MACRO ECONOMICS ANALYSIS

Unit I: National Income Accounting

Circular flows of Income in two-three and four sector economy, Social Accounting, Components of Social Accounting, Input-Output Accounting, Balance of payments accounting.

Unit II: Consumption Function

Keyne's psychological law of consumption-implications of the law; Short-run and long-run consumption function; Empirical evidence on consumption function. Life cycle, relative and permanent income hypotheses.

Unit III: Investment function

Marginal efficiency of investment and level of investment : marginal efficiency of capital and investment-long run and short run; The accelerator and investment behavior-impact of inflation; Inflation and business cycle, Influence of policy measures on investment – empirical evidence.

Unit IV: The classical vs Keynesian models

General theory – Evolutionary or Revolutionary. The Keynesian theory of income, output and employment, criticism of Keynesian theory.

Unit V: Recent developments in Macro Economics

Supply side economics - adoptive and rational expectations theory – monetary policy and fiscal policy.

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LESSON-1

NATURE OF MACRO ECONOMICS-DEFINITION-STATISTICS, COMPARATIC STATICS-DYNAMICS.

1.1.Introduction

This chapter is concerned with the meaning and definitions of Macro economics, nature and scope of macro economics, comparative static and dynamic macro economics, importance of macro economics, limitations of macroeconomics.

1.2.Objectives

- To define macro economics, nature and scope of macro economics
- To examine difference between micro and macro economics
- To analyse comparative static and dynamic types of macro economics
- To examine the importance of macro economics

1.3. Content

1.3.1. Nature of Macro Economics

1.3.2. Scope and Importance of Macro Economics

1.3.3.Difference between micro and macro economics

1.3.4. Comparative static and dynamic types of macro economics

1.3.1. Nature of Macro Economics-Meaning and Definition.

Economics is a social science which is deals with mankind and human wants. It is deals with scarcity of natural resources and unlimited human wants. The term economics is broadly classified in to two words viz.“ micro economics “and “macro economics”. The word micro is derived from the Greek word micros and the word macro is derived from the Greek word macros. The term micro means a small unit or individual, the term macro means aggregate or total.

1.3.2. Scope and Importance of Macro Economics

Prof Lipsey would prefer to call macro economics as a search for short-cut. He lists out major economic problems coming under macro economics. Thus macro economics is a study of

1. Problem relating to the allocation of resources between the production of consumer goods and capital goods.
2. Problem relating to fluctuations in price level
3. Problems relating to fluctuations in price level of wages
4. Problem relating to rate of growth
5. Problems in relation to international trade & employment
6. Problem relating to monetary & fiscal policies.

Importance of Macro Economics

Macro economics has assumed immense importance as an integral part of modern economics due to the following features.

1. Modern economic system is complex and complicated. Therefore, to get a proper and accurate knowledge of working of economic system, one should study macro economics to understand the behaviour pattern of aggregates such as level of savings, investment, national output and national income.
2. Macro economic approach is of a great help in the formulation of economic policies. All governments are interested in promoting economic growth stability and they take effective steps to control fluctuations. Government deals not with individual savings but with groups of individuals, thereby establishing the importance of macro economics.
3. Modern economics stress on economic growth and stability. Economic fluctuations are the characteristic feature of capitalistic society. The theory of economics fluctuations can be understood & severity of the fluctuations can be controlled only with help of macro economics.
4. Macro economics is essential for understanding macro economics. No macro economics law could be framed without studying aggregates. For Example, the theory of firm could not have been formulated with reference to the behaviour of a single firm. The theory was possible only after examining and analyzing the behaviour pattern of several firms.

5. Macro economic approach is of utmost importance to analyse and understand the effects of inflation and deflation. Keynes considers that inflation are harmful to the society and macro economics help to take effective steps to control them.

6. Modern governments are interested in promoting and maintaining full employment. The determinants of full employment namely, saving, income, consumption are all important concepts of macro economics.

7. Macro economics has brought forward the importance of the study of National income was relegated to the background. It is the study of national income which gives an idea about the standard of living of different countries of the world.

8. The study of macro economics have revealed not only the glaring inequalities of wealth within an economy but has shown the differences in the standard of living. Thus various countries adopt important steps to promote economic welfare.

1.3.3 Difference between micro and macro economics

The term micro economics and macro economics were first coined by Prof. **Ragnar Frish** of Oslo University in 1933. Since then it has become very familiar and it was applied by other economists. Now micro economics are part and parcel of economic terminology. The macro economic approaches were extent before Adamsmith's view. This approach was first profounded by mercantilists followed by physiocrats, after that Robert Malthus and Karl Marx.

The term micro economics is derived from the Greek word "micros", it means "small" and the term macro economics is derived from the Greek word "Makros", it means "large".

What is Micro economics?

Micro economics is deals with output of the particular goods and services by single firms or industries.

Micro economics deals with the analysis of small individual units of an economy. Micro economics is not considered with total output, total employment or

total spending. Micro economics concerned with individual consumers, individual firms, individual industries, markets, and explains how prices of products and factors are determined.

Micro economics explained how resources are allocated among various products and how income distribution among different factors is determined.

What is Macro economics?

Macro economics is deals with the analysis of the behaviour of the economic system in totality. Thus, Macro economics is concerned how the large aggregates such as total employment, national product or output, national income of an economy and the general price level are determined. Therefore, macro economics is a study of aggregates. Besides, macro economics explains how the productive capacity and national income of the country increase over time in the long run.

In brief, Macro economics is the study of the economy's total output, employment, and the price level. Macro economics concerns with the analysis of the economy as a whole or aggregates output, income, employment, investment, etc.,

According to **R.G.D. Allen**, "The term 'Macro economics' applies to the study of relationship between broad economic aggregates.

J.M.Culbertson, stated that "Macroeconomic theory is the theory of income, employment, prices and money".

K.E.Boulding, advocates "Macro economics is "that part of economics which studies the overall averages and aggregates of the system".

Macro economics deals not with individual income but with national income, not with individual in prices but with national income general price level, not with individual output but with national output".

Professor **Gardner Ackley** says, "Macro economics is " the study of the forces or factors that determine the levels of aggregate production or volume of output, employment, size of the national income and general prices in an economy, and their rates of change over time.

Hanson says, "macro economics considers the relation between aggregates such as volume of employment, savings, investment and national income.

According to **Meyers** " Macro economics is a study of the nature, relationship and behaviour of aggregates and average of economic quantity".

Doctor of Heilbroner defines, "macro economics is the study of large scale economic problems, employment and unemployment, prosperity and recession, growth and defines".

1.3.4. Comparative static and dynamic types of macro economics

Economic theory is classified into Macro and Micro Economic Theories. Economic phenomena could be studied through the technique of static, comparative Macro Economics and Dynamic Macro Economics.

Static Micro Economics

A greater of economic theory has been formulated with the help of static analysis. Though static and dynamic techniques of analyses have been used by classical economics, it was Ragnar Frisch, who made a clear distinction between the terms in 1928. August Comte first introduced these words in social services. It was John Stuart Mill who first made of the concepts in Economics. However, the use of these remained clouded and ambiguous till 1928. When, Ragnar Frisch made a scientific distinction between them. This was followed by a lot of controversy between J.R.Hicks, Tinbergen, Paul Samuelson, Harod and William Baumol over their nature. However, in the recent years dynamic technique has been increasingly applied to the various fields of economic theory, we say that dynamic is that which changes, static is that which does not change. In static analysis time is not variable while dynamic analysis is a system in which time is a variable. A static system may be stationary i.e. when it holds itself over time. In the study of dynamic economics, we study a large number of static positions of an economy. Thus, dynamic analysis is running commentary on static economics.

Static Macro Economics

Given the consumption at a constant level, private investment and Government spending is also at a constant level, Static Macro Economics can be understood from the following equations.

$$Y = C + I + G$$

$$C = a + bY$$

$$I = I$$

$$G = G$$

Therefore $Y = a + bY + I + G$. Static equilibrium income can be represented by Ye, therefore the equilibrium level of income in a static economy is

$$Ye = a + bY + I + G$$

From this, the equilibrium level of income can be determined in another way also

$$Ye = \frac{1}{1 - b}\left(a + \bar{I} + \bar{G} \right)$$

We assuming the numerical values for a' = Rs. 25 Crores, I –Rs. 25 Crores, G = Rs 25 Crores and b = .75.

$$Ye = \frac{1}{1 - .75}(25 + 25 + 25)$$

$$Ye = \frac{1}{.25}(75) = 300 \text{ Crores.}$$

Comparative Statics:

Comparative Statics is a method of economic analysis which was first used by F.Oppenheimer, a German economist, in 1916. Schumpeter described it, Comparative statics is deals with disturbances of given state by trying to indicate the static relations obtaining before a given disturbance impinged upon the system and after it had time to work itself out. The comparative statics is the method of analysis in which different equilibrium situations are compared.

In comparative statics, compares the change from one equilibrium position to another new equilibrium position. It does not analyses the whole path as to how the

system grows out from one equilibrium position to anther when the data have changed ;it merely explain and compares the initial equilibrium position with the final one reached after the system has adjusted to a change in data . Thus, in comparative static analysis, equilibrium positions corresponding to different sets of data are compared.

When the economy moves given an initial equilibrium position to new equilibrium position the comparative statics is not concerned with transitional period but it involves the study of variations in equilibrium positions corresponding to specified changes in underlying data.

1.4 Summary

The above text clearly defined macro economics, nature and scope of macro economics. It has examined difference between micro and macro economics. It analyzes comparative static and dynamic types of macro economics. Further it explained the importance of macro economics. The term micro means a small unit or individual, the term macro means aggregate or total. Macro economics is a study of problem relating to the allocation of resources between the production of consumer goods and capital goods. Problem relating to fluctuations in price level Problems relating to fluctuations in price level of wages Problem relating to rate of growth Problems in relation to international trade & employment Problem relating to monetary & fiscal policies. Macro economic approach is of a great help in the formulation of economic policies. Macro economics has brought forward the importance of the study of National income was relegated to the background.

1.5 Revision Points

Micro Economics:. The term micro means a small unit or individual.

Macro Economics: The term macro means aggregate or total.

Static: In static analysis time is not variable. A static system may be stationary i.e. when it holds itself over time.

Dynamic: In Dynamic analysis is a system in which time is a variable. In the study of dynamic economics, we study a large number of static positions of an economy. Thus, dynamic analysis is running commentary on static economics.

1.6. In text questions

1. Explain the nature, scope, and importance of Macro economics
2. Distinguish between Micro economics and Macro economics.
3. Distinguish between economic statics and dynamics, explain comparative statics**.**

1.7. Reference

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1.8. Key Words

Micro Economics, Macro Economics, Static, Dynamic.

LESSON-2

A STUDY OF MACRO MODELS- CIRCULAR FLOW MODEL

2.1. Introduction

This chapter is concerned with the study of macro models-circular flow of income model. Circular Income Flow in a Two Sectors Economy, Circular Money Flow With Saving and Investment. The Circular income Flow in a Three-Sector Closed Economy. The Circular flow in a Four-Sector Open Economy (Adding Foreign Sector) and finally, importance of the circular flow in detail.

2.2. Objectives

- To study Macro models Circular flow model
- To examine Circular Income Flow in a Two Sectors Economy
- To analyses the Circular income Flow in a Three-Sector Closed Economy
- To examine The Circular flow in a Four-Sector Open Economy

2.3. Content

2.3.1 A study of Macro models Circular flow model

The modern economy is a monetary economy. In the modern economy, money is used in the process of exchange. Money has facilitated the process of exchange. Money has facilitated the process of exchange and has removed the difficulties of the barter system. Thus money acts as a medium of exchange. The households supply the economic resources or factors to the productive firms and receive in return the payments in terms of money corresponding to the flows of economic resources and the flows of goods and services. But each money flow is in opposite direction to the real flow.

2.3.2 Circular Income Flow in a Two Sectors Economy

Real flows of resources, goods and services have been shown in Fig 2.1. In the upper loop of this figure, the resources such as land, capital and entrepreneurial ability flow from households to business firms as indicated by the arrow mark. In opposite direction to this money flows from business firms to the households as factor payments such as wages rent interest and profits. In the lower part of the figure money flows

from households to firms as consumption expenditure made by the households on the goods and services produced by the firms while the flow of goods and services is in opposite direction from business firms to households. Thus we see that money flows from business firms to households as factor payments and then it flows from households to firms. Thus there is, in fact a circular flow of money or income. This circular flow of money will continue indefinitely week by week and year by year.

