loanable Funds Theory of Interest

Building on the drawbacks of classical theory, several economists like Wicksell, Bertil Ohlin, Robertson, Myrdal, Lindahl, Viner, etc contributed to the development of loanable funds theory. Loanable Funds theory proposed that not only real forces, such as thriftiness, waiting, time-preference and productivity of capital help to determine the interest rate but monetary forces such as hoarding and dishoarding of money, money created by banks, monetary loans for consumption purposes also play a role in interest rate determination.

The Supply of loanable funds is determined by savings, dishoarding, bank money and disinvestment. The Demand for loanable funds is determined by investment demand, consumption demand, and hoarding. Under Loanable Funds Theory the interest rate is determined by the intersection of the demand for loanable funds curve DL and the supply of loanable funds curve SL.

Keynes argued that the concept of hoarding as used in loanable funds theory is quite doubtful. Keynes also criticised the loanable funds theory on the ground that similar to classical theory, it did not provide a determinate solution to the interest rate determination and involved what was called circular reasoning. Another criticism against the loanable funds theory is that it is based upon the assumption of full employment level of income which does not hold in the real world.

Keynes‟s Liquidity Preference Theory of Interest

J.M. Keynes proposed Liquidity Preference Theory. According to Keynes, interest is a purely a monetary phenomenon and as such it is determined by the demand for money (i.e., liquidity preference) and the supply of money. Liquidity preference of a particular individual is influenced by several factors. **The desire for liquidity can be caused by three motives:** the transactions motive, the precautionary motive, and the speculative motive.

Like any other theory, Keynes Liquidity Preference theory of Interest has also been subjected to some criticism. Economists have pointed out that interest rate is not purely a monetary phenomenon. The basis of which Keynes rejected the classical and loanable funds theories applies to Keynesian theory itself. Economists argue that even Keynes‟s theory of interest is also indeterminate. According to Keynes, interest is a reward for parting with liquidity and in not a compensation and motivation for saving or waiting. Economists argue that without saving funds cannot be made available to be kept as liquid. Eventually, there cannot be question of surrendering liquidity if one has not already saved money. Therefore, the interest rate is crucially connected with saving which is neglected by Keynes in the determination of interest.

7. Glossary

- Disinvestment: The action of an organization or government selling or liquidating an asset or subsidiary.
- Hoarding: Usually associated with the idea of people holding money despite the loss of interest involved because of the fear of the prices of financial instruments falling.
- Liquidity: The extent to which an asset can be converted to money, quickly, cheaply and for a known capital sum.
- Liquidity preference theory: The theory that the rate of interest is determined by the demand for money (liquidity preference) and the supply of money.
- Loanable funds theory: The theory that the rate of interest is determined by people's willingness to save and the demand for funds to invest in real capital assets.
- Real interest rate: The nominal rate of interest minus the expected rate of inflation (strictly) but in practice often the nominal rate minus the actual rate of inflation.
- Risk: The probability that an outcome differs from what was expected.
- Speculation: The practice of engaging in risky financial transactions in an attempt to profit from fluctuations in the market value of a tradable good such as a financial instrument

8. Self Assessment Test

A. What is Interest Rate ? How is it determined in Classical Theory of Interest ?
B. Explain liquidity preference theory of interest by Keynes. Do you think it is superior to the classical theory of interest ? Explain
C. Explain the neoclassical theory of rate of interest detrmination
D. How is loanable fund theory of interest different from liquidity preference theory of interest ?

9. Suggested Reading/Reference Material

- The General Theory of Employment, Interest, and Money by John Maynard Keynes
- Chapter 13 & 14, Macroeconomics, Theory and Policy by D.N.Dwivedi, Tata McGrawHill Publishing Company Limited
- Chapter 4, Classical Macroeconomics: Some Modern Variations and Distortions by James C.W. Ahiakpor, Routledge.
- Chapter 21 Principles of Macroeconomics by N. Mankiw, Cengage Learning
- Chapter 13 & 14 Macroeconomics: Theory and Policy by Vanita Agarwal, Pearson Education India.
- Chapter 7, Macroeconomics, by Froyen, Pearson Education India.

10. Model Answers

1. d

2. a

3. The three prominent theories on determination of interest rates are

(i) Classical Theory of Interest which describes interest as determined by saving and investment.

(ii) Loanable Funds or Neo-Classical Theory of interest as proposed by neo-classical economists such as Wicksell, Ohlin, Haberler, Robertson, Viner.

(iii) Liquidity Preference Theory as proposed by Keynes.

4. d

5. Assumption of Full Employment

Changes in Income Level Overlooked

Indeterminateness

Disincentive Effect of Lesser Consumption on Investment Ignored

6. c

7. b

8. d

9. Investment Demand

Consumption Demand

Demand for Hoarding

By totalling up the investment demand curve, consumption demand curve and the hoarding demand curve we get the total demand curve for loanable funds.

10. The desire for liquidity can be caused by three motives:

(i) The transactions motive,

(ii) The precautionary motive, and

(iii) The speculative motive.

11. b

12. b

13 d

14. b

Chapter 7: Theory of multiplier

Objectives

After studying this chapter, you should be able to:

- Understand the nature of using theory of multiplier , its importance and limitations
- Obtain information about the static and dynamic multiplier
- Acquire some information tax multiplier
- Obtain information foreign trade multiplier
- Understand the leakages of multiplier

Structure

7.1 Introduction

In macro economics, the concept of multiplier has been borrowed from mathematics. The term multiplier in mathematics is used for that number which is multiplied by another number. For example, if an investment of Rs. 1000 in a business yields an income of Rs.2000 (1000 x2), then multiplier is 2. "The General Theory of Employment, interest and Money" (1936) has propounded Investment Multiplier. In this chapter you shall be concerned with the effect of change in aggregate demand on the national income and what determined the relationship and magnitude of change in national income. The answers to the above question are given by study of theory of multiplier. The theory of multiplier

helps in analysis of national income behavior in response to the changes in its determinants.

7.2 Meaning of Multiplier:

Concept of multiplier is an important concept of Keynes‟ Theory of income, output and employment, which you have learned in chapter 3. This concept relates to changes in incomes as a result of change in investment. It is an economic fact that when investment increases there is also an increase in income. But increase in income is not exactly the same as increase in investment; rather it is any times more than the increased investment. The number of times it increases is called multiplier. Keynesian concept of multiplier establishes a relationship between investment and income. That is why it is called as Investment Multiplier. The concept of multiplier expressed the relation between final changes in income as a result of initial change in investment. Multiplier is the ratio of change in income due to change in investment. It shows that an increase in investment there is initially increased in consumption and finally many times more increase in income. For examples, if by increasing investment by Rs. 5 crore, ultimate increase in income is Rs. 20 crore, then multiplier will be 20/5 = 4. In short, it can be said that multiplier is that number which when multiplied by the amount of investment tell us of the ultimate increase in income due to increase in investment.

Definition of Multiplier:

According to Keynes, "Investment multiplier tells us that when there is an increment of aggregate investment; income will increase by an amount which is K times the increment of investment".

In words of Peterson, "Multiplier is a co- efficient that links any autonomous shift in aggregate demand to a change in income".

Formula for Multiplier:

Multiplier can be expressed in terms of a formula as

$\Delta Y = K\Delta I$

$K = \frac{\Delta Y}{\Delta I}$

(Where, K = Multiplier, ΔY = Change in income, ΔI = Change in investment)

Since change in income is studied with respect to change in investment, it is called investment multiplier.

It can be explained with an example, Suppose, Government of India makes an investment of Rs.100 crore in the village economy in order to generate employment opportunities. As a result of this investment, national income increase by Rs.200 crore. Thus, $K = \frac{\Delta Y}{\Delta I} = \frac{200}{100} = 2$. Or multiplier is 2.

Numerical value of Multiplier

The numerical value of the multiplier is determined by the numerical value of MPC (Marginal Propensity to Consume). This is evident from the multiplier formula: $m = \frac{1}{1-MPC}$

Importance of the Multiplier

Concept of multiplier has great practical importances which are as follows:

1. **Income Propagation:** Concept of multiplier states that income propagation is a natural process. It tells that increase in employment, income and output is due to increase in investment. Study of income propagation is of great significance to attain and maintain full employment situation.
2. **Importance of Investment:** Study of multiplier highlights the importance of investment. It is the initial increase in investment that results in multiple increases in income. As a matter of fact, investment is that dynamic element on which changes in employment depend.
3. **Trade Cycle:** Trade cycle refers to those cycles which tell that business fluctuations take place according to definite time period. Sometimes there is boom and at another time there is depression in business. The concept of multiplier helps in understanding trade cycles. It tells that greater the investment larger will be the increase in income through multiplier effect. Thus, investment is to be increased during depressions and decreased during inflations.
4. **Full Employment:** In formulating policy regarding full employment, the concept of multiplier can prove to be of great significance. This concept shows that to attain full employment situation a big thrust of net investment should be made in the economy. As a result of increase in investment, income will increase manifold. Consequently, both output and employment level will improve.
5. **Equilibrium between saving and Investment:** Concept of multiplier can prove to be of great help in achieving equality between saving and investment. Equilibrium between saving and investment can be achieved through change in the level of income. If saving is low in an economy, it

can be known from the concept of marginal propensity to save how much increase in income is needed to get the required increase in saving. And to increase the level of income how much investment is needed, can be ascertained from the co-efficient of multiplier.

6. **Deficit Financing:** Deficit financing can be of great help in removing the bad effects of depression. It is so because as a result of deficit financing investment increases and increase in investment causes manifold increase in income under the impact of the multiplier effect.
7. **Public Investment:** Keynes has used the concept of multiplier with a view to underlining the significance of public investment. Concept of multiplier testifies that if during depression, a little increase in public investment is made; it will lead to multiple increases in income. Such an increase in income will help control depression and unemployment.
8. **Inflation and Deflation:** In the situation of inflation, prices of goods rise. To bring them down, volume of investment should be reduced. On the contrary, to check deflation, volume of investment must be increased. Study of multiplier is helpful in calculating how much increase or decrease in investment must be made to achieve the desired change in prices.
9. **Government interference:** Concept of multiplier fully supports Keynes view that government interference is a must to bring about equilibrium in economic activities and remove the condition of unemployment. By effecting a little investment on the economy, government can help increase income many times more under the impact of multiplier.

Check your progress:

Multiple choice questions:

1. It is the ratio of change in income due to change in investment.
   a) Investment b) Multiplier c) Saving d) None
2. The formula For the Multiplier is

a) $K = \frac{\Delta I}{\Delta Y}$ b) $K = \frac{\Delta Y}{\Delta I}$ c) $K = \frac{\Delta K}{\Delta S}$ d) $K = \frac{\Delta C}{\Delta I}$

3. It can be of great help in removing the bad effects of depression.
   a) Deficit Financing b) Public investment c) Taxation d) Inflation
4. It refers to the business fluctuations take place according to definite time period
   a) Recession b) Inflation c) Trade cycle d) Time series analysis
5. Change in income with respect to change in investment, is called
   a) Income multiplier b) Investment multiplier c) Saving multiplier d) All

Activity 1:

Assume that you are the economic analyst of a Multi National Company. State how the study of multiplier helps you to analyze the business in Indian market?

Answer: _____

_____

_____

_____

_____

_____

7.3 Static and Dynamic Multiplier

Depending on the purpose of analysis, there is a distinction is made between the static multiplier and the dynamic multiplier. The static multiplier is also called „comparative static multiplier" „simultaneous multiplier", „ logical multiplier", „timeless multiplier", „instant multiplier".

The concept of static multiplier implies that change in investment causes change in income instantaneously. It means that there is no time lag between the change in investment and the change in income. It implies that the moment a rupee is spent on investment projects, society"s income increase by a multiple of Rs.1.

The dynamic multiplier also known as „period" and „sequence" multiplier, which recognizes the fact that overall change in income as a result of the change in investment is not instantaneous. There is gradual process by which income changes as a result of change in investment or other determinants of income. The process of change in income involves a time lag. The multiplier process works through the process of income generation and consumption expenditure. The dynamic multiplier takes into account the dynamic process of the change in income and the change in consumption at different stages due to change in investment. The dynamic multiplier is essentially a stage-by-stage computation of the change in income resulting from the change in investment till the full effect of the multiplier is realized.

The process of dynamic multiplier is described below:

Suppose MPC = 0.80 and autonomous investment increases by Rs.100 (ΔI = 100), all other remaining the same. When an autonomous investment expenditure of Rs. 100 is made on the purchase of capital equipment and labor the income of the equipment and labor sellers increase by Rs.100 in the first instance. Let us call

it ΔY_1. Those who receive this income spend Rs.80 (100 x 0.80). As a result, income of those who supply consumer goods increase by Rs.80. Let it be called ΔY_2. They spend a part of it Rs80 x0.08 = Rs.64. This creates ΔY_3. This process continues until additional income and expenditure are reduced to zero. The whole process of the computation of the total increase in income (ΔY) as a result of ΔI = Rs100 can be summarized as follows:

$\Delta Y = \Delta Y_1 + \Delta Y_2 + \Delta Y_3 + \quad \Delta Y_{n-1}$

In numerical terms,

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

$= 100 + 80 + 64 + 51.20 + \ldots.. + \rightarrow 0$

$= 499.999 = 500$

After having calculated the total income effect (ΔY), the multiplier can be calculated as:

$\frac{\Delta Y}{\Delta I} = \frac{500}{100} = 5$

Check your progress:

Fill in the blanks:

6. The concept of_____implies that change in investment causes change in income instantaneously
7. The multiplier process works through the process of_____and _____.
8. _____ takes into account the dynamic process of the change in income and the change in consumption at different stages due to change in investment
9. The process of dynamic multiplier is described as_____

7.4 Tax Multiplier

Tax cuts also have a multiplier effect. Cutting personal income taxes increase the disposable income of households. When household disposable income rises, so will consumption, depends on the size of the MPC (Marginal propensity to consume). These increases in consumption will set of further increases in real GDP and income, just as increase in government purchases do.

Definition: The tax multiplier is the ratio of the change in income and output to the change in taxes that has brought about the change in income and output. The multiplier for a change in tax is not same as the multiplier for a change in government spending.

The change in aggregate expenditure (Total spending) resulting from an initial changes in taxes. Expressed as a formula:

Tax multiplier = 1 – spending multiplier

Any change in taxes has a smaller impact on the macro economy than an equal change in government spending. The tax multiplier is always one less than the corresponding government spending multiplier because of the lag effect of tax changes showing up as changes in aggregate spending. If we thought of the circular flow model, a tax changes has a diversion or leakages into saving prior to the change aggregate spending, whereas a change in government spending changes aggregate spending prior to the initial diversion into savings. Since a tax cut causes an increase in consumption expenditure and output and a tax increase causes a reduction in consumption expenditure and output, the tax multiplier is negative

The tax Multiplier can be found by the formula:

$$\left(-MPC \times \frac{1}{MPS} \right)$$

And always assumes a value one less than the multiplier

Examples:

Rs 1 change in taxes is going to lead to Rs 1 change in income rather than to a Rs.1 change in aggregate spending. The Rs.1 changes in taxes is subject to the MPC, so consumption is changes by Rs.0.9 (Assuming an MPC of .9) therefore the initial change in aggregate spending is Rs.0.9 rather than Rs.1.

The ultimate impact on the macro economy of a Rs.1 increase in taxes would be a Rs. 0.9 decrease in equilibrium national income, as shown below.

.9 X (1/0.1) = .9 x 10 = Rs.9

Check Your Progress:

10. Assuming that MPC = 0.75, calculate the size of tax multiplier and compare it with the size of the government expenditure multiplier (.25).

Solution:

7.5 Foreign Trade Multiplier

When foreigners import goods from our country, domestic export industries earn revenue. Income of those people who work in export industries will increase. They will spend the increased income on the purchase of consumer goods. The effect of it will be that the income of those people will rise who produce consumer goods. In this way, because of increase in export-income aggregate income increase many times more. In other words, the ratio of change in total income to change in export-income is called foreign trade multiplier. It can be expressed in terms of the following equation:

$$Kf = \frac{\Delta Y}{\Delta E}$$

(Here Kf=Foreign trade multiplier, ΔY=Change in national income, ΔE=Change in exports)

Just as investment multiplier depends on marginal propensity to consume, similarly foreign trade multiplier depends on domestic savings and marginal propensity to import. Higher this propensity, lower will be the foreign trade multiplier. On the contrary, lower this propensity, higher will be the foreign trade multiplier. It can be expressed in terms of the following equation:

$$Kf = \frac{1}{IS}$$

(Here IS = Marginal Propensity to import and Save)

If IS = ½ the Kf= 1/2= 2. It means that if income from export increases by Rs. R crore then total increase in income will be Rs. 5 crore x 2 = Rs.10 crore; because foreign trade multiplier in this case is 2. Several factors account for the leakages of the working of the foreign trade multiplier; as a result, its effect is weakened. Some of the main leakages are

1. Increase in imports
2. Fall in consumption
3. Rise in price etc.

On account of these leakages, foreign trade multiplier fails to increase total income as much as it should.

Check your progress:

Fill in the blanks:

11. foreign trade multiplier depends on _____ and _____
12. K$f = \frac{1}{IS}$ IS represent _____
13. The main leakages of foreign trade multiplier are_____,_____ and _____

7.6 Balanced Budget Multiplier

The balanced budget multiplier is a hypothesis that states that if government spending and taxes are increased or decreased simultaneously by equal amounts, GDP will be increased or decreased by the same amount

Definition: "The balanced-budget multiplier is always 1 – equal changes in spending and taxes cause aggregate demand to change by the amount of the initial change in government spending"

The balanced budget multiplier is exactly one; that is an increase in government purchases, accompanied by an equal increase in taxes, increases the level of income by exactly the amount of the increase in purchases. The reason for that is that the effects of equal increase in government spending and taxes are opposite.

When a government adopts a balanced budget policy it spends only as much as it collects through taxation. That is, in the balanced budget policy, T = G and $\Delta G = \Delta T$. The effect of the balanced budget policy on the national income is measured through the balanced budget multiplier. The balanced budget multiplier is always equal to one.

The government expenditure multiplier = 1/MPW and the tax multiplier = -MPC/MPW. Adding these two together gives the balance budget multiplier, which applies every time changes in government expenditure G and changes in taxes are the same.

Balanced budget multiplier = $\frac{1}{MPW} - \frac{MPC}{MPW} = \frac{1-MPC}{MPW}$

But 1- MPC = MPW so substituting this to equation into the numerator gives

Balanced budget multiplier = $\frac{MPW}{MPW}$ = 1

So, If the government increase its expenditure on goods and services and increase taxes by the same amount, maintaining therefore a balanced budget, G = T, the net effect on the economy is to increase aggregate expenditure, output and income by the same amount.

7.7 Leakages from Multiplier

Increase in income, due to increase in initial investment, does not go on endlessly. Due to several factors, the process of income propagation slows down and ultimately comes to halt. Supposing an account on initial increase in investment of Rs.5 crore, income increases by Rs. 5 crore. If marginal propensity to consume is ½ then in the second round income will increase by Rs.2.5 crore only, in the third round income will increase by 1.25 crore and in the fourth round by Rs0.62 crore and in this manner it will go on diminishing. Causes responsible for this decline in income are called as leakages of multiplier.

According to Peterson, "Income that is not spent for currently produced consumption goods and services may be regarded as having leaked out of income stream." As a result of these leakages, the entire increase in income is not spent on consumption. Some part of it goes out of the income stream. The more powerful these leakages are the smaller will be the value of multiplier. Some important leakages responsible for lowering the value of the multiplier are as follows:

1. **Idle Saving:** Some part of the increased income goes out of circulation in the form of idle saving. It is an important leakage. Idle saving leads to equivalent fall in marginal propensity to consume. It results into fall in the value of multiplier. As a matter of fact, the marginal propensity to save greater is the leakage from income propagation and smaller is the value of multiplier.
2. **Import:** Import constitutes yet another leakage from the system. Money goes out of the system equivalent to the value of imports. Accordingly propensity to consume falls limiting the multiplier effect of increased investment. Hence, the size of the multiplier is reduced.
3. **Excess Stock of Consumption Goods:** Increase in income leads to increase in consumption. If the increased demand for consumer goods is met out of the existing excess stocks of such goods, new consumption of

goods will not be produced. It will weaken the multiplier effect and gradually reduce the income-stream.

4. **High Liquidity Preference:** If people have high liquidity preference, i.e., if they want to hold more money in cash for transaction, precautionary and speculation motives, it would imply less expenditure. Thus, high liquidity preference also serves as a leakage of the multiplier.
5. **Price Inflation:** If prices rise, then a large part of the increase income will be spent on the purchase of the same of goods and services as before. Thus, under inflationary situation people have to spend more money to buy the same number of goods and services as before. The effect of it is that increased monetary income is absorbed in buying the same amount of goods and services as before. Very little income is left to buy new goods and services. There will not be much increase in consumption. With little increase in consumption multiplier effect will remain limited.
6. **Taxation System.** If taxes on goods and progressive taxes on income are increased, there will be no appreciable increase in consumption despite increase in income. As a result, the process of income propagation slows down.
7. **Purchase of shares and Government securities:** When some part of the increased income is used to purchase of shares and government securities, the flow of income stream falls. This part of income is not spent on consumer goods. Consequently, future increase in income halts and multiplier effect decline gradually.
8. **Undistributed Profits of the Companies:** Many companies do not distribute all the profits among the shareholders; they keep a part of it in the reserve fund. This undistributed profit also serves as a leakage of the multiplier because this amount is not made available to the shareholders who could use it as consumption expenditure.

Activity 2

Assume that you are the financial analyst in one of the leading news paper. Based on the different methods of multiplier, how do you analyze the new changes in taxation in the budget of 2015?

Answer: _____

_____

_____

_____

_____

_____

7.8 Limitations of Multiplier

The limitations of the multiplier are as follows:

1. **Existence of Leakages from income Stream**: Keynes was of the view that the marginal propensity to consume remains constant overtime. It has been observed that, as income increases often, consumption may not increase proportionately and hence the value of the multiplier may be reduced. Other than consumption, individuals may utilize their increased income for different purposes as the following
   a) They may increase their holidays of money
   b) They may use a part of the increased income to pay off their old debts.
   c) They may purchase old securities and property with the additional income.
   d) They may purchase imported goods and services, the income spent on which will certainly be a leakage out of the economy.
2. **Availability of the Consumer Goods**: For the multiplier principle to work, it is necessary that the consumer goods are available in the right quantities and at the right time. Often, this may not be the case and this may hinder the multiplier from working properly.
3. **There May Exist Time Lags**: The supply of goods may increase in response to demand but only with a time gap. Also consumption may not increase immediately in response to an increase in income.
4. **Full Employment Ceiling**: When an economy is at the full employment level, any further increase in the income and output are not possible. Whatever is the marginal propensity to consume, the multiplier principle will not be able to work. In fact, any increase in investment will trigger off inflationary expectations in the economy.

These limitations do not in any way undermine the importance of the multiplier. In fact, due to these limitations, economists have time and again modified the multiplier, which has further enhanced its utility in analyzing the changes in income in response to an increase in the aggregate demand.