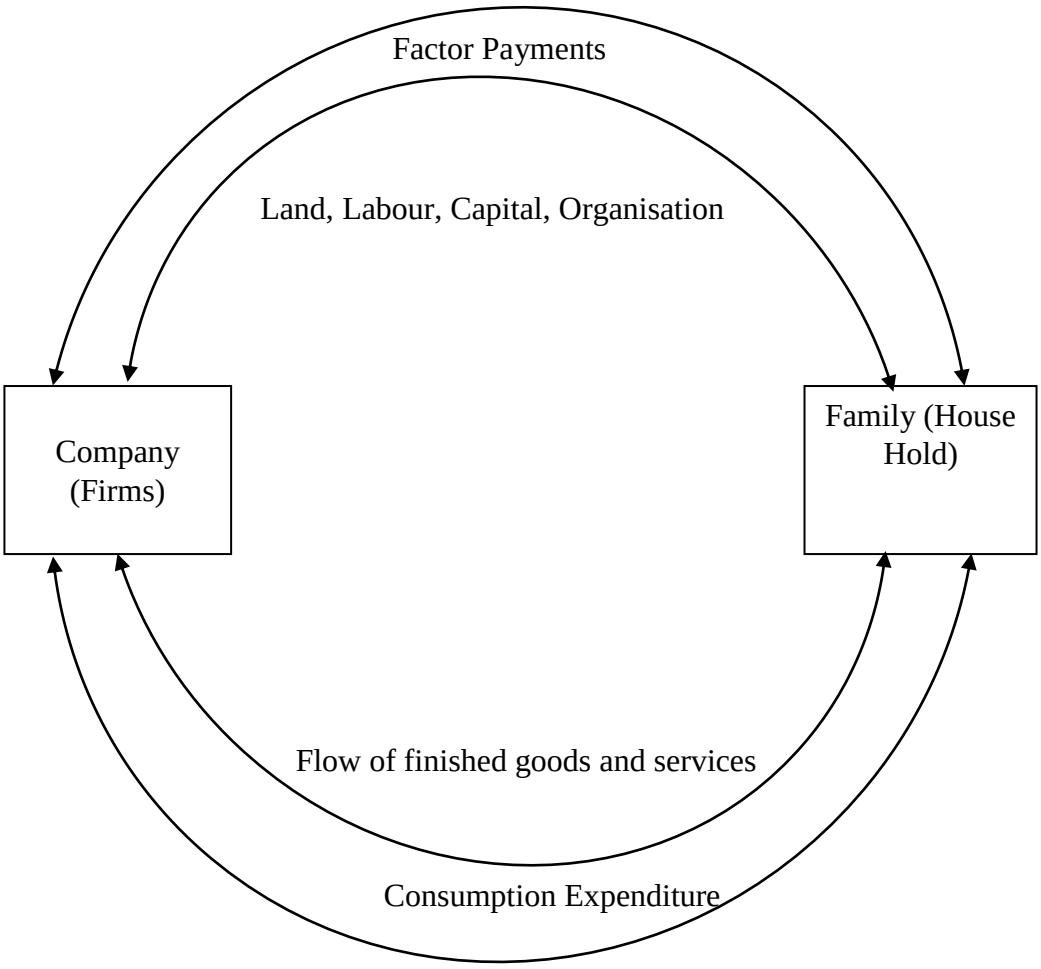


Fig.2.1

The flow of money income will not always continue at a constant level. In year of depression, the circular flow of money income will contract, i.e., will become lesser in volume, and in years of prosperity it will expand, i.e., will become greater in volume. This is so because the flow of money is a measure of national income and will, therefore, change with changes in the national income. In year of depression, when national income is low, the volume of the flow of money will be small and in years of

prosperity when the level of national income is quite high, the flow of money will be large.

2.3.3 Circular Money Flow with Saving and Investment

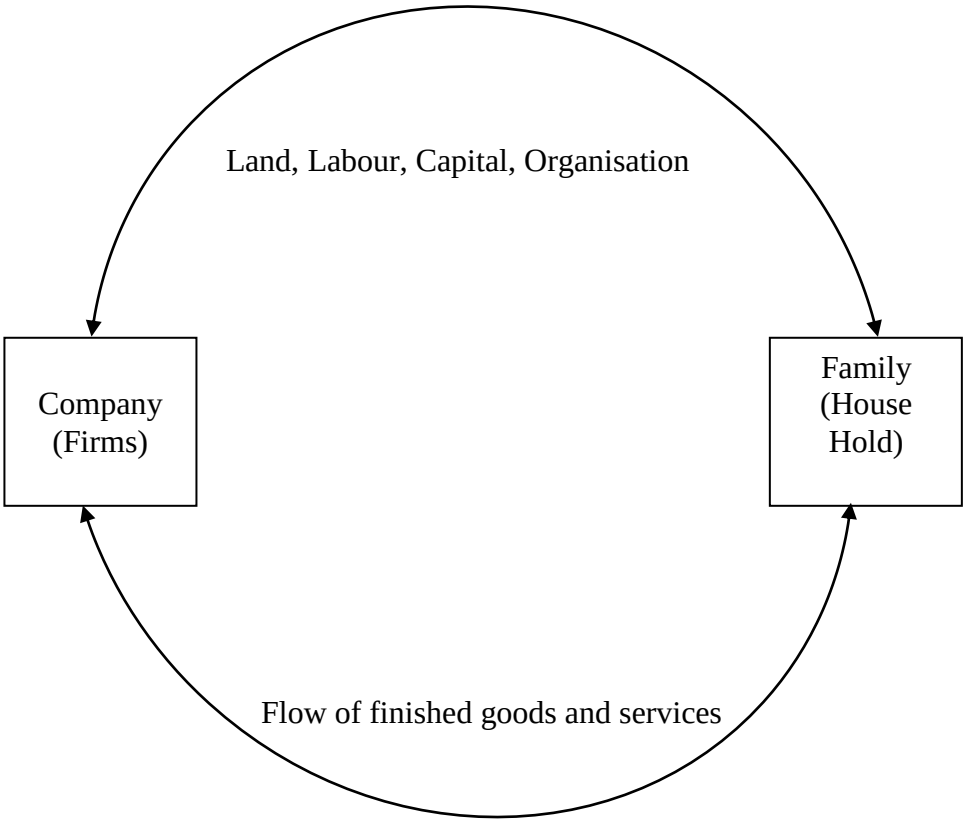
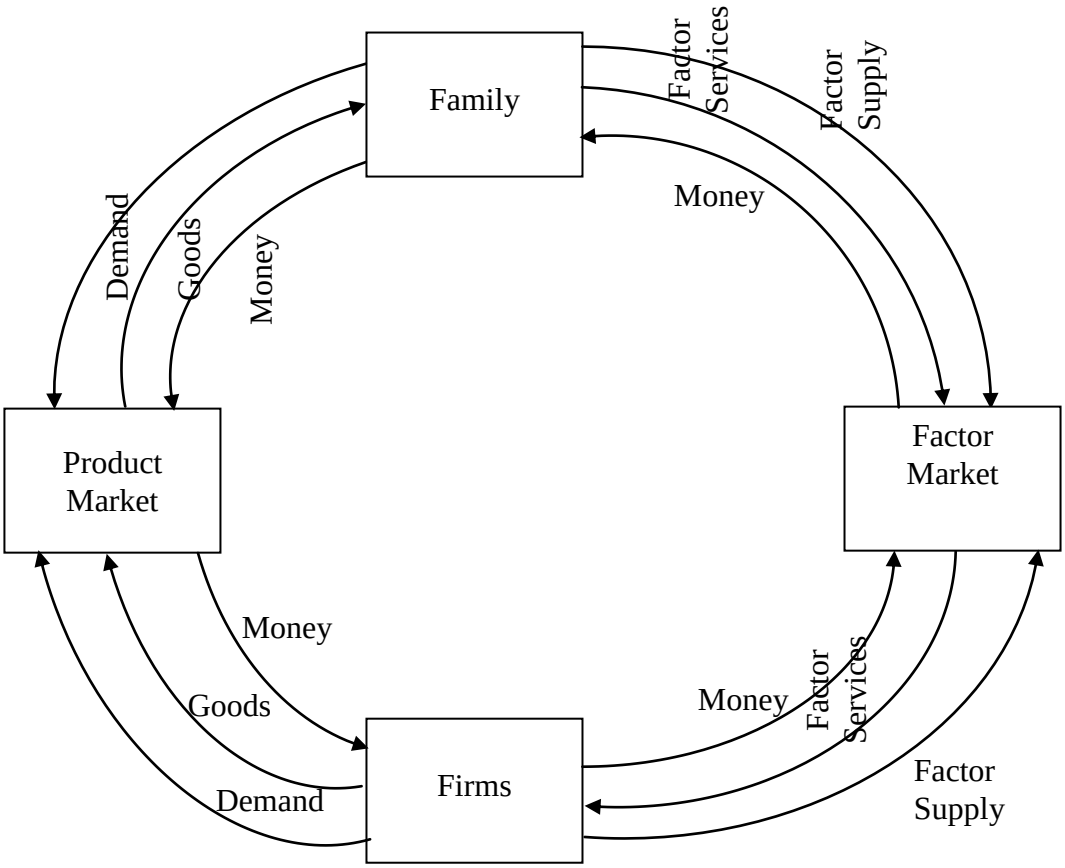
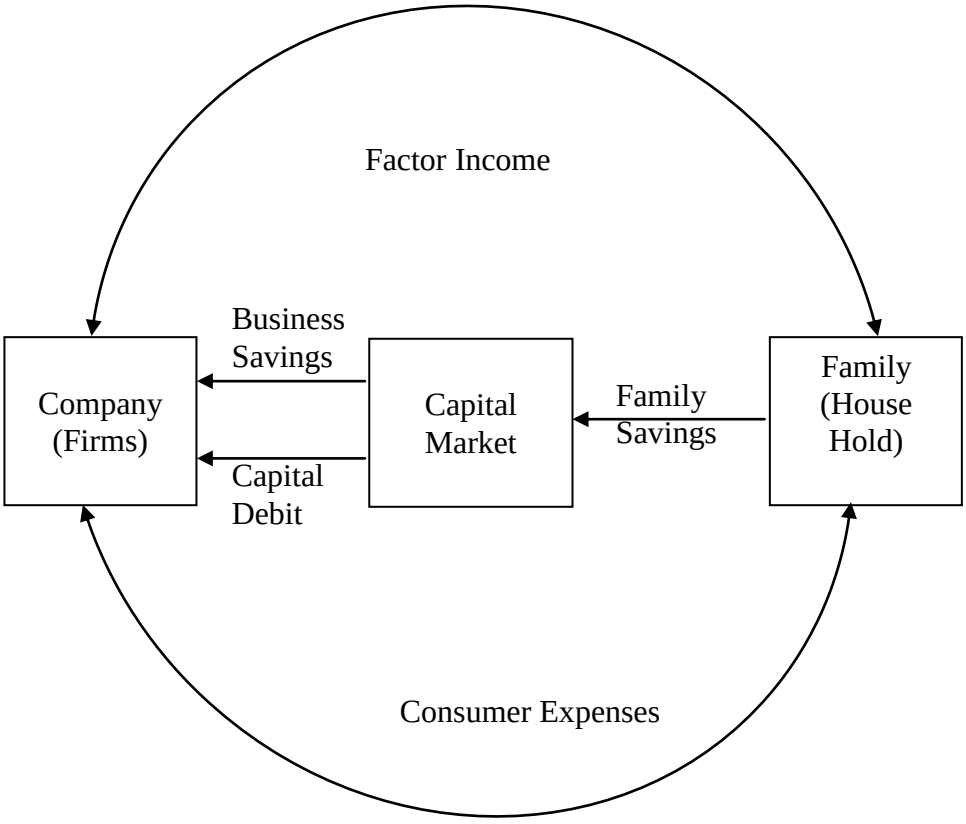


Fig.2.2

We will now explain if households save apart of their income, how their savings will affect money flows in the economy. When households save, their expenditure on goods and services will decline to that extent and as a result money flow to the business firms will contract. With reduced money receipts, firms will hire fewer workers (or lay off come workers) or reduce the factor payments they make to the suppliers of factors such as workers. This will lead to the fall in total incomes of the households. Thus, savings reduce the flow of money expenditure to the business firms and will cause a fall in economy's total income. Economists therefore call savings a leakage from the money expenditure flow.