7.9 Summary

The multiplier plays a very important role in planning the economic growth of a nation. In this chapter you have learned about the multiplier and its different types. You have also learned how multiplier is useful in government section i.e., in fiscal policy making. The multiplier suffers from many limitations, which may

prevent it from working. These limitations have been responsible for the modification in the multiplier

7.10 Glossary

Investment Multiplier: Investment multiplier tells us that when there is an increment of aggregate investment; income will increase by an amount which is K times the increment of investment

Multiplier: Multiplier is a co- efficient that links any autonomous shift in aggregate demand to a change in income.

Trade Cycle: Trade cycle refers to those cycles which tell that business fluctuations take place according to definite time period.

Static Multiplier: Static multiplier implies that change in investment causes change in income instantaneously.

Dynamic Multiplier: The dynamic process of the change in income and the change in consumption at different stages due to change in investment.

Tax multiplier: It is the ratio of the change in income and output to the change in taxes that has brought about the change in income and output

Foreign trade multiplier: The ratio of change in total income to change in export-income is called foreign trade multiplier

The balanced-budget multiplier: It is always 1 – equal changes in spending and taxes cause aggregate demand to change by the amount of the initial change in government spending"

7.11 Self Assessment Question

1. What is a multiplier? Write the importance of multiplier.
2. What is the difference between static and dynamic multiplier?
3. What is Tax multiplier? State the importance of it.
4. Define foreign trade multiplier? How the study of foreign trade multiplier help in import export business/
5. Explain in brief about the balanced budget multiplier/
6. What are the different leakages of multiplier?
7. Write the limitations of the multipliers?

7.12 Suggested Reading

Vanita Agarwal, “Macro Economics” theory and policy, Pearson New Delhi, chapter 18.

Nadia Tempini Macdonald, “Macroeconomics and Business” An Interactive Approach. Thomson Learning. Chapter 5

T.R Jain, “Macro Economics and Elementary Statistics”, V.K Publishing, Chapter 9

7.13 Model Answers

1. **(b)**
2. **(b)**
3. **(a)**
4. **(c)**
5. **(b)**
6. **Static Multiplier**
7. **Income generation and Consumption expenditure**
8. **Dynamic Multiplier**
9. $\Delta Y = \Delta Y_1 + \Delta Y_2 + \Delta Y_3 + ...\Delta Y_{n-1}$
10. **Solution:**

If the MPC = 0.75, then using the formula for the tax multiplier

$$\left(-\frac{MPC}{MPS}\right) = -\frac{0.75}{0.25} = -3$$

The government expenditure multiplier was the full multiplier:

$$\frac{1}{MPW} = \frac{1}{0.25} = 4$$

Therefore Tax multiplier is smaller than the government expenditure multiplier.

11. **Domestic savings and Marginal propensity to import**
12. **Marginal Propensity to import and Save**
13. **a)Increase in imports**
    - **b) Fall in consumption**
    - **c) Rise in Price**

Chapter: Inflation

Objectives

After studying this chapter, you should be able to:

Learn the meaning of the inflation and its types

Understand why inflation results from rapid growth in the money supply

Examine the difference between demand pull and cost push inflation.

Consider the various theories associated with inflation

Demonstrate the link between money supply and inflation

Explore all the measures available to control inflation

Structure

1.1 INTRODUCTION

Remember elders say that they bought milk for you at Rs 8 per liter when we were young. What is the cost of liter of milk now in 2015? Nearly Rs 36. Petrol costed around Rs 42-45 per liter in 2005. Today it cost you around Rs 75-80. The

quantity is same as one litre but its value has increased. I bought my first splendor for Rs 38,000 in 2002, where the same vehicle costs above Rs 65,000 now.

All the above examples define „inflation". Something which you buy at present times is likely to get costlier tomorrow. Inflation in one sentence means „decreasing value of money" and „increasing value of goods„. The purchasing power of money goes down and same amount of money buys lesser products/services.

For example rise of onion prices suddenly cannot be considered as inflation. The prices of produces fluctuate, responding to the pushes and pulls of supply and demand of the market. A less produce of a particular harvest can cause the price of that harvest to rise, just as an unexpected excess in the production of onions will cause the price of onions to fall.

Inflation, on the other side, does not get affected by these changes in comparative prices of goods and services. It refers to a significant rise in the general price level in a country over a long period of time. Inflation is when a certain form of currency starts to have lesser value over time.

Inflation is a global phenomenon. No country in the capitalist world, has overcome the spectra of inflation. A small increase in the price level is not considered inflation in strict economic sense. An increase in the general price levels in the midst of depression is not inflationary, as it doesn"t have any harmful consequences for the economy. Thus, inflation is the state of instabilities in which an increase of buying power tends to cause or is the result of an increase of the price level.

1.2 Definition of Inflation

Peterson: „the word inflation is the broadest sense refers to any increase in the general price level which is sustained and non seasonal in character".

Silverman: Inflation is defined as “inflation is the term given to the expansion of money supply, in excess of the amount justified by the state of the trade resulting in a general rise in prices”.

Coul born has beautifully define the term as “too much money chasing too few goods”.

Crowther says, “Inflation is a state of economy in which the value of money is following”.

Keynes defined inflation as an occurrence of full employment. According to him, inflation is the result of the surplus of aggregate demand over the available aggregate supply and true inflation starts only after full employment. So long, there is unemployment, employment will change in the same proportion as the quantity of money and when there is full employment, and prices will change in the same proportion as the quantity of money.

Check your progress:

1. Inflation can be defined as :

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2. Can the sudden rise in commodities or vegetables can be considered as inflation?

1.3 Causes of Inflation

Mainly two things cause inflation: people's perception of value, and the economic principle of supply and demand. Long-term occurrences of high inflation are often the result of negligent monetary policy. If the money supply grows big relative to the size of an economy, the value of the currency diminishes. This association between the currency stock and the size of the economy is called the quantity theory of money and is one of the firstborn theories in economics.

Constant stress on the supply or demand side of the economy can also cause inflation. Supply tremors that upset manufacturing of goods, such as natural disasters, or raise production costs, such as hike in oil prices, can reduce overall supply and lead to inflation. Equally, demand shocks, such as a stock market rally, or expansion policies, such as when a bank lowers interest rates or a government promotes spending, can temporarily increase overall demand and economic growth. However, the increase in demand exceeds an economy‟s production capacity, the resulting strain on resources is inflation.

Expectations also play an important role in determining inflation. If people or firms anticipate higher prices, they form these expectations into salary negotiations and contractual price alterations. This actions partly determines the next period‟s inflation; once the contracts are exercised and prices rise as agreed, expectations have become self-fulfilling.

Supply difficulties have had more strong inflationary effects. In the past history, governments have tried to solve financial problems by simply printing extra money. This can result in the value of money drastically downward, especially in modern markets where money is not assisted by gold.

Check your progress:

3. Inflation:

a) Always reduces the cost of living

b) Always reduces the standard of living

c) Reduces the price of products

d) Reduces the purchasing power of rupee

4. Which of the following can start an inflation?

a) an increase in aggregate demand

b) an increase in aggregate supply

c) a decrease in aggregate supply

d) Both answers A and C are correct.

After World War I, Germany was forced to pay war damages of about $33 billion. It was virtually impossible for the nation to produce that much amount, so the government's only choice was to print more money, none of which was backed by gold. The result was some of the most awful inflation ever recorded. Till the end of 1923, it took 42 billion German marks to buy one U.S. cent, it took 726 billion marks to purchase something that had price just one mark in 1919.

1.4 Theories of inflation

The Classical Theory of Inflation

According to classical economists like Jean Bodin, Richard Cantillon, John Locked, David Hume, Adam Smith who propounded this theory „Classical Theory of Inflation" is based on the quantity theory of money. But the extensive version of the classical theory of inflation was propounded by Irving Fisher in 1911. According to the classical theory, inflation occurs in direct proportion to increase in money supply, given the same level of output.

Fisher"s equation can be stated as

$$MV = PT,$$

$$\text{and } P = MV/T$$

This equation can also be written in terms of percentage changes.

$$m + v = p + y$$

$$p = m + v - y$$

Where all values in percent rate,

p = rate of inflation,

m =rise in money supply,

v = increase in velocity of money, and

y = increase in real output.

Example: Assuming the quantity of money is Rs. 4,00,000 in an countries economy, the velocity of circulation of money (V) is 4; and the total output to be executed (T) is 1,60,000 units, the average price level (P) will be:

$$P = MV/T$$

$$= 4,00,000 \times 4/ 1,60,000 = \text{Rs. } 10 \text{ per unit.}$$

Now, all things remaining the same except the quantity of money is doubled, i.e., increased to Rs. 8,00,000 then:

$$P = 8,00,000 \times 4/ 1, 60,000 = \text{Rs. } 20 \text{ per unit}$$

So it can be understood that according to the quantity theory of money, price level varies in direct proportion to the quantity of money. A doubling of the quantity of money (M) will lead to the doubling of the price level. Further, changes in the quantity of money are supposed to be independent of the price level, the changes in the quantity of money become the reason of the changes in the price level.

Neo Classical Theory of Inflation:

Neo-classical theory profounder like Solow, Ray, Mundell, Tobin believed that there exists no relationship between inflation and growth as growth was assumed to be exogenously determined. They believed that when inflation rises, it reduces the wealth of the people as the return on real money falls. As a result people switch to other assets which raise their price and lowers down the interest rate. This enhances the investment in the economy and growth takes place.

While classical economists considered increase in the supply of money as the cause of inflation, the neo classical economists proposed increase in demand for money as the reason of inflation.

The Keynesian Theory of Inflation

While classical economists considered a rise in money supply as the only cause of an increase in the aggregate demand and reason of inflation, Keynes postulated that aggregate demand can rise also due to a rise in real elements. Keynes gave the concept of inflationary gap. Inflationary gap is defined as the

planned expenditure in excess of output available at full employment. The inflationary gap is so called because it causes only inflation, without increasing the level of output.

The Monetarist View on Inflation

The monetarist view is an improved version of the Classical Quantity Theory of Money. That‟s why it is also called Modern Fisherianism. The monetarists propose that the general level of price rise is only due to an increase in money supply. To this extent, monetarists contribute to the classical quantity theory of money. However, they differ from the claasical theory in the following aspects:

(i) They do not agree to the classical view that there is a relative association between the stock of money and the price level.

(ii) They do not agree with classical view that the supply curve is vertical in short-run.

Check your progress:

5. What is fishers equation and what do they denote?

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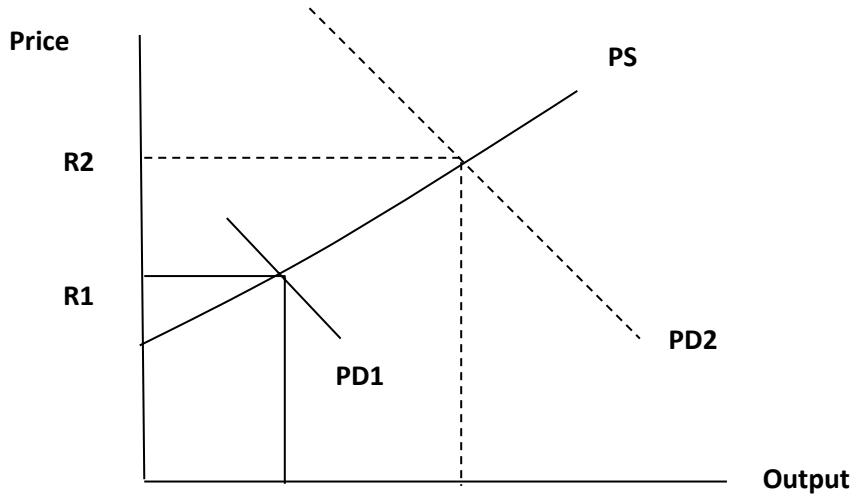
6. What is the monetarist view of inflation?

1.5 Demand pull inflation and Cost push inflation

Demand pull inflation:

Few economists consider that inflation is caused by rise in aggregate demand for goods/services. They say that demand may rise due to many causes including increased money supply. For example: Increased money supply may tend people to spend more which rises demand for goods and services, in turn industries try to increase production. To increase production they need more workers, more machines and more raw materials. These resources may not be available because they are already full employed, which can result in incapacity of the firms to increase production. In this situation, rise in demand causes inflation.

For example: Demand pull inflation is where the demand for an good has amplified to a point where the price is increased, to reach an new steadiness on a supply demand diagram. For example, if there is a toy many children want for a season collection, sellers may increase the price.



The above diagram is a representation of demand pull inflation as a price-quantity graph, we can see the relationship between cumulative supply and demand. If cumulative demand increases from PD1 to PD2, in the short run, this will *not* change cumulative supply, but will source a change in the quantity

supplied as represented by a movement along the PS curve. The validation behind this absence of shift in cumulative supply is that cumulative demand tends to react faster to changes in economic conditions than cumulative supply.

By time manufacturers rise production due to increased demand, the cost to produce each additional production increases, as represented by the change from R1 to R2. The validation behind this change is that manufacturers would need to pay workers more money (e.g. overtime) and invest in additional equipment to sustain with demand, thereby increasing the cost of production. Similar to cost-push inflation, demand-pull inflation can occur as manufacturers, to maintain profit levels, forward the higher cost of production to consumers' prices.

Reasons for demand pull inflation

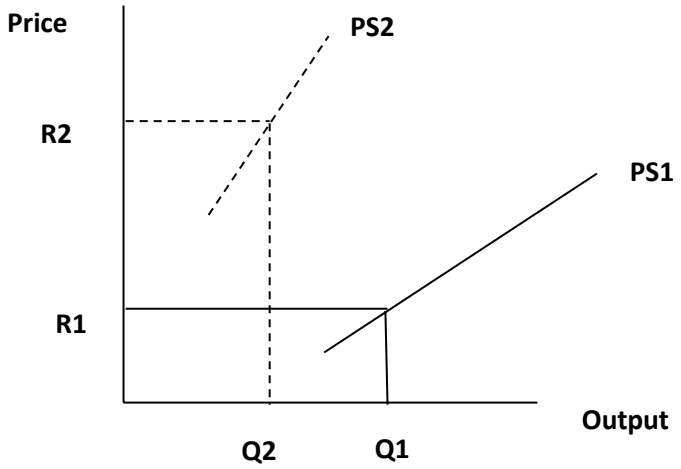
1. A depreciation of the exchange rate
2. Higher demand from a government spending and borrowing
3. A fall in interest rates
4. Faster economic growth in other countries
5. Improved business confidence which prompts firms to raise prices and achieve better profit margin

Cost push inflation:

One more observation of economists is that inflation occurs due to growing costs. When the manufacturers forward their increased costs to customers in the form of higher prices, inflation starts. Cost push inflation is where the price must be increased because the costs of making the product or service has increased, for example, if there was a new tax on raw material R, any products which use this raw material will have their price increased relative to the tax increase.

To know how a cost-push inflation works, we can refer to the below illustrated price-quantity graph depicting what happens to changes in cumulative supply. The graph below shows the level of production (output) that can be achieved at each price level. As production costs increase, cumulative supply decreases from

PS1 to PS2 (at a point where production is at full capacity), causing an increase in the rates level from R1 to R2. The validation behind this increase is that, for companies to maintain/increase profit margins, they will need to increase the retail price paid by consumers, thereby causing inflation.



Cost-push inflation occurs when industries react to rising costs, by increasing their prices to protect profit margins. There are many reasons why costs might rise:

1. Increase in price of raw materials

2. Rise in labour costs

3. Higher indirect taxes imposed by the government

4. A fall in the exchange rate

Check your progress:

7. Give reasons for Cost push inflation and Demand pull inflation.

Ans: _____

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1.5 Types of Inflation

There are many types of inflation classified on the basis of different aspects like time, coverage, government policies, prices, causes and expectations. But here we will discuss few important types of inflation.

Demand pull and cost push inflation are studied under the classification of causes of inflation which we discussed in the topic above. The remaining types of inflation are

1. **Deflation:** Deflation is a situation of falling prices. It is also termed as negative inflation. In deflation, the value of money rises and prices fall down. Deflation is a sign of depression phase of commerce in the economy.
2. **Creeping Inflation**: As and when prices are gently/slowly rising, it is referred as Creeping Inflation. It is also known as Mild Inflation or Low Inflation. As per economists like R.P. Kent, if prices rise by not more than (upto) 3% per annum (year), it is called Creeping Inflation.
3. **Walking/ trotting Inflation** : If prices rise by more than 3% but less than 10% per annum (i.e between 3% and 10% per annum), it is called as Walking Inflation. In view of some economists, walking/trotting inflation must be taken gravely as it gives a warning signal for the occurrence of running inflation. Moreover, if walking inflation is not checked in due time it can ultimately result in Galloping inflation.

4. **Running Inflation**: A rapid rushing in the rate of rising prices is referred as Running Inflation. If prices rise by more than 10% per annum, running inflation arises. However economists have not proposed a fixed range for measuring running inflation, we can consider price rise from 10% to 20% per annum as a running inflation.
5. **Galloping Inflation**: In view of Prof. Samuelson, if rates rise by double or triple number inflation rates like 30% or more per annum, then the condition can be termed as Galloping Inflation. If prices rise by more than 20% but less than 1000% per annum, galloping inflation occurs. Also known as Jumping inflation, India has been seeing galloping inflation since the second five year plan period.
6. **Hyperinflation**: Hyperinflation denotes to a condition where the prices rise at a shocking high rate. The prices rise so fast that it becomes very difficult to measure its magnitude. Conversely, in measurable terms, when prices rise above 1000% per annum, it is called as Hyperinflation. At the stage of hyperinflation, value of national currency (money) of that affected country reduces almost to zero. Paper money becomes worthless and people start trading either in gold and silver or sometimes even use the old barter system of commerce.
7. **Stagflation** : Paul Samuelson refer to Stagflation as the enigma of rising prices with growing rate of unemployment.
8. **Stagnation** : Stagnation in the rate of economic growth which may be a slow or no economic growth at all.

Check your progress:

8. What is negative inflation?

Ans: ____

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9. Explain hyperinflation?

Ans:..

- -

- -

1.6 Measurement of Inflation

To calculate the rate of inflation, we use a price index that measures the aggregate price level relative to a chosen base year. The inflation rise is calculated as the percentage rate of variation in the price index over a certain period. There are diverse price indexes for different group of goods.

The Producers Price Index (PPI)

PPI is an index or ratio of a compound prices of a number of various raw materials, such as steel, relative to a compound of the prices of those raw materials in a base year. It does not correctly measure real inflation, but it does give an early sign of which way inflation will likely indicate the direction since many of the prices that include are the prices which are used as inputs in the manufacture of other goods.

Consumer Price Index (CPI)

The CPI compounds the retail prices of a stable market of several goods and services bought by households. Each of the goods/services is given a weight in the index in percentage to its rank in the market.

$$\text{Inflation rate (t)} = \frac{\text{CPI (t)} - \text{CPI (t-1)} \times 100}{\text{CPI (t-1)}}$$

3. GNP Deflator: The GNP Deflator method used to calculate rate of inflation is done by taking the ratio of nominal GNP in a year with the real GNP of that year under study.

GNP Deflator = Nominal GNP/Real GNP

Where

Nominal is GNP at current prices

Real is GNP at constant prices

Check your progress:

10. Expand CPI .....

11. Expand PPI .....

12. What is the formula for measuring inflation using CPI----------

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1.7 Measures to control inflation

Different measures are used for controlling inflation depending on their cause and source. These measure are made in such a way that they try to bridge a gap between aggregate demand and supply of different good/services.

1. **Monetary measures**: Money supply increases the national income which in turn hikes the purchasing power of the people and in a condition of available supply of products, the purchasing power increases demand which further results in high inflation. So the central bank of a country tries to control this demand by regulating money supply. In India, the

measures adopted by the RBI to regulate money supply are known as monetary measures. These may include

a. Bank rate: One such measure is increasing the bank rate i.e, the rate at which the RBI lends money to commercial banks and other financial institutions. So by increasing the bank rate it increases the lending rates of all the commercial banks rates that are influenced by bank rate which regulates the money supply into the market. Example: Bank rate increase will in turn increase interest rate which will make investment
b. Open Market operations: OMOs are defined as sales and purchases of government securities by the RBI from one market to control inflation. In order to pay for the securities the investors have to surrender the money to the RBI thereby reducing the money circulation.
c. Cash reserves and cash balances ratio: RBI can directly impose commercial banks by raising the requirement known as Cash Reserve Ratio. An increase in cash reserve ratio means the banks are required to maintain a larger balance of their funds in cash reserves which cannot be given to public as loan thus reducing aggregate demand and inflation.

2. **Fiscal measures**:

Fiscal measures can include taxation policies, debt policies and government expenditure which are related to control inflation.

a. Government expenditure: It is one of the important aspect of aggregate demand. Postponement of new projects, reduction in wages, subsidies and other government expenses reduces or controls the money supply to the public and directly reduces demand for goods and services.
b. Taxation: Raising the existing tax rates and imposing new taxes will help in reducing the purchasing power of public and will generate resources for the government.
c. Public sector borrowing and debt: Borrowing funds by government leads to transfer of money from private sector to public sector, hence helps in controlling inflation as it reduces the funds available with the private sector and their demand for goods/services.

3. **Other measures**: In order to control inflation steps should be taken to reduce aggregate demand and increase the supply of goods. This can be done under other measures which may include redefining investment policies, increase in production, good commercial policy, encouraging savings, price control and rationing, controlling distribution of profits by joint stock companies and proper wage policy.

Check your progress:

13. What are the other measures discussed to control inflation?

Ans: ____

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14. What are the different fiscal measures discussed to control inflation?

Ans:..

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1.9 Summary

Inflation is a global phenomenon. It refers to a significant rise in the general price level in a country over a long period of time. Inflation is when a certain form of currency starts to have lesser value over time. Mainly two things cause inflation: people's perception of value, and the economic principle of supply and demand. Long-term occurrences of high inflation are often the result of negligent monetary policy. Classification of inflation on the cause is studied under two categories demand pull inflation and cost push inflation. Demand pull inflation is that inflation which is caused by rise in aggregate demand for goods/services. Cost push inflation is where the price must be increased because the costs of making the product or service has increased. Theories of inflation discussed here are the Classical theory of inflation, Neo Classical theory of inflation, the

Keynesian theory of inflation, the Monetarist view on inflation. Measurement of inflation is mainly carried out using PPI – producer‟s price index and CPI – consumer‟s price index. Measures for controlling inflation include monetary measures, fiscal measure and other measures like price control and government policies.

1.10 Glossary

Inflation: It refers to a significant rise in the general price level in a country over a long period of time.

Demand pull inflation: It is where the demand for an good has amplified to a point where the price is increased, to reach an new steadiness on a supply demand diagram. .

Cost push inflation: It is where the price must be increased because the costs of making the product or service has increased In deflation, the value of money rises and prices fall down.

Hyperinflation: Hyperinflation denotes to a condition where the prices rise at a shocking high rate.

Producers Price index: PPI is an index or ratio of a compound prices of a number of various raw materials, such as steel, relative to a compound of the prices of those raw materials in a base year.

Consumer Price Index (CPI): The CPI compounds the retail prices of a stable market of several goods and services bought by households.