Family
Factor Services
Factor Supply
Money
Demand
Goods
Money
Product Market
Factor Market
Money
Goods
Money
Factor Services
Demand
Firms
Factor Supply


Factor Income
Business Savings
Company (Firms)
Capital Market
Family Savings
Family (House Hold)
Capital Debit
Consumer Expenses

2.3.4 The Circular income Flow in a Three-Sector Closed Economy

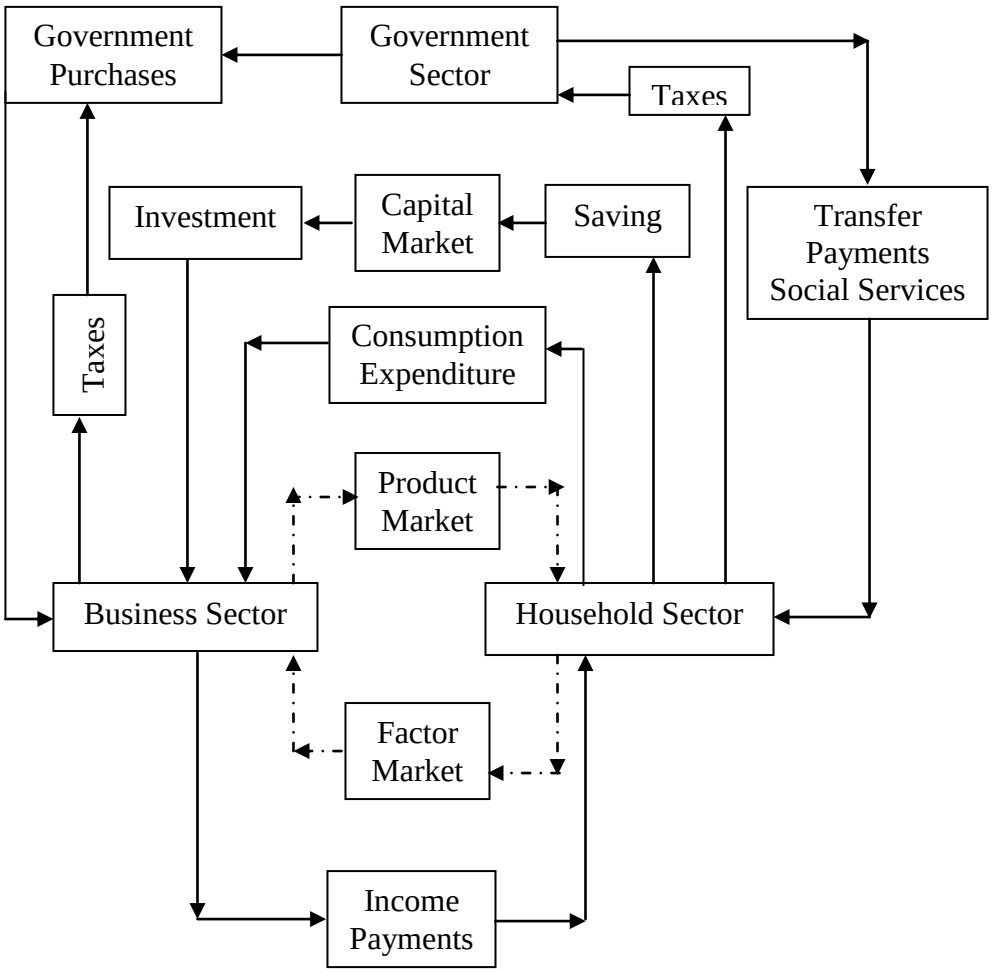


Fig.2.3

So far we have been working on the circular flow of a two-sector model of an economy. To this we add the government sector so as to make it a three-sector closed model of circular flow of income and expenditure. For this, we add taxation and government purchases (or expenditure) in our presentation. Taxation is a leakage from the circular flow.

First, take the circular flow between the household sector and the government sector. Taxes in the form of personal income tax and commodity taxes paid by the household sector are outflows or leakages from the circular flow. But the government purchases the services of the households, makes transfer payments in the form of old age pensions, employment relief, sickness benefit, etc., and also spends on them to

provide certain social services like education, health, housing, water, parks and other facilities. All such expenditures by the government are injections into the circular flow.

Next the circular flow between the business sector and the government sector. All types of taxes paid by the business sector to the government are leakages from the circular flow. On the other hand, the government purchases all its requirements of goods of all types from the business sector, gives subsidies and makes transfer payments to firms in order to encourage their production. These government expenditures are injections into the circular flow.

Now we take the household, business and government sectors together to show their inflows and outflows in the circular flow. As already noted, taxation is a leakage from the circular flow. It tends to reduce consumption and saving of the household sector. Reduced consumption, in turn, reduces the sales and incomes of the firms. On the other hand, taxes on business firms tend to reduce their investment and production. The government offsets these leakages by making purchases from the business sector and buying senses of the household sector equal to the amount of taxes. Thus total sales again equal production of firms. In this way, the circular flow of income and taxes are leakages.

Figure 2.3 shows that taxes flow out of the household and business sectors and go to the government. Now, the government makes investment and for this purchases goods from firms and also factors of production from households. Thus government purchases of goods and services are an injection in the circular flow of income, and taxes are leakages.

If government purchases exceed net taxes the government will incur a deficit equal to the differences between the two, i.e., government expenditure and taxes. The government finances its deficit by borrowing from the capital market which receives funds from households in the form of saving. On the other hand, if net taxes exceed government purchases the government will have a budget surplus. In this case the government reduces the public debt and supplies funds to the capital market which are received by firms.

2.3.5 The Circular flow in a Four-Sector Open Economy (Adding Foreign Sector:)

So far the circular flow of income and expenditure has been shown in the case of a closed economy. But the actual economy is an open one where foreign trade plays an important role. Exports are an injection or inflows into the economy. They create incomes fro the domestic firms. When foreigners buy goods and services produced by domestic firms, they are exports in the circular flow of income. On the other hand, imports are leakages from the circular flow. They are expenditures incurred by the household sector to purchase goods from foreign countries. These exports and imports in the circular flow are shown in Figure 2.4.

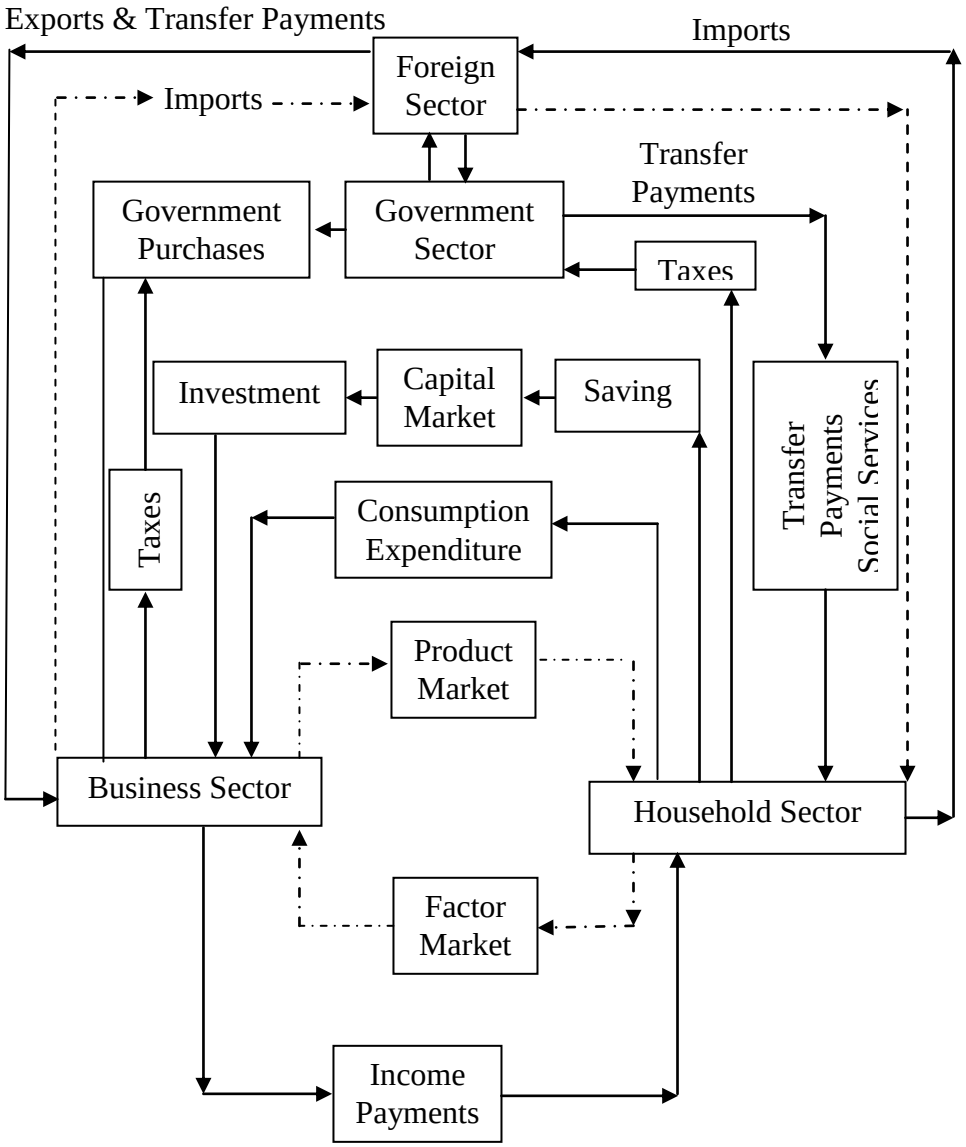


Fig.2.4

Take the inflows and outflows of the household, business and government sectors in relation to the foreign sector. The household sector buys goods imported from abroad and makes payment for them which is a leakage from the circular flow. The households may receive transfer payments from the foreign sector for the services rendered by them in foreign countries.

On the other hand, the business sector exports goods to foreign countries and its receipts are an injection in the circular flow. Similarly, there are many services rendered by business firms to foreign countries such as shipping, insurance, banking, etc., for which they receive payments from abroad. They also receive royalties, interests, dividends, profits, etc. for investments made in foreign countries. On the other hand, the business sector makes payments to the foreign sector for imports of capital goods, machinery, raw materials, consumer goods, and services from abroad. These are the leakages from the circular flow.

Like the business sector, modern government also export and import goods and services, and lend to and borrow from foreign countries. For all exports of goods, the government receives payments from abroad. Similarly, the government receives payments from foreigners when they visit the country as tourists and for receiving education, etc. and also when the government provides shipping, insurance and banking services to foreigners through the state-owned agencies. It also receives royalties, interest, dividends etc. for investments made abroad. These are injections into the circular flow. On other hand, the leakages are payments made for the purchase of goods and services to foreigners.

Figure 2.4 shows the circular flow of the four-sector open economy with saving, taxes and imports shown as leakages from the circular flow on the right hand side of the figure, and investment, government purchases and exports as injections into the circular flow on the left side of the figure. Further, imports, exports and transfer payments have been shown to arise from the three domestic sectors-the household, the business and the government. These outflows and inflows pass through the foreign sector which is also called the “Balance of Payments Sector”.

If exports exceed imports, the economy has a surplus in the balance of payments. And if imports exceed exports, it has a deficit in the balance of payments.

But in the long run, exports of an economy must balance its imports. This is achieved by the foreign trade policies adopted by the economy.

The whole analysis can be shown in simple equations:

$Y = C + I + G$ …(1)

Where Y represents the production of goods and services, C for consumption expenditure, I investment level in the economy and G for government expenditure respectively.

Now we introduce taxation in the model to equate the government expenditure

Therefore, $Y = C + S + T$ …(2)

Where S is saving T is taxation.

By equating (1) and (2), we get.

$C + I + G = C + S + T$

$I + G = S + T$

With the introduction of the foreign sector, we divide investment into domestic investment (Id) and foreign investment (If) and get

$I_d + I_f + G = S + T$

But $I_f = X - M$

Where X is exports and M is imports

$\therefore Id + (X-M) + G = S + T$

$Id + (X-M) = S + (T-G)$

The equation shows the equilibrium condition in the circular flow of income and expenditure.

2.3.6 Importance of the Circular Flow

The concept of the circular flow gives a clear-cut picture of the economy. We can know whether the economy is working efficiently or whether there is any disturbance in its smooth functioning.

It is with the help of circular flow that the problems of disequilibrium and the restoration of equilibrium can be studied.

The role of leakages enables us to study their effects on the national economy. For example, imports are a leakage out of the circular flow of income because they are payments made to a foreign country. To stop this leakage, government should adopt appropriate measures. So as to increase exports and decrease imports.

Similarly, saving is a leakage out of the spending stream. This depresses the circular flow of income. On the other hand, consumption expenditures are inflows. In leakages exceed inflows, total spending is smaller than output. As a result, income and employment tend to decline over a period of time. On the other hand, if inflows exceed leakages, the spending stream is enlarged in the circular flow. This causes income and employment to rise in the next period.

The study of circular flow also highlights the importance of monetary policy to bring about the equality of saving and investment in the economy. Figure 2.2 shows that the equality between saving and investment comes about through the credit or capital market. The credit market itself is controlled by the government through monetary policy. When saving exceeds investment or investment exceeds saving, money and credit policies help to stimulate or retard investment spending. This is how a fall or rise in prices is also controlled.

Similarly, the circular flow of income and expenditure points toward the importance of fiscal policy. For national income to be in equilibrium desired saving plus taxes (S+T) must equal desired investment plus government spending (I+G). S+T represent leakages from the spending stream which must be offset by injections of I+G into the income stream. If S+T exceeds I+G government should adopt such fiscal measures as reduction in taxes and spending more itself. On the nue and expenditure by encouraging saving and tax revenue. Thus the circular flow of income and expenditure tells us about the importance of compensatory fiscal policy.

2.4. Summary

The above text clearly explained about the circular flow of money income in a two sectors (viz. household and firm) economy. Followed by the circular money flow with savings and investment. Further it analysed the circular income flow in a three sector closed economy i.e adding government sector. Finally, it comprised the circular flow of money income in a four – sector open economy i.e adding foreign sector.

2.5. Revision Points

Two Sector : Means house hold sector, and firm sector. Household sector supply of factors, to the firm sector. The firm sector received the factors of production and it provide goods and services to the households sector.

Three-Sector: It includes Government sector. The Government sector balanced household sector as well as firms sectors by the way of taxation.

Four-Sector: Adding Foreign sector involved in import and export activities. It balanced the economy to control the leakages.

Open Economy : The economy is an open one where foreign trade plays an important role. Exports are an injection or inflows into the economy.

Closed Economy: Government involved and to control all the economic activities. the government purchases all its requirements of goods of all types from the business sector, gives subsidies and makes transfer payments to firms in order to encourage their production. These government expenditures are injections into the circular flow.

2.6. Intext questions

1. Explain circular flow of money income in a closed economy
2. Explain circular flow of money income in a open economy
3. Discuss the importance of the circular flow of money income

2.8. Key Words

Two Sector, Three-Sector, Four-Sector, Open Economy, Closed Economy.

LESSON-3

NATIONAL INCOME- DEFINITION-CONCEPTS, MEASUREMENT-DIFFICULT-SOCIAL ACCOUNTING

3.1 Introduction

This chapter is concerned with the definitions of national income, concepts of national income, methods of measuring national income, difficulties in measurement of national income, importance of national income, definitions of social accounting, distinguish between private accounting and social accounting, different kinds of measurement of social accounting, importance of social accounting and difficulties in social accounting.

3.2.Objectives

- To define National income
- To examine methods of measuring National income,
- To analyse difficulties in measurement of National income,
- To explain the importance of National income,
- To define social accounting, distinguish between private accounting and social accounting,
- To identify different kinds of measurement of social accounting,
- To examine the importance of social accounting and
- To analyses the difficulties in social accounting.

3.3.Content

3.3.1 Meaning and definitions of National Income

3.3.2 Concepts of National Income

3.3.3 Measurement of National Income

3.3.4 Difficulties in measurement of National Income

3.3.5 Importance of National Income

3.3.6 Meaning and definitions of Social accounting

3.3.7 Measurement of Social accounting

3.3.8 Importance of Social accounting

3.3.9 Difficulties in measurement of Social accounting

3.3.1 Meaning and definitions of National Income

The national income has been defined by different persons in different ways. There is nothing absolutely right or wrong about any of these definitions. In general, national income means the total value of goods and services produced annually in a country. In other words, the total amount of income accruing from economic activities in a year's time is known as national income. It includes payments made to all resources in the form of wages, interests, rent and profits.

The definitions of national income can be grouped into two classes. 1) the traditional definitions advanced by Marshall, Pigou and Fisher and 2) modern definitions:

1. Marshall's Definitions

Marshall defined national income as below:

According to Marshall, "the labour and capital of country acting on its natural resources produce annually a certain net aggregate of commodities, natural and immaterial including services of all kinds… this is the true net annual income or revenue of the country or national divided". Thus, the national income of a country can be defined as the total market value of all final goods and services produced in the economy in a year.

Though the definition is theoretically sound, simple and comprehensive it has serious practical limitations. It is not easy to make statistically correct estimates of the total production of goods and services because the difficulties of the double counting and portion of the produce which is retained for personal consumption.

2. A.C. Pigou's Definition

A.C. Pigou has, in his definition of national income included, income which can be measured in terms of money. In the words Pigou, "the national dividend is that part of the objective income of the community including of courses, income derived from abroad which can be measured in money'. According to Prof. Pigou, only those goods

and services are to be counted, avoiding double counting of course, which are actually exchange for money. Pigou's definition is practicable and convenient and avoids the difficulties of measuring national dividend inherent in Marshall's definition. But it has its own shortcomings. It makes an artificial distinction between the goods that are exchanged. For money and those which are not so exchanged. The bought and unbought goods do not differ in any fundamental manner. Underdeveloped countries marked by a high degree of self sufficiency in households a substantial portion of the production would be excluded since, part of it is on barter basis and not against money. Pigou's definition would exclude even such goods. Thus this definition is not of much use for under developed countries.

3. Fisher's Definition

Fisher adopted 'consumption' as the criterion of national income, whereas Marshall and Pigou regarded 'production'. According to Fisher, "The national dividend or income consist solely of services as received by ultimate consumer's whether from their material or from their human environments. Thus, a piano, or an overcoat made for more this year is not a part of this year's income, but an addition to the capital. Only the services rendered to me during this year by these things are income". Fisher's definition is considered to be better than that of Marshall or Pigou because Fisher's definition provides an adequate concept of economic welfare which is dependent on consumption and consumption represents our standard of living. It is however, more difficult to have an idea of net consumption than that of the net production. Further it is very difficult to measure the life of durable gods which last beyond one year.

None of the definitions mentioned above suited Keynes because he was interested in knowing the factors which determine the level of income and employment at a particular time. He wanted to know the considerations which the entrepreneurs bear in mind while deciding to employ a particular number of persons. He therefore formulated his own definition to suit his purpose.

4. Keyne's definition

According to Keynes the national income lies between the gross national product and the net national product. To arrive at income, Keynes does not deduct all

depreciation and obsolescence from the gross national product. He deducts something less than this which he calls" User Coast". It is the cost of using capital depreciation in the value of the equipment when it is put to use and depreciation which would occur if not in use plus the expenditure which would have to be incurred on its maintenance and keep up. User cost is one of" the expenses of production voluntarily undertaken by the entrepreneurs when they decide how many workers to employ.

The income of an individual business firm is defined as that sum which it attempts to maximize and in terms of which it decides how much employment to offer. To arrive at this sum, the firm must subtract from its total proceeds, the user cost plus the amount paid out to other factors of production in the forms of wages, interests and rent (factory cost). Since the later costs [(i.e) wages interests and rent] represent the income of the remaining community, the total national income would be equal to aggregate proceeds of all business firms less the aggregate user cost.

Though income as defined above is the important concept in determining the amount of employment that would be offered by the entrepreneurs. It is the concept of net income which is important in relation to the amount which will be spent for consumption. Net income either for the firm or the whole economy, is income minus the remaining expected depreciation and obsolescence which is not included in user cost.

Thus the definitions advanced by Marshall, Pigou and Fisher are not altogether flawless. However, the Marshallian and Pigouvian definitions tell us of the reasons influencing economic welfare whereas Fisher's definition helps us to compare economic welfare in different years.

5. Kuznet's Definition

From the modern point of view, Simon Kuznets has defined national income as "the net output of commodities and services flowing during the year from the country's productive system in the hands of the ultimate consumers whereas, in one of the reports of United Nations, national income has been defined, on the basis of the system, of estimating national income, as net national product and as net national expenditure in a country in a year's time. In practice, while estimating national income, any of these

definitions may be adopted because, the same national income would be derived, if different items were correctly included in the estimate.

Simon Kuznets, an authority on national income Accounting defines national income as "the net output of commodities and services flowing during the year from the country's productive system into the hands of ultimate consumers or into net additions to the country's stock of capital goods"

6. Richard Stone

Has defined national income as follows: "The national Income or product provides a measure of the total value at factor cost of goods and services produced in a period which are available either for consumption or for additions to wealth. This total is valued in terms of the money and it is equivalent to the income going to the factors of production"- labour, management enterprise and property.

7. National Income Committee of India

In 1951 defined this concept in a simple manner. "A National income estimate measures the volume of commodities and services turned out during a given period counted without duplication".

8. United Nations Department of Economic Affairs

Gives an elaborate definition of National Income, "Gross national product at market prices is the market value of the produce before deduction of provisions for the consumption of fixed capital attributable to the factors of production supplied by the normal residents of the given country. It is identically equal to the sum of consumption capital and gross domestic capital formation private and public and the surplus of the nation on current account. Thus surplus us identically equal to the net exports of goods and services plus the net factor income received from abroad".

9. J.R. Hicks

Defined national income as a collection of goods and services reduced to a common basis by being measured in terms of money.

All the above definitions make it clear that national income is the money measure of

1. the net value of all products and services,
2. an economy during a year
3. economy counted without duplication
4. an economy after allowing for depreciation
5. both in the public and private sector of products and services.
6. in consumption and capital goods sector
7. the net gains from international transactions.

3.3.2 Concepts of National Income

We study below the important concepts of national income, viz., the GNP, NNP, National income Personal income, Disposable income.

Gross National Product

GNP is the market value of all the final goods and services produced by the economy in as given year.

Certain components of GNP are counted. These include the rental value of owner-occupied houses, and the value of goods produced and consumed by forms. GNP includes foreign trade and exchange rates. Certain kinds of services are not counted, for example housewives services, voluntary community service, Teacher parents their teaching tuition to their children that kind of services are not counted.

Gross Domestic Product (GDP)

GDP is the sum of total value of final goods produced and services provided in a country in one year. This includes the value of produces that are produced in a country for local consumption or for export, but does not include imports from other countries.

GDP is calculated by adding private and public spending, investments, and exports, minus imports and minus value generated by foreign owned companies.

Oxford Dictionary (1996): Defines. GDP as "the total value of goods produced and services provided in a country in one year".

Net National Product (NNP)

GDP minus the cost of capital goods "Used up" during the accounting period. For purposes of measurement depreciation charges and any other allowances for the consumption of durable capital goods are used to estimate the amount of capital "used up" in the production of a given volume of output.

National Income

Defined as "the total value of all final goods and services produced in an economy during the particular year". The aggregate earnings of labour and property during the accounting period. It is an estimate of total cost of all factors of production during a given year.

Personal Income

A measure of the current income received by all "persons" from all sources. For accounting purposes, nonprofit institutions, private trust funds, and private health (or) welfare funds are classified as "persons" personal income is measured before taxes.

Disposable personal income

The income held by persons after the deduction of all personal taxes and other payments to general government. It is the amount of income available during a given year either for spending on consumption (or) for savings.

Disposable income = Personal income – Personal Taxes = Personal Consumption + Personal Saving

Real Income (RI)

Real income is national income expressed in terms of general level of prices of a particular year taken as base. In order to find out the real income of the country, a particular year is taken as base year when the general price level is neither too high nor too low and the price level for that year is assumed to be 100. Now the general level of

the prices of the given year for which the national income (real) is to be determined is asserted in accordance with the prices of the base year. For the purpose the following formula is employed.

Real NNP = NNP for the current year × Base year index current year index

Per Capita Income

The average income of the individuals of a country in the particular year is called per capita income for the year.

$$\text{Per Capita Income} = \frac{National\ Income}{Population} \text{ (for a particular year)}$$

Similarly, for the purpose of arriving at the Real per Capita Income the formula employed is

$$\text{Real per capita Income} = \frac{\text{Re}al\ National\ Income}{Population} \text{ (for a particular year)}$$

3.3.3 Measurement of National Income

There are three methods of measuring national income, which method is to be employed depends on the availability of data in the country and the purpose in hand.

(a) Product Method

Also known as the inventory method or commodity service method, it consists in finding out the market value of all final goods and services produced in a country during a given period. We add up the net production of all the industries in the economy. For this we either adopt the value added approach or the final goods approach. We find out the value added in different sectors such as agriculture, mining manufacturing, transportation, trade, finance, Government, professional and other services. The total would give us net domestic product at factor cost classified by industrial origin. By adding net income from aboard to this total we get net national income at factor cost. Only the final goods and services are included and the intermediary goods and services are left out.