1.12 Self-Assessment Questions

1. How is inflation defined? Can any rise in prices be considered as inflation?
2. What are the various methods of measuring inflation?
3. What are the different kinds of inflation? Define any three of them.

4. In what way does inflation contribute to economic growth?
5. What is the monetarist‟s explanation of inflation?
6. Explain how demand factors cause demand pull inflation?

1.12 Further Reading

D.N. Dwivedi., 2004. Macroeconomics Theory and Policy. Tata McGraw-Hill, P. 366.

T.R.Jain & O.P.Khanna, “Macroeconomics Management”, V.K Enterprise : Delhi, Ch.1

M.C.Vaish, “Essential of Macroeconomics Management”, Vikas Publishing House Pvt.Ltd. New Delhi, Ch.1

1.13 Model Answers

Model answers to check your progress questions

1. Inflation is defined as a significant rise in the general price level in a country over a long period of time.
2. A less produce of a particular harvest can cause the price of that harvest to rise, just as an unexpected excess in the production of onions will cause the price of onions to fall.Inflation, on the other side, does not get affected by these changes in comparative prices of goods and services
3. d) Reduces the purchasing power of rupee
4. d) Both answers A and C are correct.

5. Fisher‟s equation can be stated as

$$MV = PT,$$

$$\text{and } P = MV/T$$

This equation can also be written in terms of percentage changes.

Where all values in percent rate,

p = rate of inflation,

m =rise in money supply,

v = increase in velocity of money, and

y = increase in real output.

6. The monetarists propose that the general level of price rise is only due to an increase in money supply. However, they differ from the classical theory in the following aspects: (i) They do not agree to the classical view that there is a relative association between the stock of money and the price level. (ii) They do not agree with classical view that the supply curve is vertical in short-run.

7. Reasons for Demand pull inflation.

1. A depreciation of the exchange rate
2. Higher demand from a government spending and borrowing
3. A fall in interest rates
4. Faster economic growth in other countries
5. Improved business confidence which prompts firms to raise prices and achieve better profit margin

Reasons for cost push inflation are:

1. Increase in price of raw materials
2. Rise in labour costs
3. Higher indirect taxes imposed by the government
4. A fall in the exchange rate

8. Deflation is also termed as negative inflation. Deflation is a situation of falling prices. In deflation, the value of money rises and prices fall down. Deflation is a sign of depression phase of commerce in the economy.

9. Hyperinflation denotes to a condition where the prices rise at a shocking high rate. The prices rise so fast that it becomes very difficult to measure its magnitude. Conversely, in measurable terms, when prices rise above 1000% per annum, it is called as Hyperinflation. At the stage of hyperinflation, value of national currency (money) of that affected country reduces almost to zero. Paper money becomes worthless and people start trading either in gold and silver or sometimes even use the old barter system of commerce.

10. CPI is customer price index

11. PPI is productivity price index

12. The formula for measuring inflation using CPI

$$\text{Inflation rate (t)} = \frac{\text{CPI (t)} - \text{CPI (t-1)} \times 100}{\text{CPI (t-1)}}$$

13. Other measures include redefining investment policies, increase in production, good commercial policy, encouraging savings, price control and rationing, controlling distribution of profits by joint stock companies and proper wage policy.

14. Fiscal measures can include taxation policies, debt policies and government expenditure which are related to control inflation.

Chapter 9: Stabilisation policies

Objectives

After studying this chapter, you should be able to:

Learn different stabilisation policies established in India

Examine the effectiveness of monetary policy in ensuring price stability in India

Study the changing role and importance of stabilization policies in India

Explain the objectives of Fiscal Policy and its constituents

Identify the suitability of different instruments of monetary and fiscal policies in specific problems

Structure

1 INTRODUCTION

Stabilisation is a necessary complement of crucial reform that is driven by crisis in the economy. But there is always a scope for improvement in the content and pace of a stabilization policy. A macroeconomic crisis is well-known in the form of increasing inflation and unsustainable fiscal and current account deficits. So stabilization policies involves controlling inflation and a sustainable fiscal and current account position. Economic policies can be classified into two main divisions which are

Structural policies: These policies relate to the aggregate supply system on the economy like industrial policy(privatization, liberalization, globalization), foreign trade policy and foreign investment policy.

Stabilization policies: These policies relate to the demand system of the economy which include monetary policy and fiscal policy.

The foreign exchange rate policy has not been used much in stabilizing the economy. The other

Check your progress:

1. What are structural policies?

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_____

2. What are the two important stabilization policies?

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two have been applied with varied success.

2 Economic reforms in india

India‟s stabilization policy was a response to the crisis of 1991 which bought a steep fall in the foreign exchange reserves to about one billion dollar which led to a cutoff in foreign

private lending. The reason for the crisis was high inflation, large fiscal and current account deficits and a heavy debt. This created a need for a proper economic stabilization policies.

Stabilisation policies are also needed to help an economy to recover from specific crisis like stock market crashes. In these cases policies may be framed by government by legislation, securities reform or by international groups like World Bank.

In India, the basis of fiscal and monetary policy was recognized before the business cycle fluctuations of a market economy came into play. In the new scenario, it is significant to carefully plan the legal and institutional frameworks for fiscal and monetary policy so as to ease the extent of business cycle fluctuations.

In the past India never had a „conventional business cycle" but had a sequence of short span agricultural shocks. After the emergence of a large corporate sector, together with flexibility of decision making in the hands of this corporate sector gave rise to a business cycle deep-rooted in variations of investment.

As a result, macroeconomic policy in India started to identify ways through which the policy framework can stabilise this conventional business cycle, as followed by most of the economies around the world. With the most awaited and discussed agreement in place, and after a significant fiscal association has started, monetary policy started to occupy centre stage in stabilisation.

Thus, by the early 2000s, just when India was experiencing a conventional business cycle, where monetary policy could have come into its own in stabilizing this business cycle, monetary policy autonomy was lost through a blend of convertibility accompanied by exchange price rigidity. So a combination of fiscal policy and monetary policy framework was designed for India as a macro policy framework for stabilisation.

So a macroeconomic strategy enacted by government and central bank like RBI to make economic growth stable by controlling price levels and unemployment. Monetary policy, Fiscal policy and the foreign exchange rate system provide the required tools in the hands of the policymakers to control economic fluctuations or crisis.

Economist‟s opinion vary with regard to the comparative effectiveness of diverse stabilizing policies. The classists favor the monetary policy over the fiscal policy, as they believe

Activity: India‟s stabilization policy was a response to the crisis of 1991. Discuss the case of the crisis of 1991 which brought a reformation in the entire finanacial framework of India and what are the steps taken by the RBI and government during the crisis to overcome it.

that the demand for money and the other behavioral functions are fairly stable. On the contrary the Keynesians favor the fiscal policy, particularly to monitor recession, when the interest rate barely responds to fiscal deficit. Both the economists from these schools believe that for policies to be effective, they have to be dependable.

3 Stabilization policies

Monetary and fiscal policy are two strategic economic mechanisms used by governments or national banks as an intrinsic element of a nation‟s overall economic planning. Monetary policy is the process by which the monetary authority of a nation controls the supply of money. To promote economic growth, stability and inflation it is important to control the interest rate.

Normally, a monetary policy is utilized by government or a central bank to control the supply, availability and rate of interest of money to attain stability of the economy. Fiscal Policy is changes in government spending or taxes designed to achieve macroeconomic goals. Monetary Policy is changes in the money supply or credit conditions designed to achieve macroeconomic goals. The three main goals are full employment, price stability, and steady economic growth.

4 Monetary policy

Monetary policy shapes a nation‟s economic growth by adjusting the money supply to the needs of growth by directing the flow of funds into the necessary areas with a purpose to attain macro-economic goals. The term monetary policy is also known as the credit policy or called as the Reserve Bank of India‟s money management policy in India. The RBI decides how much should be the supply of money in the economy, ratio of interest etc. It can be concluded from the above facts that monetary policy is related to the demand and supply of money.

Definition of monetary policy:

Monetary policy is defined as

"It is the deliberate effort by the central bank to control the money supply and credit condition for the purpose of achieving certain broad objectives" – Professor Wrightsman

" A policy which influences the public stock of money substitute of public demand for such assets of both, that is, policy which influences public liquidity position is known as monetary policy" – A.G.Hart

Objectives of monetary policy:

The objectives of monetary policy can be summarized as

1. ***Price stability***: Inflation and deflation are hindrances to growth of economy and so it is important to control big fluctuations in the overall prices.
2. ***Exchange rate stability***: Instability in exchange rate affects international trade which can lead to financial crisis.
3. ***Full employment and maximum output***: Full employment indicates optimum utilization of scarce resources like land, labour, capital and organization. The central bank of the country has the responsibility of stabilizing the economy and taking steps through its monetary policy to smoothen variations in output and employment.

Check your progress:

3. Monetary policy is used to regulate the money supply. So what are the feasible objectives of monetary policy?.....

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4. ***High rate of growth***: Monetary policy can contribute to the growth of the economy in two ways – one way is to balance the aggregate supply of goods and services and other way is to encourage savings and investment in the economy.

Types of monetary policy:

Monetary policy affects a nation‟s monetary supply and the direction of its economy. The difference between various types of monetary policy lies primarily with the set of instruments and target variables that are used by the monetary authority to achieve their goals. Below are few of the different types of monetary policy:

1. ***Expansionary policy***: In this form of monetary policy increase in money supply and a reduction in interest rates are used to correct the problems of a business cycle contraction. For example in recession banks are encouraged to extend credit to consumers and entrepreneurs to solve the unemployment program.
2. ***Contractionary policy:*** A contractionary policy will put upward pressure on interest rates and cause an inflow of short term capital. It is a type of policy in which the central bank of a country decides that is necessary to decrease the money supply to prevent inflation or slow down economic growth. For example sometimes central banks implement this policy by selling of government bills, notes and bonds so that the buyer pays in terms of money which reduces the money available in the system.
3. ***Counter cyclical policy***: This policy aims at moderating the cyclical fluctuations in the economy and stabilizing the economy by following counter cyclical measures. It helps in slowing down the economy when it is growing faster and tries to kindle the economy when it is going downward. For example, in case of progressive taxation when there is expansion in the economy if a larger population of income is taxed but it reduces the demand when the economy is growing.
4. ***Rule based policy:*** This is also called as nonactivist monetary policy. It is a policy based on a predetermined steady growth rate in the money supply for example allowing the money supply to grow at 3 percent a year no matter what is happening in the economy.

5. ***Discretionary policy*:** This is also called as activist monetary policy. This policy leads to actions in the case of the occurrence of a certain situation. It is used to harmonize economic cycles by using an anti-cyclical policy.

Instruments of monetary policy: Instruments used in monetary policy can be classified into qualitative and quantitative instruments.

Quantitative instruments also called as the general tools refers to the quantity of the money devised to govern and channelize the gross quantity of bank credit.

1. **Bank rate policy**: It refers to the rate of interest at which the central bank rediscounts approved bills of exchange. If the bank rate is increased, it decreases the quantity of borrowing of banks from the RBI controlling the credit expansion.
2. **Open market operations**: It is an effective tool in which the RBI sells or buys short term or long term securities in the open market. The sale of securities causes a decrease in the quantity of money and credit. The activity of buying securities from the market increases the money in circulation which results in an increase in the cash reserves with commercial banks.
3. **Variation in the reserve ratio**: It is compulsory for the commercial banks to have a cash reserve which is a percentage of the total assets decided by the central bank. A percent of the money kept with the RBI to have liquidity and credit control is called as Cash Reserve Ratio (CRR) and Statutory liquidity ratio (SLR). Both of them together are termed as Variation in reserve ratio (VRR). Any change in this VRR leads to a change in the reserve status of the banks and thereby it‟s lending capacity.
4. **Lending rate**: lending rates are those ratios fixed by the RBI to lend cash to the customers on the basis of those rates. The higher the rate means the credit to the customers would be costlier. On the other side lower the rate means encouragement to the customers to lend more money.
5. **Repo rate**: Repo rate is the rate at which the banks borrow funds from the RBI to cover up the difference between the demand they are facing for loans and how much they have in hand to lend. If RBI increases repo rate it becomes difficult for the commercial banks to borrow and vice versa.