(b) Income Method

This method consists in adding together, all the incomes according to the factors of production by way of payment in the form of wages, rents, interest and profits. The method gives us national income according distributive shares.

The most important income share is that of labour. Labour is variously paid the form of wages, salaries, and supplement compensations and in kind also. All these payments when aggregated give us the share of wages. The second share is that of capital rentals. Arrive at this we have to find out the net interest rate, dividends, undistributed profits earned by state enterprises and co-operatives. Then, the third share is the income of self employed persons which may consist, of wages, rent, interest and profit. When all the three shares are added we get net national income. Adding depreciation to it we get Gross National Incomes. Therefore, this is called national income by distributive shares.

(c) Expenditure Methods

This method involves the addition of personal consumption expenditures, gross private domestic investment, state purchase of goods and services and net foreign investment. The aggregate gives GNP at market prices. Deducting depreciation from it gives NNP at market prices. Further deduction of indirect taxes gives us no national income at factor cost.

(d) Value added Method

Another method of measuring national income is the value added by industries. The difference between the value of material outputs and inputs at each stage of production is the value added. If all such differences are added up for all industries in the economy, we arrive at the GDP.

3.3.4 Meaning and definitions of Social accounting

The term Social Accounting was first introduced into economics by J.R.Hicks in 1942.it means “nothing else but the accounting of the whole community or nation, just as private accounting is the accounting of the individual firm”. Social accounting, also known as national income accounting, is a method to present statistically the inter relationship between the different sectors of the economy for a thorough understanding

of the economic conditions of the entire economy. It is a "method of studying the structure of the body economic. It is a technique of presenting information about the nature of the economy of a society with a view not merely to get an idea of its prosperity, past or present, but also to get guidelines for collective(or state) policy to influence (or regulate) the economy."

Social accounting or preparation of social accounts has assumed great importance in modern times. This is so because economic theory being increasingly applied for the solution of practical problems. If study of economics is to be fruitful, knowledge of social accounts is absolutely essential. It is only with help of social accounting that one clearly traces the effects of changes in one section of the economy on its other sections.

What is Social Accounting?

Social accounting is a term which is applied to the description of the various types of economic activities that are taking place in the community in a certain institutional frame-work. In social accounting, we are able to understand easily and clearly the operation of the economy as a whole.

Stone and Murray says, "The term social accounts is used in a general sense to denote an organized arrangement of all transactions, actual or imputed, in an economic system. In such a system distinctions are drawn between: (1). Forms of economic activity, namely, production, consumption, and accumulation of wealth; (2). Sectors or institutional division of the economy; and (3) types of transactions, such as sales and purchase of goods and services, gifts, taxes and other current transfers, etc."

The Social accounting is embraces, not only the classification of economic activity, but also the application of the information thus assembled to the investigation of the operation of the economic system.

Social accounting is thus concerned with the analytical as well as the statistical elements of the study of national accounts.

3.3.5 Importance of Social accounting

Social accounting helps to know about the structure of an economy and relative importance of the different sectors and flows. It is a key the evaluation and formulation of government policies both in the present and future.

The uses of Social Accounting are as follows:

1) The preparation of social accounting is to give a clear picture of the economy as a whole. It is find a classified account of the various transactions in different sectors of the economy e.g. to buying and selling, paying and receiving income, exporting and importing, paying taxes, etc. These different kinds of transactions properly, and deriving from these aggregates as national income, national expenditure, saving, investment, consumption expenditure, production expenditure, government spending, foreign payments and receipts, etc.
2) If we want to promote efficiency and stability of our economy, preparation of social accounts is a must.
3) Measurement of economic and social welfare is another purpose of the preparation of social accounts.
4) Preparation of social accounts helps to us to know about the contribution of different sectors such as production sector, consumption sector, investment sector and other sectors contribution in the national accounts.
5) Social accounts help in clarifying the relationships between net national product at factor cost and gross national product at market prices.
6) Social accounts are guide to the trends in income distribution within the economy.
7) Social accounts provide an ex post picture of the working of the economy. They can also be used as a framework for drawing up an ex ante forecast of the likely outcome of the economy in the future. Thus, social accounts ensure consistency of forecasts, both internally and in relation to other known facts.
8) Social accounts also provide an in sight into the interdependence of the different sectors of the economy through the matrix of social accounts.
9) Social accounts are estimating the effects of government policies on different sectors of the economy and in formulating new policies in keeping with changes in economic conditions, as revealed by national income accounts.

10) Social accounts are also used by big business houses for assessing their performance and to improve their prospects on the basis of the statistical information about the various sectors of the economy.

11) Social accounting is also useful for international purposes. It is helps to comparative study of the social accounts of the different countries.

3.3.6 Difficulties in measurement of Social Accounting

The preparation of social accounts involves the following difficulties:

1. In social accounts, all incomes and payments are measured in money. But there are many goods and services which are difficult to impute in terms of money.
2. The greatest difficulty in preparing social accounts is of double counting. It arises from the failure to distinguish between final and intermediate products.
3. Another difficulty is to estimating a number of public services in social accounts e.g. police, military, health, and education. Similarly multipurpose projects we can't assess social accounts because it has numerous benefits and in difficulty to assessing its benefits in monetary terms.
4. It is very difficult to estimate the current depreciation rate of capital asset.
5. All the firms record inventories at their original costs and not their replacement costs. So for correct estimation of inventories in business accounts which is very difficult to inventory valuation adjustment.

3.4. Summary

The above text clearly explained the definitions of national income. It can be grouped into two classes. 1) the traditional definitions advanced by Marshall, Pigou and Fisher and 2) modern definitions. We understood the important concepts of national income, viz., the GNP, NNP, National income Personal income, Disposable income. Its explained there are three methods of measuring national income, viz.,(a) Product Method (b) Income Method (c) Expenditure Methods and (d)Value added Method. Further we known the meaning of social accounting, distinguish between private accounting and social accounting. It analysed the different kinds of measurement of social accounting, the importance of social accounting and difficulties

in social accounting. Finally it concluded the difficulties in measurement of national income. All of the above are clearly defined.

3.5. Revision Points

National income: National income means goods and services produced in an economy during a particular year.

Gross Domestic Product (GDP): GDP is the sum of total value of final goods produced and services provided in a country in one year.

Gross National Product: GNP is the market value of all the final goods and services produced by the economy in as given year.

Net National Product: GDP minus the cost of capital goods "Used up" during the accounting period. For purposes of measurement depreciation charges and any other allowances for the consumption of durable capital goods are used to estimate the amount of capital "used up" in the production of a given volume of output.

Personal Income: A measure of the current income received by all "persons" from all sources. For accounting purposes, nonprofit institutions, private trust funds, and private health (or) welfare funds are classified as "persons" personal income is measured before taxes. Personal income differs from person to person it may be depends upon there ability and skills.

Per capita income: The average income of the individuals of a country in the particular year is called per capita income for the year.

$$\text{Per Capita Income} = \frac{National\ Income}{Population} \text{ (for a particular year)}$$

Disposable income: Disposable income = Personal income – Personal Taxes = Personal Consumption + Personal Saving

3.6. In text questions

1. Define National income
2. Distinguish between GNP and NNP
3. Distinguish between personal income and per capita income
4. Define disposable income

5. Discuss the methods of measurement of National Income

6. Describe the difficulties in measurement of National Income

7. Examine the importance of National income

8. Define the term “social accounting”

9. Discuss the methods of measurement of Social accounting

10. Examine the difficulties in measurement of Social accounting

11. Describe the Importance of Social accounting

3.7. Reference

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3.8. Key Words

a. National income, b. Gross National Product, c. Net National Product, d. Per capita income, e. Disposable income f. Social Accounting

LESSON-4

UN EMPLOYMENT AND FULL EMPLOYMENT

4.1.Introduction

This chapter is concerned with the definitions of unemployment. It has been one of the most persistent and unmanageable problems facing all industrial countries of the world. At the same time, the goal of public policy has been to remove unemployment and to achieve full employment in such countries. We attempt below the various types or causes of unemployment for an understanding of the meaning of the term full employment.

4.2.Objectives

- To define unemployment
- To examine various kinds of unemployment

4.3.Content

4.3.1 Meaning of Unemployment

Technical speaking, unemployment is defined as a state of affairs when in a country there are a large number of able-bodied persons of working age who are willing to work but cannot find work at the current wage levels. People who are either unfit for work for physical or mental reasons, or don't want to work, e.g., sadhus, are excluded from the category of the unemployed.

4.3.2 Types of Unemployment

Before explaining the various types of employment, it is necessary to define the term unemployment, Everyman's Dictionary of Economics defines unemployment as "involuntary idleness of a person willing to work at the prevailing rate of pay but unable to find it." It implies that only those persons are to be regarded as unemployed who are prepared to work at the prevailing rate of pay but they do not find work. Voluntarily unemployment persons who do not want to work like the idle rich, are not considered unemployed. We now analyses the various causes of and types of unemployment.

4.3.3 Frictional Unemployment

Frictional unemployment exists when there is lack of adjustment between demand for and supply of labour. This may be due to lack of knowledge on the part of employers about the availability of workers or on the part of workers that employment is available at a particular place. It is also caused by lack of necessary skills for a particular job, labour immobility, breakdowns of machinery, shortages of raw materials, etc. The period of unemployment between losing one job and finding another is also included under frictional unemployment.

4.3.4 Seasonal Unemployment

Seasonal unemployment results from seasonal fluctuations in demand. Employment in ice factories is only for the summer. Similarly ice-cream sellers remain unemployed during winter and chestnut sellers during summer.

4.3.5 Cyclical Unemployment

Cyclical unemployment arises due to cyclical fluctuations in the economy. They may also be generated by international forces. A business cycle consists of alternating periods of booms and depressions. It is during the downswing of the business cycle that income and output fall leading to widespread unemployment.

4.3.6 Structural unemployment

Structural unemployment results from a variety of causes. It may be due to lack of the co-operant factors of production, or changes in the economic structure of the society. The work structural implies that "the economic changes are massive, extensive, deap-seated, amounting to transformation of an economic structure, i.e., the

production functions or labour supply distribution. More specifically, it refers to changes which are large in the particular area, industry or occupation." Shifting patterns in the demand for the products of various industries have also been responsible for this type of unemployment. There are, however, economists who argue that the higher unemployment in America since 1957 has been due to causes other than inadequate demand: (1) A faster rate of technological change; (2) a displaced worker remains unemployment for a number of days in finding a new job; and (3) most of the unemployed workers belong to blue-collar groups. The supporters of the structural transformation thesis hold that the number of vacancies is greater than or equal to the number of displaced workers due to structural changes in particular area, industry or occupation, and that unemployment is not due to inadequacy of demands.

4.3.7 Technological Unemployment.

Keynes fails to take into account technological unemployment that has taken place more rapidly in the post –war period. Modern production process is essentially dynamic where innovations lead to the adoption of new machineries and inventions thereby displacing existing workers leaving behind a trail of unemployment. When there is automation or displacement of old technology by a new one require less workers than before, there is technological unemployment. A special case of technological unemployment is that "which is not due to improvements in the technique of production but in the technique of organization." It pertains to making management more efficient which may decide upon modernizing existing facilities or closing down obsolete plants. In all such cases unemployment is bound to decreases.

4.3.8 The Meaning of 'Full Employment' following The classical view

The classical economists always believed in the existence of full employment in the economy. To them full employment was a normal situation and any deviation from this was regarded as something abnormal. According to Pigou, the greatest exponent of the classical view, the tendency of the economic system was to automatically provide full employment in the labour market.

Full employment exists "when everybody who at the running rate of wages wishes to be employed". Those who are not prepared to work at the existing wage rate are not unemployed in the Pigovian sense because they are voluntarily unemployed. There is, however, no possibility of involuntary unemployment in the sense that people

are prepared to work but they do not find work. According to Pigou, "With perfectly free competition there will always be at work a strong tendency for wage rates to be so related to demand that everybody is employed." However, this classical view on full employment is consistent with some amount of frictional, voluntary, seasonal or structural unemployment.

4.3.9 The Keynesian View of employment

Thus the Keynesian concept of employment involves three conditions: (i) reduction in the real wage rate; (ii) increase in effective demand; and (iii) inelastic supply of output at the level of full employment.

According to the American Economic Association Committee, " Full employment means that qualified people who seek jobs at prevailing rates can find them in productive activities without considerable delay. It means full time jobs for people who want to work full time. Full employment situation where all qualified persons who want jobs at current wage rates find full-time jobs.