Qualitative Instruments: They are called selective tools and are employed in distinguishing between different uses of credit.

1. **Consumer credit regulation**: Consumer credit supply can be regulated by determining the installments and down payments in the purchase process of consumer goods.
2. **Fixing margin requirements**: Any variation of change in the margin money leads to a change in the total amount of loan. This technique is used by RBI to promote a neglected sector by decreasing margin and also increase the margin to prevent any sector to grow.
3. **Credit rationing**: RBI controls and directs credit to neglected sectors by fixing the amount of credit including the bill rediscounting. It can also put a ceiling on the limit of bank credit.
4. **Moral suasion**: This instruments uses moral persuasion by directing banks without following any rules. The RBI has this power to suggest commercial banks to reduce credit limit to restrict speculation.
5. **Control through directives**: The policy of commercial banks can be molded by RBI by passing directions from time to time which would impact on guiding the credit to a particular path of an economic sector.
6. **Direct action**: RBI can take action on any commercial bank if does not follow the directives by stopping rediscounted bills and securities.

Problems in monetary policy:

There are certain limitations to monetary policy discussed below:

1. ***Lags in monetary policy***: There are two types of lags in monetary policy.
    a. Inside lag: Inside lag is again divided into recognition lag and action lag
        (i) Recognition lag refers to the time period taken to identify the requirement of alterations in monetary policy.
        (ii) Action lag is the time gap between the recognition of the need and implementation of the policy.
    b. Outside lag: It is described as the time period taken to affect demand and supply after the execution of the policy.

These lags affect the operational capability of a monetary policy.

2. ***Pressure of financial intermediaries***: pressure of financial intermediaries like insurance companies, pension funds, cooperative banks etc., convert idle funds into active balances as they lend against mortgages and assets which yield higher returns. These actions hike the velocity of money and weaken the power of policy.

3. ***Excess non-banking financial institutions***: Policy is affected by the credit pumped into the economy by excess non-banking financial institutions.

Check your progress:

4. Which of the following is not an instrument of monetary policy?

    a. open market operations

    b. bank rate policy

    c. reserve requirement changes

    d. government spending

5 ----------rate is the rate at which the central bank rediscounts approved bills of exchange.

    a. lending

    b. debt

    c. bank

    d. forwarding

6. When would the commercial banks have fewer funds to provide credit to the customers?

    a. when the central bank decreases the reserve requirements

    b. when the central bank increases the reserve requirements

    c. when the central bank leaves the reserve requirements unchanged

    d. when the commercial bank increases the lending rate

7. The time lag between recognition of the need and the implementation policy is known as

    a. recognition lag

    b. action lag

    c. outside lag

    d. inside lag

8. Which of the following is a common feature of monetary policy and fiscal policy?

    a. both deal with interest rates

    b. both deal with tax rates

    c. both deal with foreign exchange

    d. both deal with regulatory mechanisms

4. ***Contradictions of objectives***: When there is a contradiction of objectives the efficiency of monetary policy is hindered.
5. ***Underdeveloped nature of money and capital markets***: unorganized money and capital markets restrict the monetary authorities from regulating money variables.
6. ***Higher liquidity***: when an economy grows there is an addition in the deposit of commercial banks. Surplus liquidity due to high deposits is a hindrance to a good policy.

Activity: Monetary policy pacts with the regulation of the currency supply. Assume that you are the expert in charge for framing the monetary policy in a republic. While outlining the policy which instruments do you reflect helpful in regulating credit?

5 Fiscal policy

The fiscal policy plays an important role in the economic front of a nation. Though fiscal policy started with a role of determining state income and expenditure policy. But with time its importance grew with the speed of economic growth. So gradually public borrowing and deficit financing are included as a part of fiscal policy.

An effective fiscal policy is comprised of debt management, public expenditure, tax revenue, transfers, budgetary deficit etc, including the entire financial structure of the nation. It tries to attain a proper balance between these units to achieve best possible results in terms of economic goals.

Definition of fiscal policy:

"Fiscal policy as changes in government expenditure and taxation designed to influence the pattern and level of activity". – Harvey and Johnson

"We define fiscal policy to include any design to change the price level, composition or timing of government expenditure or to vary burden, structure of frequency of the tax payment". – G.K.Shaw

"Fiscal policy as changes in taxes and expenditure which aim at short run goals of full employment price level and stability". – Otto Eckstein

Objectives of fiscal policy:

1. **Mobilization of resources**: There are two methods of government to raise funds for investment mainly voluntary and compulsory savings. Resources can be mobilized through public borrowing and taxation. The government can mobilize more money by introducing new taxes and increasing the existing taxes.
2. **Reduction of disparities of income**: Economic disparities can be reduced by imposition of more taxes on the richer section, raising the taxes on luxury items. Revenues so generated can be useful for the up-liftment of weaker sections.
3. **Economic development and growth**: Resources are mobilized through taxation policy, public borrowing and public expenditure. Public expenditure is used for development of infrastructure, expansion of investment opportunities and subsidies on production of specific items contributes to the development and growth of the economy.
4. **Price stability**: Fiscal policies are helpful in maintaining stable prices. When the economy is deflating the budget should be prepared in a way to increase in government expenditure creating more income for the people. When the economy is undergoing inflation the government has to reduce its expenditure and control the spending capacity of people through taxes.
5. **Expansion of employment**: Full employment is very important as economic development would be incomplete without it. Fiscal policy expands employment opportunities in the economy.

Check your progress:

9. Discuss the objectives of fiscal policy.

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Instruments of fiscal policy: Fiscal policy endeavors to achieve its objectives through the use of three instruments in its group – taxation, public expenditure and public debt management.

Taxation: One of the important sources of revenue for the government is taxation. The tax structure should fetch the government maximum revenue and at the same time avoid adverse effects on the investment of private sector. There are two types of taxes – direct and indirect taxes.

Direct taxes: These are levied directly on an individuals income or wealth. Major direct taxes are personal income tax and corporation tax. Payments of direct taxes is compulsory. Direct taxes are mainly collected by the central government. Examples of direct taxes are income tax, corporation tax, capital gains tax, wealth tax and a capital transfer tax.

Indirect taxes: Indirect taxes are levied on consumer‟s expenditure or outlay. Major indirect taxes are excise duties and custom duties. In indirect tax the impact will be on manufacturer and the impact is on the ultimate consumer. Indirect taxes are collected by both the central and state governments. Examples of indirect taxes are custom duties, motor vehicle tax, excise duty and sales tax.

Public Expenditure: Expenditure by government would be mainly on defence, police and public administration even including expenditure on roads, parks, etc. Other expenditure may include on relief works, subsidies of various kinds. Public expenditure transfers income from the government to the general public while taxation works vice versa.

Public debt management: Government borrowing and public debt affect the volume of liquid assets with the public. Public borrowing is an effective anti-inflationary measure for clearing up excess liquidity in public. It is better than taxation on a positive note as it supports saving and investment.

Deficit financing: It is the name of those forced savings which are the result of increase in prices during the period of government investment. Deficit financing is a kind of forced savings. The deficit financing in India indicates loan taking by the government from the RBI in the form of issuing fresh dose of currency.

Problems of fiscal policy:

Instability: the fiscal policy has failed to attain stability in various fronts. The growing volume of deficit financing has created the problem of inflationary rise in the price level which give rise to instability.

Inflation: The fiscal policy of the nation has failed to contain the inflationary rise in price level. The increasing volume of public expenditure on non-developmental heads and deficit financing has resulted in demand pull inflation. And also the direct taxes has failed to check the growth of black money, which is again aggravating the inflationary spiral in the level of prices.

Defective tax structure: The fiscal policy has also failed to provide a suitable tax structure for the country. The tax structure has failed to raise the productivity of direct taxes and the nation has been relying much on indirect taxes. Therefore the tax structure has become burdensome to the poor.

Negative return of the public sector: The negative return in the public sector units has become a serious problem for the government. The returns on investment has remained mostly negative. In order to maintain those PSUs the government has to keep huge

Check your progress:

10. Write about any one instrument of fiscal policy

_____
_____
_____
_____
____

11. Point out any three differences between direct taxes and indirect taxes

_____
_____
_____
_____
____

12. Discuss any two limitations of fiscal policy.

_____
_____
_____
_____

amount of budgetary provisions, creating a drainage of scarce resources of the nation.

Growing inequality: The fiscal policy of the nation has failed to contain the growing inequality in the distribution of income and wealth throughout the country. The growing trend of tax evasion has made the tax machinery ineffective for the purpose.

6 Summary

Stabilisation is a necessary complement of crucial reform that is driven by crisis in the economy. Economic policies can be classified into two main divisions which are Structural policies which relate to the aggregate supply system on the economy like industrial policy (privatization, liberalization, and globalization), foreign trade policy and foreign investment policy and Stabilization policies which relate to the demand system of the economy which include monetary policy and fiscal policy.

Economist‟s opinion vary with regard to the comparative effectiveness of diverse stabilizing policies. The classists favor the monetary policy over the fiscal policy, as they believe that the demand for money and the other behavioral functions are fairly stable. Both the economists from these schools believe that for policies to be effective, they have to be dependable.

Monetary and fiscal policy are two strategic economic mechanisms used by governments or national banks as an intrinsic element of a nation‟s overall economic planning. Monetary policy is the process by which the monetary authority of a nation controls the supply of money. To promote economic growth, stability and inflation it is important to control the interest rate. Fiscal Policy is changes in government spending or taxes designed to achieve macroeconomic goals.

7 Glossary

Rule based policy: This is also called as nonactivist monetary policy. It is a policy based on a predetermined steady growth rate in the money supply

Discretionary policy: This is also called as activist monetary policy. This policy leads to actions in the case of the occurrence of a certain situation.

CRR and SLR: A percent of the money kept with the RBI to have liquidity and credit control is called as Cash Reserve Ratio (CRR) and Statutory liquidity ratio (SLR).

VRR: CRR and SLR together are termed as Variation in reserve ratio (VRR)

Economic development: it is defined as a process of economic transition involving the structural transformation of an economy through industrialization and rising GNP and per capita income.

External debt: This is the amount borrowed by the government from foreign bodies.

National debt: National debt refers to the amount borrowed by government to meet expenditures that arise out of the deficit in the budget.

8 Self-Assessment Questions

1. What do you mean by monetary policy? Discuss its objectives and its instruments.

2. What is the role of fiscal policy in economic growth?

3. Discuss the tools/instruments of fiscal policy.

4. What are the problems of monetary policy?

5. What are the different types of economic policies for an nation?

9 Further Reading

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10 Model Answers

Model answers to check your progress questions

1. Structural policies are foreign trade policy and foreign investment policy.
2. Stabilization policies are monetary policy and fiscal policy.
3. Feasible objectives of monetary policy to regulate money supply are

Price stability: Inflation and deflation are hindrances to growth of economy and so it is important to control big fluctuations in the overall prices.

Exchange rate stability: Instability in exchange rate affects international trade which can lead to financial crisis.