4.4. Summary

In fact, there is little to distinguish between structural and technology unemployment. One of the causes of structural unemployment is technological change. Technological change itself causes obsolescence of skills thereby leading to structural unemployment. Further, both structural and technological unemployment are related to inadequate demand. Technological change tends to increase output per man-hour which has the effect of raising the potential total output in the economy. If this potential growth in output is not matched by the actual growth in output, there will be unemployment in the economy due to deficiency in demand. Therefore, modern economists are of the view that unemployment is caused by structural changes, technological changes and by inadequacy of demand, taken together. Thus, in the late 1950's in America, productivity and the labour force were increasing more rapidly than usual, while the growth of output was slower than usual. This accounts for the persistence of high unemployment rates.

4.6. In text question

1. Explain the meaning and definitions of full employment.

2. Describe the various types of unemployment.

3. Explain Keynesian View of employment.

4.7. Key Words

Frictional Unemployment, Seasonal Unemployment, Cyclical Unemployment, Structural unemployment , Technological Unemployment, Full Employment.

LESSON-5

CLASSICAL THEORY OF OUTPUT AND EMPLOYMENT

5.1. Introduction

This chapter is concerned with Classical theory of output and employment. Economists bears to Keyne's General Theory much the same relation that mercantilism bears to Adam Smith's Wealth of Nations'. Just as it would be difficult to understand Adam Smith without knowing something about mercantilist theory, in the same way it is difficult to understand Keynes without knowing something about classical theory. The term 'classical economists' as used by Keynes refers to the traditional or orthodox principles of economics which have been handed down since the time of early 19th century. The term 'classical economists' was invented by Karl Marx to refer to Ricardo and his predecessors' including Adam Smith. But Keynes used the term 'classical economists' to include even the followers of Ricardo, including J.S. Mill, Alfred Marshall and A.C. Pigou.

5.2.Objectives

- To explain fundamental ideas of classical theory
- To critically analyse of classical theory of output and employment

5.3 Content

5.3.1 Criticism of Classical Analysis

5.3.2 Application of the Classical Model

5.3.3 Graphic illustration of Complete Classical Model with Money and Prices

5.3.4 Analysis of classical theory

5.3.5 Fundamental ideas of classical Theory

In those days. i.e. in 19th century when the society was simple, economic problems were limited in numbers and less complicated in their nature. Population was like a small factory system and round about, method of production were absent. Naturally the economic idea put forth by economists of those simple days have become irrelevant for today's complex modern society. Many of the principles which were enunciated by the classical economists have become out dated, inapplicable and

irrelevant to the modern economy of today. Keynesian economics has nullified the importance of classical ideas and no doubt many of the classical concepts were severely criticized by Keynes' and his followers.

5.3.1 Fundamental ideas of classical Theory

The Classical theory of employment and output revolves round the following fundamental ideas:

(a) There is laissez faire in the economy.

(b) There is always full employment in the economy.

(c) Even if full employment is not found it can be easily achieved through 'wage – cut'.

(d) Micro concepts such as output and employment decisions of a firm or industry is the same for the economy as a whole also. What solutions are applicable for a micro problem are the same for a macro problems also.

(e) 'Money' is a mere medium of exchange. Money as such does not create any problem in the society. The classical school did not appreciate the connection or interlink age between commodity market where goods are produced and money market where exchange takes place.

(f) Savings are always equal to investment.

(g) Interest rate is the very important and powerful factor which brings about an equality between savings and investment.

(h) Money can never be kept idle. Money is such as precious thing that it should either be used up.

(i) The classical school considered only 'real factors' and not 'monetary factors'. The concept like 'real effort', real savings and 'real value' were not touched upon.

(j) They did not consider the concept of 'inflation' and its repercussions on employment and output.

So, based on the above said fundamental ideas, the whole classical structure has been built and we are going to consider each one of the above in detail in this chapter.

1. Laissez Faire Economy or Free Enterprise Economy

The classical economist fully believed in 'Laissez Faire'. This means ' non-interference by government in the activities of private individual'. The citizens of a country have full freedom; to start any business of their choice. According to Adam Smith, the father of Economics, Laissez Faire economy ensures efficiency, quality and maximum output. His examples of 'baker of bread' is quite famous in this context. The baker of bread produces bread not because he is interested in feeding the poor or in the welfare of other people, but does so just to earn 'profit' i.e. to become rich; to a mass wealth. While producing bread, with an intention to get profit he automatically benefits the society and relieves the hunger of other individuals. His selfish activity ultimately leads to the welfare of the society. So given full freedom, the society is capable of looking after itself. The Government need not indulge in any business activity. If the government undertakes production then, every body's business becomes nobody's business. There arises inefficiency, lack of interest and consequently low production. So the duty of the government is just to maintain law and order provide justice and protect the country from foreign invasion. The Government should be a mere police Government and not 'welfare government'. It should not regulate the activities of private individuals in their business. So non-interference is considered to be a 'must for smooth functioning of a society.

Thus classical had full faith in the invisible hand (Price mechanism) profit motive, free and perfect competition or to use Pigovian terminology "thorough-going competition" and the self adjusting nature of the economic system. They believed that if the economic system is allowed to work without any state interference it would automatically do away with the mal adjustments in the economy if there are, any, and would function smoothly ensuring full employment. So a "free enterprise system" or "capitalist system" was advocated by the classical economists.

2. Perfect Competition

The classical assumed a state of perfect competition and they did not visualize "imperfect conditions" in the market which lead to exploitation of consumers, wastage of resource, artificial restrictions on output and boosting up of prices due to advertisement war, etc. They thought there will always prevail perfect competition or pure competition. In perfect competition there is free entry and exit. If a producer earns abnormal profits many new entrepreneurs enter into the production of this commodity in order to earn this profit and this leads to competition among the producers who will increase the supply of goods which theory reduces the price level. Every producer earns ultimately only normal profit. The price is a "normal price". There is an exploitation of consumers. There is no amassing of wealth by the producer also. So perfect competition is an ideal market situation for the country as a whole and that is why classical advocated perfect competition. But now, because of various factors, the market is not characterized by perfect competition but it is dominated only by imperfect competition". So perfect competition is not a reality in modern days. But many of the classical principles are based on this notion of "perfect competition" which thought will prevail always in the economy. Perfect competition does not exist in modern economy ideas based on this concept have also become irrelevant and inapplicable.

3. Assumption of Full Employment

Classical economics is based on the assumption of full employment of labour and other resources within an economy. Full employment is a normal situation and any situation of less than full employment (unemployment) is an abnormal one for them. By full employment they meant situation in which there is no involuntary unemployment though there may be frictional, structural and voluntary unemployment. If there exists such unemployment's in an economic system, they feel that it is due to the existence of monopolistic conditions in the industry or state intervention in the free working of competitive situations in the market or it may be attributed to the imperfections of the market due to immobility of productive factors. The best way to ensure full employment is to follow a policy of "Laissez faire".

4. Resource Allocation

Instead of attempting to explain what determines the volume of employment the classical theory thus assumes full employment, and goes on to explain how a given total volume of resources is allocated in production and how the income derived from production is distributed to the different types of resources participating in production. The market forces which allocate resources in production and determine the rewards in distribution are supply and demand. Expressed in terms of money these values are "prices" and "the pricing system" is the unconscious "planning" mechanism which guides private individuals in pursuit of maximum rewards to allocate economically and fully the total resources of the economic system. This in short is the well known theory of value, distribution and production, which forms the core of classical economic theory.

Thus for the classical school the resources are constant and if more resources are employed in one industry, they are assumed to be drawn away from other industries. The choice is between employment here and employment there and not between employment and unemployment. Addition to total output in one direction are at the expense of deductions from total output somewhere else in the economic system and are not additions to total output resulting from putting to work previously unemployed resources. Where resources are ideally allocated there is no way by which total output can be increased by reallocation. In the long run, of course, because of increases in population and productivity and the discovery of new resources there is an increase in total employment and output.

5. Say's Law of Markets

Acceptance of full employment as the normal conditions of an exchange economy is justified to classical economists mainly because of J.B. Say's Law of Markets", J.B. Say was an early 19^{th} century French economist. He said, "supply creates its own demand". By this he means every producer who brings goods to market does so only in order to exchange them for other goods. Say assumed that the only reason people work and produce is in order to enjoy the satisfaction of consuming. In an exchange economy therefore whatever is produced represents the demand for another product. Additional supply is additional demand. The analysis is carried on in

terms of barter. A producer who normally produces 'one table' a day if suddenly produces 'two tables' a day by putting in extra effort, then it means his needs have increased and he wants to demand some other consumer item by exchanging this extra table. So every supply create its own demand. Let us consider the operation to this law in a money economy. When a resource is put to work, a product (output) is produced and income is paid to those who contribute to its production. The sales receipts cover cost of production and all factors are willing to accept rewards equal to their marginal productivity. For the agent of production the new income from its employment will create the sufficient demand to take out of the market an amount of output equivalent to that produced by virtue of its employment. Misdirected production may result in temporary over supply of some particular items but there can be no general overproduction as long as supply creates its own demand; if overproduction takes place in certain items, then this will be corrected when entrepreneurs shift from the production of things they cannot sell (at a profit) to the production of things they can sell (at a profit). So Say's Law of Market is a denial of the possibility of general overproduction' or 'Glut'. It is also a denial of the possibility of deficiency of aggregate demand'.

Say's Law means that there will always be a sufficient rate of spending to maintain full employment. This theory rests on the assumption that income is spent automatically. Even if some proportion of income is saved, it is not an obstacle for full employment. Saving is another form of spending. Saving is spending on producers goods (investment).

In the words of J.B. Say, it is production which created markets for goods, for selling is at the same time, buying and in production men are creating a demand for other goods. David Ricardo has expressed Say's law as follows: No man produces but with a view to consume or sell, and he never sells but with an intention to purchase some other commodity which may be useful to him or which contributes to future production. By producing them he necessarily becomes either the consumer of his own goods or the purchaser and consumer of the goods of some other person. Production are always bought by productions or by services, money is only the medium by which the exchange is affected".

James Mill states Say's Law thus 'Consumption is co-existent with production and … production is the … sole cause of demand. It never furnishes supply without furnishing demand both at the same time and both to an equal extent; in the words of McConnell. The very act of producing goods generates an amount of income exactly equal to the value of goods produced. To give an example, when a car is produced necessary purchasing power equivalent to the price of the car is simultaneously generated in the form of rents wages, interests and profits, which would ultimately lead to its purchase.

6. Pigovain formulation of Say's law

Say's Law of Markets was put in a different form by Pigou. According to Pigou, it labourers are willing to accept wages equal to marginal productivity general unemployment is an impossibility. The base determinant of the volume of employment at any given time is the level of wages. If there is unemployment, i. e., supply of labour exceeds the demand for labour then market wage rates would fall till the supply is equal, to demand and full employment equilibrium is restored. Classical therefore held the view that if 'unemployment' persisted for a long time, then it must be due to wage rigidity and imperfections in labour market.

7. Employment and Output

At a given time, there exists in the economy as a whole a given productive capacity or 'productive potential' which refers to the capacity of the nation to produce goods and services. This productive capacity of course varies in the long run when more resources are found out, when technology changes or when population increases. Symbolically it can be expressed as Q= f (N.K.R.T.) where

'Q' stands for productive capacity of the economy 'N' stands for the labour force.

'N' stands for the labour force

'R' for the stock of natural resources

'K' for the stock of capital or for man made means of production and

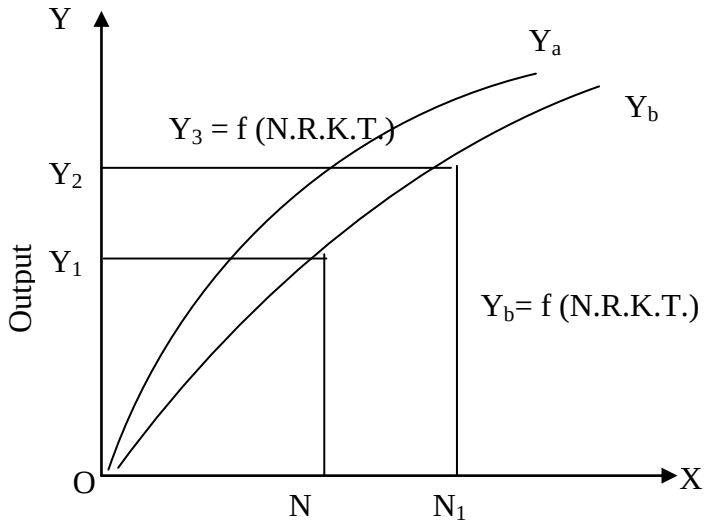
'T' for the level of technology prevailing in the economy.

So productive capacity of a nation is determined by the amount of labour, capital and resources and the prevailing level of technology. The equation above does not indicate in what proportion these are to be combined. It merely shows that productive capacity is a function of or depends on these factors. The actual output produced at a particular point of time however depends on the extent to which these resources are being used, in other words output is the result of the utilization of productive capacity. This is decided by the production function, which shows a functional relationship between the quantity of input used and the quantity of output produced. Symbolically

$$Y = f\ (N.R.K.T)$$

Output produced is a function of labour, resources, capital and level of technology. Given the stock of natural resources capital, and the level of technology, output or income (Y) is determined by labour input (N) which shows the level of employment. This is shown in the following diagram:

Labour input is measured on the X-axis and output on the Y-axis. The output curve, Y_a slopes upward because of diminishing marginal productivity. When employment increases from N to N_1. output increase from Y_1 to Y_2. But this increase of Y_1 Y_2 can be achieved without any increase in employment, i.e., employment remaining as (ON when the productive curve itself shifts from Y_a to Y_b), Such a shift of the production curve can take place due to changes in capital stock, natural resources, change in technology or a change in the combination of these variables.



Labour Input (N)

Figure 5.1

The classical school did not formulate a well defined theory of employment as such, they did not explicitly state their ideas with regard to output and employment. They put forth their views with regard to supply of labour, demand for labour, price level, production and such other individual variables. Later economists built up a theory of employment, and gave diagrammatic illustration of classical ideas with regard to employment as given by modern economists.

5.3.2 Analysis of classical theory

Classical economists such as Adam Smith and Ricardo maintained that the growth of income and employment depends on the growth of the stock of fixed capital and inventories of wage goods. But, in the short run, the stock of fixed capital and wage goods inventories are given and constant. According to them, even in the short run full employment of labour force would tend to prevail as the economy would to experience any problem of deficiency of demand. On the basis of their theory they denied the possibility of the existence of involuntary unemployment in the economy. The short-run classical theory of income and employment can be explained through the following three stages.

1. Determination of income and employment when there is no saving and investment.
2. Determination of income and employment in an economy with saving and investment
3. Determination of income and employment. Introducing money and prices.

1. Determination of income and employment when there is no saving and investment.

According to the classical theory, the magnitude of national income and employment depends on the aggregate production function and the supply and demand for labour. To show this let us assume that the economy produces one homogeneous and divisible good, say corn. Let symbol K stand for the output of this good. To produce this good we require two factors of production: (1) Labour which we denote by N and (2) capital which we denote by K. Let us further assume that production function is such that it exhibits constant returns to scale, that is, if the quantities of

capital (K) and labour (N) are doubled, the quantity of output, Y, is also doubled. Thus we have the following production function.

$$Y = F(K,N) \quad \ldots\ldots\ldots(i)$$

The assumption of constant returns to scale implies that if the factors K and N are multiplied by some positive number λ,, output Y will also be multiplied by the same number That is,

$$\lambda Y = F(\lambda K, N)$$

In the short run the quantity of fixed capital K, that is, plant and equipment, does not vary. Therefore, with a fixed capital stock, the output Y (or what is also the income) would increase only when the employment of labour N increases. That is employment of labour and output(income) rise or fall together. Now, according to classical theory, with a fixed capital stock as the employment of labour increases, marginal product of labour would diminish. This is the famous law of diminishing returns of the classical economics.

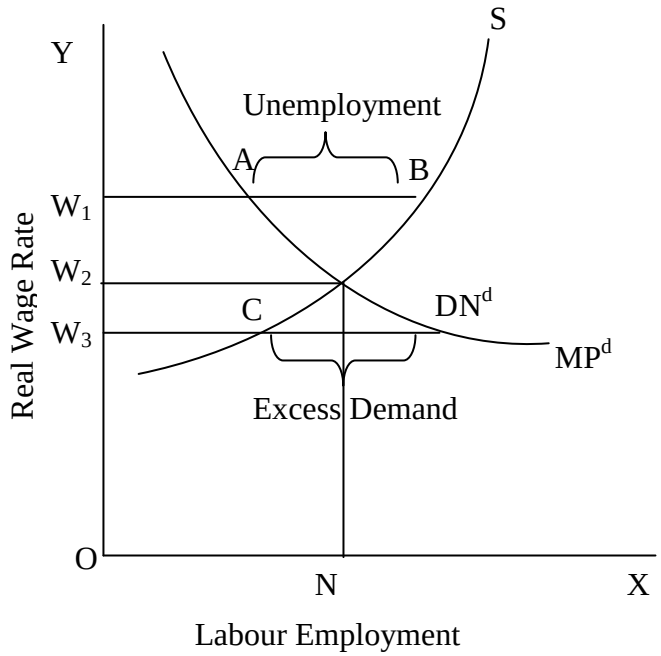


Figure 5.2 Employment and Wages

The demand for labour is derived from this short run production function that is diminishing marginal product of labour. We assume perfect competition. Further, assuming that the firms which undertake the task of production attempt to maximize profits, they will employ labour until the marginal product of labour is equal to the

given wage rate. At the lower wage rate, more labour will be demanded or employed by the firs and vice versa. Thus, the demand curve for labour is derived from the marginal product curve of labour. In fact, the former coincides with the latter. Consider Figure 5.3 where MP curve depicts the diminishing marginal product of labour with a given stock of fixed capital. As explained just above, MP curve of labour also represents the demand curve of labour N_d.

On the other hand, the supply of labour by the households in the economy depends on their pattern of preference between income and leisure. The classical theory assumes that in the short run when population does not vary, supply curve of labour slopes upward. This implies that at a higher wage rate, more labour would be supplied and vice versa. It will be seen from figure 5.2 that supply and demand for labour are in equilibrium at the wage rate OW. Hence, given the supply and demand curves, the wage rate OW is determined. It will be seen that ON labour is employed in this equilibrium situation. This equilibrium between supply of and demand for labour at the wage rate OW implies that all those who offer their labour services at this wage rate are in fact employed. There is neither excess supply of labour, nor excess demand for labour. In other words, there is no involuntary unemployment of labour in this equilibrium situation. If somehow wage rate in the labour market is higher than this equilibrium wage rate OW, say it is equal to OW, then it will be observed from Figure that excess supply of labour equal to AB would emerge. In other words, at wage rate OW., AB workers will be unemployed.

But given the competition among workers, the excess supply of labour would cause the wage rate to fall to the equilibrium level OW at which the labour market is cleared. On the contrary, if somehow real wage rate in the labour market is OW_2, the firms would demand more labour than is offered at this real wage rate. As a result of the competition among the firms to hire labour desired by them, the wage rate would go up to the equilibrium level OW. At OW to repeat, all those who offer their labour services are in fact demanded and employed. It therefore follows that at OW, there is no unvoluntary unemployment, or, in other words, full employment of labour prevails. Further, it is the wage flexibility (i.e. the changes in the wage rate) which ultimately brings about this full employment situation.

How much output will be produced in this full employment situation can be known form the production function. We depict this in Figure 5.3 where in addition to the supply of and demand for labour, the production function (OY) representing the relation between employment of labour (N) and total output (Y) is shown. It will be seen from the lower-panel of Figure that, given the stock of fixed capital, employment of ON labour produces OY output. This output OY of corn will constitute the income of the society and will be distributed between wages and profits it will be seen from the upper panel of Figure 5.3 that total wages are equal to the area ONEW and that profits WED. Thus sum of wages ONEW as reward for labour and total profits WED as reward for capital would constitute the total income of the society (and would be equal to the social output OY produced).

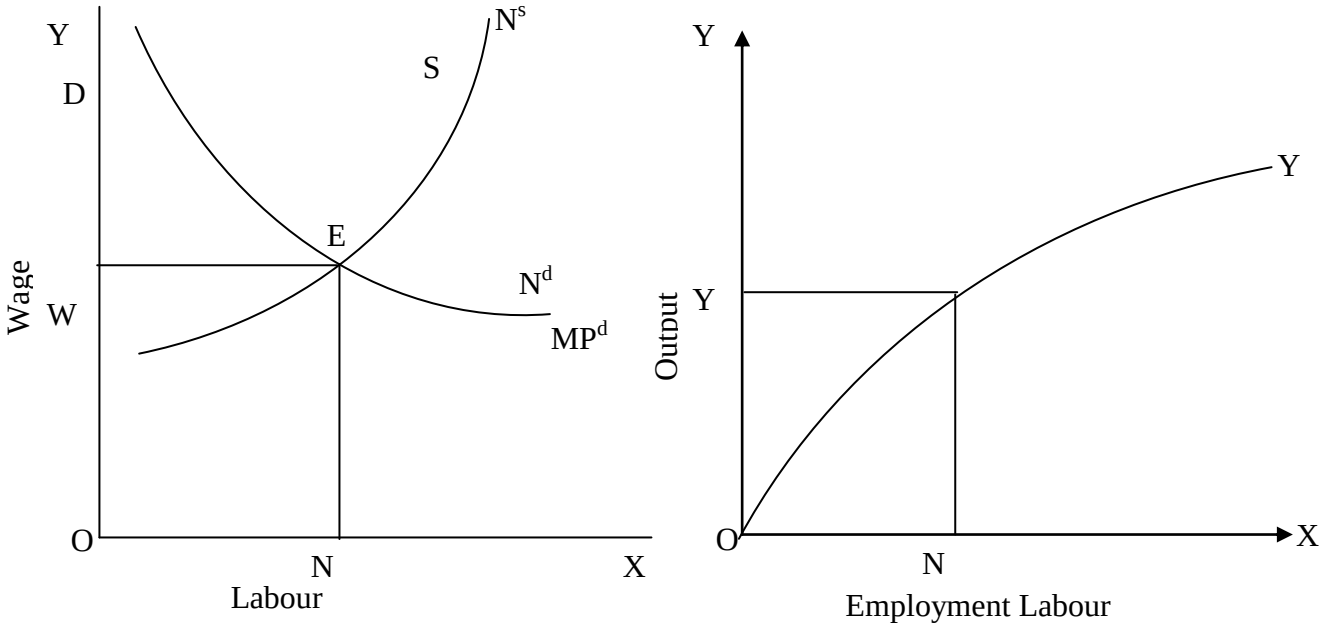


Figure 5.3 Determination of Employment and Output

It follows from about that the quick changes in the real wage rate upward or downward ensures that neither excess supply of labour, nor excess demand for labour will persist and thus equilibrium will be reached with full employment of labour in the economy. Further, given the stock of capital, with this full employment of labour, output and income of the economy equal to OY are determined.

Now, an important question to inquire is what guarantees that output produced by the full employment of labour and the level of capital (assumed as fixed in the short

run) will be actually demanded. If this does not happen, then the problem of insufficient demand for the output (i.e., corn) will emerge which will ultimately lead to reduction in output and employment and hence to the existence of involuntary unemployment.