4. Answer: a
5. Answer: c
6. Answer: b
7. Answer: b
8. Answer: d
9. Objectives of fiscal policy:
    - Mobilization of resources
    - Reduction of disparities of income
    - Economic development and growth
    - Price stability
    - Expansion of employment
10. As the answer write about any one out of these three- taxation, public expenditure and public debt management.
11. Difference between direct tax and indirect tax

Direct taxes	Indirect taxes
Levied directly on income	Levied on consumer expenditure
Personal income tax and corporation tax	Excise duties and custom duties
Payment is compulsory	Payment is not so compulsory

12. Limitations of fiscal policy:
    - *Instability*
    - *Inflation*
    - *Defective tax structure*
    - *Negative return of the public sector*

Chapter 10: Money

Objectives

After studying this chapter, you should be able to:

Define money

Explain the kinds of money and its present day forms

Describe the functions of money

Discuss the quantity theory of money and its limitations

Explain Cambridge equation of money

Discuss Keynesian concept of money and prices

Structure

1 INTRODUCTION

The drawbacks of the traditional barter system has led to the invention of money. Today Money plays a very important role in any economy that it may be impossible for us to think of an economy without money. This chapter also deals with money its definition based on different schools of thought. We will also learn about different functions and kinds of money. We will discuss about quantity theory of money and its derivation from equation of exchange.

2 Definition of Money

Money is a social and economic necessity that emerged from specific social and economic conditions. In the past barter system was the mode of exchange of goods and services. But the difficulties in barter system became highly pronounced with the number of commodities to be exchanged and with the widening of the market. This need for a medium for exchange has led to the invention of money.

Definition:

Economists have tried to define money in different aspects and based on its functions but could never give a precise and practical definition. Traditionally money was defined to include all currency notes, coins and bills held by public, together with demand deposits and other associations holding money like savings, mutual funds, credit unions. So by this definition money is defined as items that are generally acceptable for payment.

In functional definition of money, money is defined in terms of its function.

"Money is what money does" – Walker

"Money is defined as anything that is generally accepted as a means of exchange and at the same time acts as a measure and as a store of value"-Crowther

In legal definition of money, money is what the law says it is. Anything which has the legal power to act as a medium of echange and to discharge debt is called money.

Basically there are four schools of thought on defining money. They are

1. **Conventional approach**: This approach supports one of the functions of money i.e, the medium of exchange function and measure of value. Any commodity that satisfies these two functions would be termed as money according to this approach.
2. **The Chicago school of thought**: this is one of the modern approach propounded by Milton Friedman, Schwartz and many others who extended the conventional view and included currency, demand deposits and time deposits also.
3. **The Gurley and Shaw school of thought**: This is another modern approach propounded by John G. Gurley and Edward S Shaw which goes a step ahead in defining money and include the liabilities of non-bank financial intermediaries like post office saving deposits.
4. **The Central Bank view**: this is a much broader modern view which includes not only the existing means of payment but the credit flowing to the borrowers also in the definition of money.

Check your progress:

1. Money is
   a. Backed by gold in Fort Knox.
   b. The same as income.
   c. The value of all coins and currency in circulation at any time.
   d. Anything that is generally accepted as a medium of exchange.

2. The development of money as a medium of exchange has facilitated the expansion of trade because
   a. Holding money increases people's income.
   b. No other mediums of exchange are available.
   c. Money eliminates the "double coincidence of wants" problem.
   d. Holding money increases people's wealth.

3 Functions of money:

The functions of money can be broadly classified and popularly known as the triad which are as follows

1. Money as medium of exchange
2. Money as measure of value

3. Money as unit of account

Further Prof Kinley classified the functions of money into three defined groups

1. **Primary functions**
2. **Secondary functions**
3. **Contingent functions**

1. Primary functions: primary functions of money are

a. Medium of exchange: money as medium of exchange is the central function of money and for this function it should have the general acceptability. Money as a medium of exchange divides the exchange of transactions into sale and purchase and removes the difficulty of double coincidence of wants

b. Measure of value: Money measures the value of goods and works as common denominator into which the values of all goods and services are expressed. When we express the value of commodity in terms of money it is called as Price.

2. Secondary functions: These are the derivatives of primary functions.

a. Store of Value: Money can be stored without losing value which we can call as wealth. Savings are money stored for future use. So money serves as a store of value.

b. Standard of deferred payments: In millions of transactions today money is not paid instantly and directly. The debtors make a promise for a future date and there money acts as a standard of deferred payments.

c. Transfer of value: Money makes the transferability of purchasing power from one place to another and from one person to another easily, quickly and efficiently.

3. Contingent functions: They are classified as contingent functions because they are not primary functions and they keep on changing and multiplying with the change of economy.

a. Basis of credit: Modern economy is based on credit and all the credit instruments come under the classification of this function which are claims over money and serve as an easy way of transferring value.

b. Basis of distribution of income: Money remunerations which are paid in the form of wages, taxes, rent, interest and profits which facilitated the task of factors payments of distribution of national income are comprised in this function.

c. Equalisation of marginal utilities and productivities: A producer can maximize his production and a consumer can maximize his satisfaction by equalizing marginal productivities and utilities of good and services respectively since prices of factors and goods are in terms of money.

d. Liquidity: Money is the most important liquid asset and can be converted into any type of

Check your progress:

3. What are secondary functions of money?

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4. Explain traid functions of money.

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asset accordingly. The productivity and mobility of capital rises with liquidity.

4 Kinds of money

1. Metallic coins: They are made up of copper, aluminum, iron, silver and gold are the second most important source of money in circulation. The metallic coins which are introduced around 2500 years ago used to have the seal of purity and weight determined by goldsmiths. In modern times this kind of money is taken up by government with a decision of making them uniform and

in view of giving them a legal status. The metallic coins are categorized as token money excluding gold and silver.

2. Paper money: the paper money is the first popular form of money. It consists of printed notes authenticated and issued by government and the central bank of the country. Paper money makes the largest part of money supply in any country today.

3. Bank deposits: Bank deposits include three kinds of deposits: current account deposits, saving bank deposits and time deposits. Current account deposits are also known as demand deposits.

Check your progress
5. Banks can create money
(a) only by illegally printing additional dollar bills.
(b) by paying interest to their depositors.
(c) by making loans that result in additional deposits.
(d) by offering financial services, such as stick market brokerage.

Their medium of exchange is cheque.

5 Quantity theory of money:

Equation of exchange: During any period of time the total value of transactions must be same as the total value of money exchanged. The total value of all transactions will be equal to the total goods and claims traded (T) multiplied by their average price (P). The total value of all monetary payments during any period of time will be equal to the amount of money (M) multiplied by its velocity of circulation (V). Thus by equating what is paid with what is received we get

$$MV = PT$$

This is known as equation of exchange.

The equation of exchange is a truism. The quantity theory of money is derived from the equation of exchange by Fisher with certain assumptions and popularly known as Fishers quantity theory of money. By making the assumptions that V and T remain constant, the theory argues that a

change in M will lead to a considerable change in P. There are three main basic propositions implied in the quantity theory of money. They are

1. The quantity theory argues that the velocity of circulation changes very slowly and in short period V can be treated as constant. The theory also assumes that T remains constant in spite of change in M with an assumption that money is a veil and that real output is determined by real forces such as technology and production.
2. Changes in money are treated as the cause and price level as the effect.
3. Since V and T are assumed to be constant price level varies in strict proportion to the change is quantity of money.

The quantity theory was well appreciated by policy makers and laymen because of its simplicity and in the past periods marked by sharp increases in money supply have also experienced a steep

Check your progress:

6. What is quantity theory of money?

_____

_____

_____

_____

7. What is the most popular form of money in circulation in present day scenario?

_____

_____

increase in price level.

Criticisms on quantity theory:

i) Fishers theory does not explain how a change in M changes P.

ii) The transaction equation is a truism which means it doesn‟t have any theoretical value

iii) It is a static theory which is based on an assumption that M and V have a fixed relationship which is not practically possible.

iv) Price (P) is treated to be a passive factor which is not true because it can affect output.

v) Not only money (M) determines price (P) but P can also determine M according to

Check your progress:

8. Solve this problem with the quantity equation. Suppose the money supply is Rs. 20,000, real output is 1,000 units, and the price per unit of output is Rs.10.

a. What is the value of velocity?

b. If velocity is fixed at the value you solved for in part (a), what does the quantity theory of money suggest will happen if the money supply is increased to Rs.40,000?

Keynes contra quantity theory causation argument.

6. Cambridge version of quantity of theory of money:

The Cambridge view on quantity theory of money is propounded by economist Alfred Marshall. It was later further expanded by professors of Cambridge university A.C. Pigou, D.H.Robertson and J.M. Keynes. This is the reason why it is called Cambridge quantity theory of money. It is also referred to as „Neo classical theory of money" and „cash balance approach".

The Cambridge quantity theory of money is an improvement over the classical quantity of theory of money as in this theory price level is affected only by that part of money which people hold in the form of cash for transaction purpose, not by the MV as suggested by the classical theory.

As suggested by Cambridge economists, people hold money or demand money primarily for transaction purposes. For some it is a medium of security and for some it is a means for meeting unexpected obligations. People don"t hold their entire income, but hold only an optimum amount which is not precisely defined. Moreover this theory hypothesized that income earners strike a balance between the convenience and security the money provides and the loss of income resulting from money holding. People hold a certain proportion of their money for transactions. All this hypothesis was put forward in the form of a equation which is stated a s

$$\mathbf{M^d = kPQ} \text{ .....} \mathbf{(1.1)}$$

Where M^d = demand of money,

P = price, Q = real income, and k = proportion of money income held as currency and bank deposits.

The term „k" in the equation is „cambridge k" and PQ = Y, that is, money value of real income. The above equation states that the demand for money (M^d) equals k proportion of the total money income. The Cambridge economists stated that k is stable and at equilibrium level, stock of money (M) equals demand for money (M^d), i.e.,

$$\mathbf{M = M^d = kPQ} \text{.....} \mathbf{(1.2)}$$

At equilibrium therefore

$$\mathbf{M = kPQ} \text{ .....} \mathbf{(1.3)}$$

$$\mathbf{Or} \quad \mathbf{M(1/k) = PQ} \text{ .....} \mathbf{(1.4)}$$

It is crucial here that in equation 1.4, 1/k is same as V in fishers equation. This means Cambridge k is reciprocal of fishers V. that is, k = 1/V and V = 1/k. Thus k amd V are reciprocals of one another.

The salient features of Cambridge equation are:

1. Cambridge theory links prices to the demand for money and not to the supply of money, unlike fisher"s equation as idle cash does not in reality create demand and affect prices.
2. Cambridge equation links demand for money to money income. In other terms it hypothesizes that demand for money is a function of money income.

3. By linking prices to demand of money, Cambridge version of monetary theory brings out the mechanism by which change in demand for money affects the general price levels.

Check your progress:

9. The quantity theory states that the effect of an increase in the quantity of money will be

   a. more output

   b. more price

   c. more rate of interest

   d. more employement

10. Cambridge equation is a -_____explanation of the price level.

   a. short term

   b. long term

   c. both short term and long term

   d. none of the above

7. Keynes view on money and prices:

Keynes proposed a reformulated quantity theory of money which got round a change from a monetary theory of prices to a monetary theory of output. For this approach Keynes made an effort to add monetary theory with value theory and also related the theory of interest into monetary theory. But "with the help of this theory of output that value theory and monetary theory are brought into fair position with each other."

Keynes does not approve the older quantity theorists that there is a direct and proportional relationship between quantity of money and prices. His proposal is that the effect of a change in the quantity of money on prices is indirect and non-proportional.

Keynes criticizes "that economics has been divided into two compartments with no doors or windows between the theory of value and the theory of money and prices." This dichotomy

between the relative price level (as defined by demand and supply of goods) and the absolute price level (as defined by demand and supply of money) rises from the failure of the classical monetary economists to integrate value theory with monetary theory. Therefore, changes in the money supply affect not only the absolute price level but also exercise no influence on the relative price level.

Moreover Keynes criticizes the classical theory of static equilibrium in which money is regarded as neutral and does not affect the economy‟s real equilibrium connecting to relative prices. According to him, the problems of the real world are related to the theory of shifting equilibrium whereas money enters as a "link between the present and future".

Keynes's Reformulated Quantity Theory of Money:

The Keynesian reformulated quantity theory of money is based on the following:

Assumptions:

1. Actual demand and quantity of money change in the same proportion as long as there are no unemployed resources.

2. All unemployed elements are homogeneous, perfectly divisible and interchangeable.

3. There are constant returns to scale so that prices do not rise or fall as output increases.

4. All elements of production are in perfectly elastic supply as long as there is no unemployment.

With the above assumptions, the Keynesian chain of connection between changes in the quantity of money and prices is an indirect one. So when the quantity of money is increased, its first impact is on the rate of interest which tends to decrease. Assuming the marginal efficiency of capital, a decrease in the rate of interest will increase the volume of investment.

The rise in investment will increase effective demand through the multiplier effect thereby increasing income, output and employment. As the supply curve of factors of production is elastic in a situation of unemployment, wage and non-wage factors are available at constant rate of remuneration. As there are constant returns to scale, prices do not rise with the rise in output so long as there is any unemployment.

Under the given situations, output and employment will rise in the same proportion as actual demand, and the actual demand will rise in the same proportion as the quantity of money. However once full employment is reached, output ends to respond to all the changes in the supply of money and actual demand. The elasticity of supply of output in answer to changes in the supply, which was infinite as long as there was unemployment drops to zero. The whole effect of changes in the supply of money is applied on prices, which increase in exact proportion with the increase in actual demand."

So as long as there is unemployment, output will change in the same proportion as the quantity of money, and there will be no change in prices; and when there is full employment, prices will change in the same measure as the quantity of money. Hence, the reformulated quantity theory of money press the point that with the increase in the quantity of money prices increase only when the level of full employment is reached, and not before that.

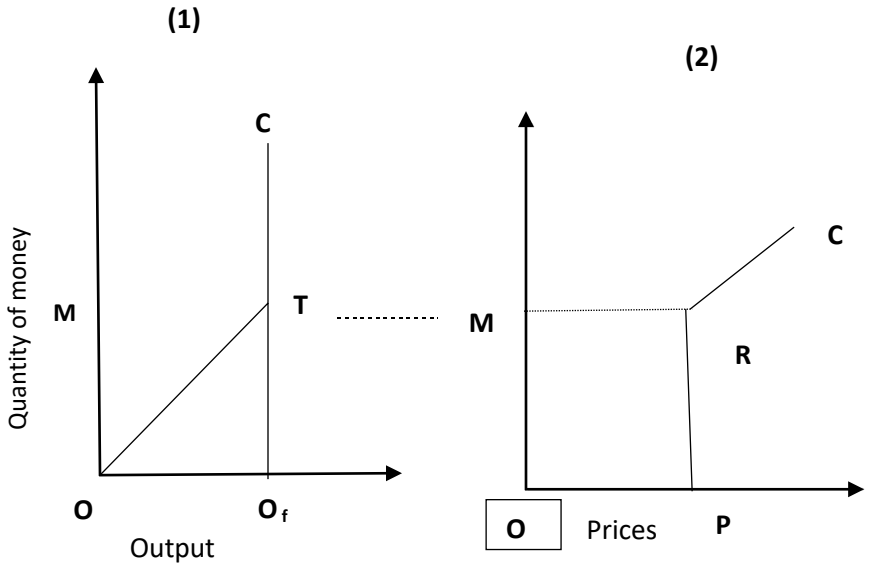
The below diagram illustrates the quantity theory of money (1) and (2) where OTC is the output curve connecting to the quantity of money and PRC is the price curve connecting to the quantity of money. Figure board (1) of the below figure shows that as the quantity of money increases from O to M, the level of output also rises along the OT portion of the OTC curve.

As the quantity of money ranges OM level, full employment output OQF is being formed. Then after point T the output curve becomes vertical as any more increase in the quantity of money cannot increase output beyond the full employment level OQF.

Figure board (2) of the figure shows the association between quantity of money and prices. So as long as there is unemployment, prices remain constant whatever the rise in the quantity of money. Prices start rising only after the full employment level is reached.

In the below figure, the price level OP remains constant at the OM quantity of money equivalent to the full employment level of output OQ1. But an increase in the quantity of money above OM raises prices in the same proportion as the quantity of money. This can be seen in the RC portion of the price curve PRC.

Keynes in his own words pointed out that the real world is so complicated that the simplifying assumptions on which the reformulated quantity theory of money is based, will not hold good.



In the opinion of Keynes, the subsequent possible complications would qualify the statement that as long as there is unemployment, employment will change in the same amount as the quantity of money, and when there is full employment, prices will change in the same amount as the quantity of money."

(1) Active demand will not change in exact amount to the quantity of money.

(2) As resources are homogenous, there will be diminishing, and not constant returns as employment gradually rises.

(3) As resources are not interchangeable, some commodities will reach a condition of inelastic supply even though there are still unemployed resources available for the making of other commodities.

(4) The wage-unit will tend to increase, afore full employment has been reached.

(5) The remunerations of factors incoming into marginal cost will not all change in the same proportion."

Taking into consideration these complications, it is clear that the reformulated quantity theory of money does not hold good. A rise in actual demand will not change in exact amount to the quantity of money, but it will partly spend itself in growing output and partly in increasing the price level. As long as there are unemployed resources, the general price level will not rise much as output rises. But a sudden large rise in aggregate demand will encounter bottlenecks when resources are still unemployed.

Advantage of the Keynesian Theory above the Traditional Quantity Theory of Money:

Keynes‟s reformulated quantity theory of money is more practical to the traditional approach in that as he discards the old view that the association between the quantity of money and prices is direct and proportional. In its place, he propounds an indirect and non-proportional association between quantity of money and prices.

In forming such an association, Keynes brought about a transition from a pure monetary theory of prices to a monetary theory of output and employment. In this process he incorporates monetary theory into value theory. He integrates monetary theory with value theory and also with the theory of output and employment through the rate of interest.

In detail, the combination of monetary theory and value theory is done through the theory of output in which the rate of interest plays the vital role. When the quantity of money rises the

rate of interest falls which increases the capacity of investment and collective demand thereby raising output and employment. In this way, monetary theory is integrated with the theory of output and employment. In turn output and employment further raise the demand for factors of production. Accordingly, certain bottlenecks come up which raise the marginal cost including money wage rate and raise the prices.

On the other side, the traditional quantity theory is centered on the unrealistic assumption of full employment of resources. As per this assumption, a given rise in the quantity of money always leads to an equivalent increase in the price level. But Keynes theory believes that full employment is an exception.

Keynes theory establishes that as long as there is unemployment, the rise in prices is gradual and there is no danger of inflation. It is only when the economy reaches the level of full employment that the rise in prices is inflationary with every increase in the quantity of money. Hence this approach has the feature of emphasizing that the objectives of full employment and price stability may be inherently irreconcilable.

Criticisms on Keynes Theory of Money and Prices:

Keynes‟ views on money and prices have been criticized by the monetarists on the following grounds.

1. Keynes by mistake took prices as fixed so that the outcome of money appears in his analysis in terms of quantity of goods traded in spite of their average prices. But the real effects of monetary changes are direct rather indirect.

2. Keynes expected that monetary changes were largely engrossed by changes in the demand for money. But Friedman has proved by his empirical studies that the demand for money is highly stable.

3. Keynes was unsuccessful in understanding the true nature of money. He thought that money could be exchanged for bonds only. In fact, money can be exchanged for many diverse types of assets like bonds, securities, physical assets, human wealth, etc.

4. As Keynes favored his theory for a depression period, this led him to conclude that money had little effect on income. But according to Friedman, it was the contraction of money that caused the depression. Hence, Keynes was wrong on this part that money had little effect on income.

Check your progress:

11. According to keynes the change in quantity of money first influences_____.

a. rate of interest

b. rate of investment

c. bank deposits

d. none of the above

12. Keynes theory of money is valid_____full employement.

a. before

b. after

c. during

d. not valid at any time

13. keynes regards money as

a. passive

b. active

c. neutral

d. none of the above

14. The Keynesian theory of money states there is

a. direct relation between money and prices

b. indirect relation between money and price

c. no relation between money and price

d. proportional relation between money and price

Money definitely affects national income.

8 Summary

Money emerged from specific social and economic conditions. Money is defined as items that are generally acceptable for payment. Basically there are four schools of thought on defining money, Conventional approach, The Chicago school of thought, The Gurley and Shaw school of thought and the Central Bank view. Prof Kinley classified the functions of money into three defined groups Primary functions, Secondary functions and Contingent functions. Basically there are three kinds of money and they are Metallic coins, Paper money and Bank deposits.

The quantity theory of money is derived from the equation of exchange by Fisher with certain assumptions and popularly known as Fishers quantity theory of money. The Cambridge quantity theory of money is an improvement over the classical quantity of theory of money as in this theory price level is affected only by that part of money which people hold in the form of cash for transaction purpose, not by the MV as suggested by the classical theory. Keynes‟s reformulated quantity theory of money is more practical to the traditional approach in that as he discards the old view that the association between the quantity of money and prices is direct and proportional. In its place, he propounds an indirect and non-proportional association between quantity of money and prices.

9 Glossary

Equation of exchange: MV = PT where M denotes Money, V= Velocity, P= Price, T = claims traded.

Bank money: transferable deposits in banks originally based on deposits of coins that usually traded at premium over ordinary money.

Fisher effect: the tendency of the rate of interest to fall with falling commodity prices, and to rise when prices are rising, so as, in effect, to index interest payments.

Monetarism: the school of thought that believes that the amount of money in a country is a main determinant of economic activity and especially of the price level.

Money illusion: the mistaken belief that when prices are changing that money amounts, such as money incomes are a representation of real income.

10 Self-Assessment Questions

1. Define money according to the different approaches?

2. Explain the three kinds of money.

3. Briefly classify money based on its functions.

4. Critically examine fisher‟s quantity theory of money.

5. Discuss the Cambridge equations and their significance in monetary theory.

6. Keynesian theory is known as reformulated quantity theory. Discuss.

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12 Model Answers

Model answers to check your progress questions

1. Answer: d
2. Answer: c
3. Secondary functions of money are
   a. ***Store of Value***: Money can be stored without losing value which we can call as wealth. Savings are money stored for future use. So money serves as a store of value.

b. ***Standard of deferred payments***: In millions of transactions today money is not paid instantly and directly. The debtors make a promise for a future date and there money acts as a standard of deferred payments.

c. ***Transfer of value:*** Money makes the transferability of purchasing power from one place to another and from one person to another easily, quickly and efficiently.

4. The functions of money can be broadly classified and popularly known as the triad which are as follows

   Money as medium of exchange

   Money as measure of value

   Money as unit of account

5. Answer: c
6. The quantity theory of money (sometimes called QTM) states that prices increase when there is more money in an economy and they fall when there is less money in an economy. The following formula expresses the theory:

   $$M \times V = P \times T$$

   Where M = the money supply

   V = the velocity of money

   P = average prices

   T = number of transactions in the economy

7. Currency notes or paper money is the most popular form of money in the present day.
8. Answer: a. (1,000 x 10)/20000 = 1 the velocity is 1

   b. Rs. 40,000 x 1 = 40 x 1,000, prices will double from 10 to 40

9. Answer: b
10. Answer: a
11. Answer: a
12. Answer: b
13. Answer: b
14. Answer: b