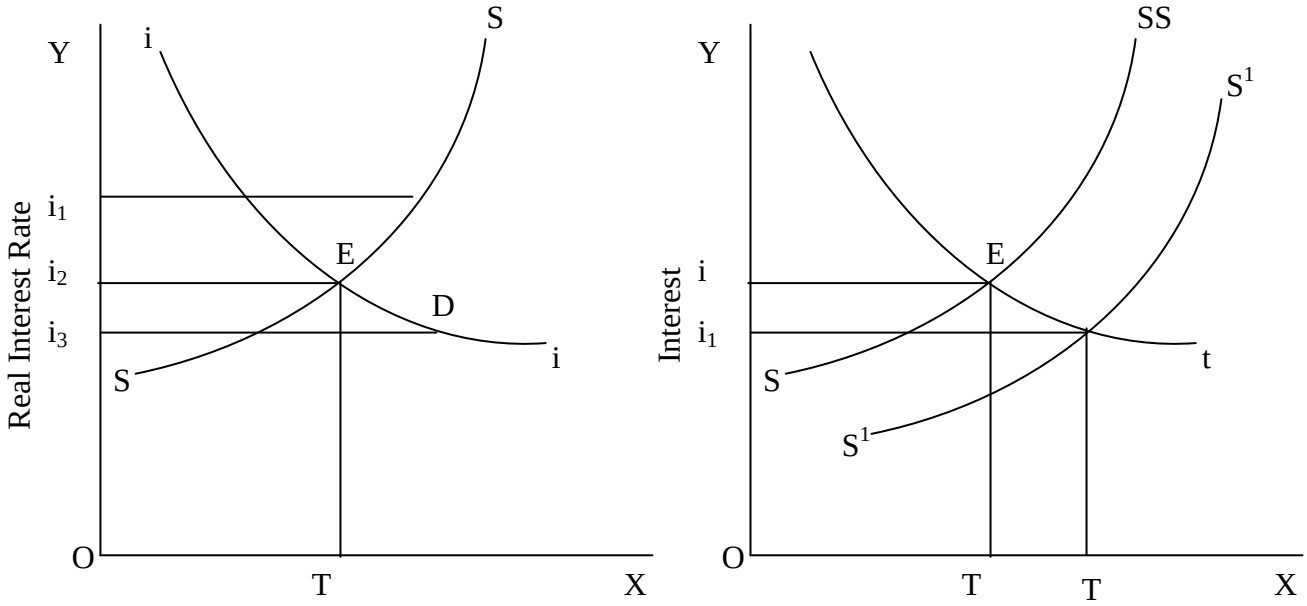
In the absence of saving and investment which we are assuming here, classical economists ruled out the possibility of deficiency of aggregate demand on the basis of Say's law. Say's law, as mentioned above, states that supply creates its own demand, that is, acts of production of goods create demand equal to the value of output of goods produced. Factors of production earn their incomes during the process of production. Since no part of income is saved as is being assumed here the entire income will be spent on consumer goods produced. Value of output produced will therefore be equal to the income generated in the process of production. Thus, quantity demanded will be equal to the supply of output produced. In Fig. wages earned by ON quantity of labour employed and profits earned by the entrepreneurs will be spent on OY output Expenditure so made will be equal to the value of output produced.

Aggregate demand being equal to aggregate supply, there is no problem of deficiency of demand Say's law that "supply creates its own demand" holds and full employment of labour is guaranteed. In this way classical theory denies the possibility of involuntary unemployment. It needs to be emphasized that under such conditions, two things ensures full employment. First, it is because saving and investment are excluded from the system so that entire income is spent on consumer goods. Second, real wage changes quickly to bring about equilibrium between demand for and supply for labour.

2. Determination of income and employment in an economy with saving and investment

In applying Say's law that supply creates its own demand an invalid assumption was made above that entire income earned by the households will be actually spent. Although it is correct that production of an output generates equal amount of income but what is the guarantee that all income earned by factors/ households will be actually spent on goods and services produced in fact, apart of income might me saved. Saving represents a withdrawal of some income from the expenditure flow. This will result in

deficiency of demand or expenditure on output of goods produced. Thus, if a part of income is saved (that is, not spent), supply of output produced would not create sufficient demand for itself. This will cause deficiency of aggregate demand which will cause fall in output and employment and the emergence of involuntary unemployment.



(a) Saving and Investment (b) Saving and Investment (S=1)

Figure 5.4 Changes in rate of interest bring about equality between saving and investment

However classical economists denied the possibility of deficiency of aggregate demand even when apart of income is saved by the households. They showed that Say's law that supply creates its own demand holds good even in the presence of saving. They argued that for every rupee saved by households will be invested by businessmen, that is investment expenditure will be equal to savings done by households. In fact, output produced consists of consumer goods and capital goods. Income earned from production will be partly spent on consumer goods and partly on investment in capital goods. What is not spent on consumer goods is saved and investment expenditure made by businessmen equals this savings. Therefore, there is no deficiency of demand or expenditure and circular flow of income goes on undisturbed. Thus, supply goes on creating its own demand and Say's law applies.

Now the pertinent question is what is the guarantee that investment expenditure will be equal to savings of the households. According to classical economists, it is the

changes in the rate of interest that brings about equality between saving and investment. Further, according to them, rate of interest is determined by supply of savings and demand for investment. The investment demand is stipulated to be decreasing function of the rate of interest. At the lower rate of interest, more would be borrowed for investment. On the other hand, the savings of the people are taken to be the increasing function of the rate of interest, that is, higher the rate of interest, the larger the savings and vice versa. The loan market will be in equilibrium at the rate of interest at which the demand for investment is equal to the supply of savings. The changes in rate of interest would cause investment and supply of saving to become equal. This is illustrated in Figure 5.4 (a). It will be seen that intersection of investment demand curve and the supply of savings curve SS determines the rate of interest I. At a higher rate of interest". The investment demand is less than the intended supply of savings. Due to the excess supply of savings, the rate of interest would fall to. On the contrary, at a lower rate of interest, say at the demand for investment exceeds the supply of savings. Now, due to the excess demand for investment in the loan market rate of interest would go up. Thus it is at rate of interest that loan market is in equilibrium, i.e. investment is equal to savings (I=S)

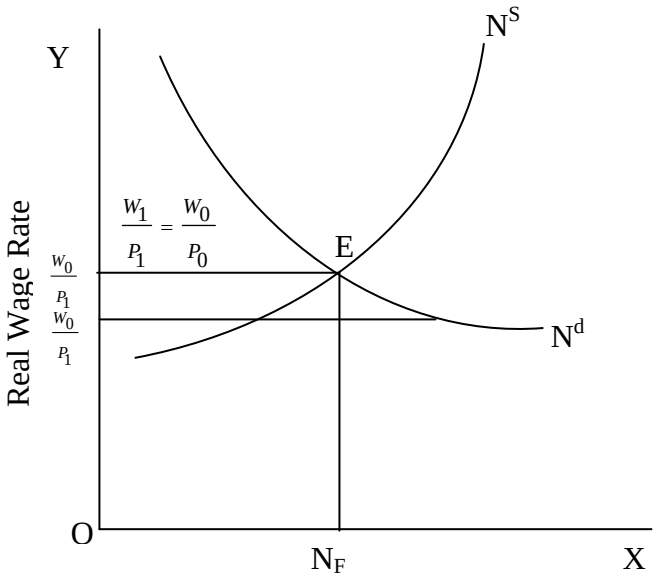
Now according to the classical theory, even if people's savings increase and as a result their consumption demand declines the problem of demand deficiency will not arise. As will be seen from panel (b) of Figure 5.4, as a result of increase in savings the supply of saving curve shifts to the right. With this rightward shift in the saving curve the equilibrium rate of interest falls to I and at this lower interest, investment demand increases to T' so that it once again becomes equal to savings.

It follows from above that the equality between investment and savings, brought about by changes in the rate of interest, would guarantee that the aggregate demand for output would be equal to aggregate supply of output. Thus, the problem of deficiency of aggregate demand would not be faced and full employment of labour will prevail.

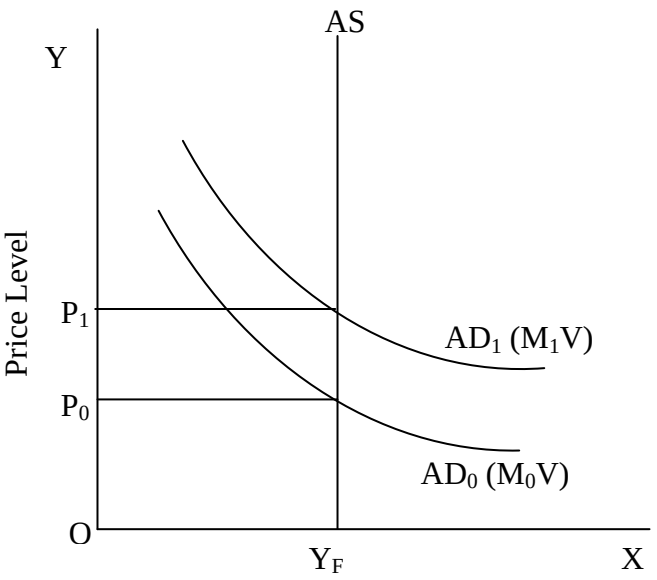
3. Determination of income and employment. Introducing money and prices.

Now, we shall examine how full employment of labour is assured in the classical theory even when assumption of the barter economy is dropped and money is introduced in the system. The introduction of money does not affect the result of the

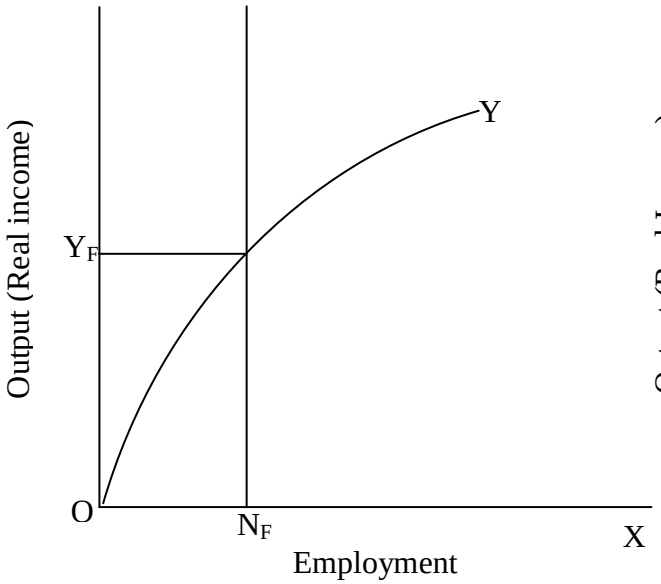
classical theory that problem of deficiency of aggregate demand would not be experienced by the free market system and therefore full employment of labour is guaranteed. The quantity of money, according to the classical theory, determines only the price level of output and in no way affects the real magnitudes of savings and investment.



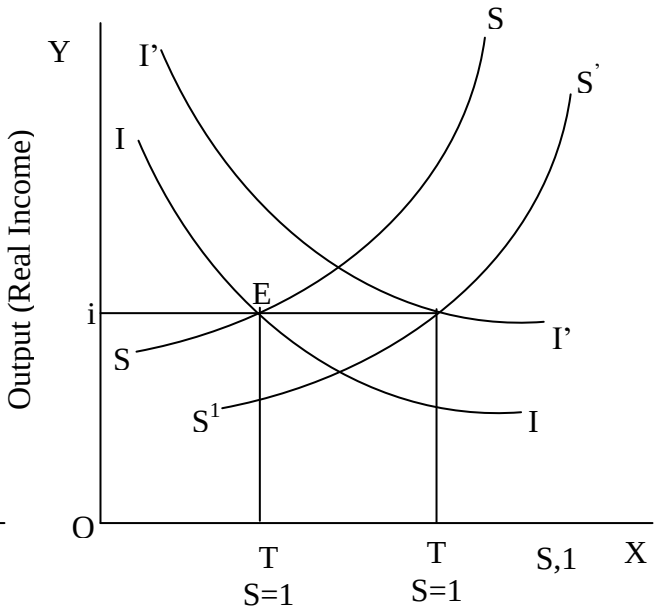
Panal (a): Labour Market Equilibrium



Panel (c) : Aggrage Output



Panal (b) : Production Function



Panel (d): Even increase in money does not disturb the equality of saving and investment

Fig. 5.5 Determination of income and Employment in a machinery economy: Complete classical model

Now, since quantity of money determines the price level of ouput, it also affects real wage. It is important to note that the real wage is the ratio of money wages and the price level, that is.

$$\text{Real wage } (W_R) = \frac{W}{P}$$

Where, W = Money wage

P = Price level

To begin with, suppose given a certain quantity of money and consequently a price level, labour market is in equilibrium at a certain real wage rate determined by demand for and supply of labour. As explained above, full employment of labour would be prevailing in this situation. Now, if quantity of money increase, according to the classical theory, it will cause a proportionate increase in the price level of output. This is because according to classical theory real output remains unchanged at the level of full employment of labour. With output remaining the same, increase in money causes only price level to rise.

This follows from Fisher's equation of exchange of the quantity theory of money. According to this, MV = PY

$$MV = PY$$

$$\text{or } P = \frac{MV}{Y}$$

Where P is the price level, M is the quantity of money. V is the velocity of circulation of money, Y is the aggregate output or Gross National Profit (GNP). It may be noted that the velocity of circulation of money is the number of times a unit of money is used for purchasing final goods and services. In classical they V is assumed to be constant because it depends on people's stable habits of holding money and the given modes of payments of wages and salaries. Further, they assume that the aggregate output or gross national product (that is, Y in the equation of exchange)

remain constant at full –employment level because they believed full–employment prevailed in a free market economy in the long run always.

Thus, it follows from the above equation that with both V and Y remaining unchanged increase in M will induce a proportional increase in the price level. For example, if a 15 percent increase in money supply occurs, the classical economists believed that there would be 15 per cent increase in the price level. The rationale of their thinking was with V and Y remaining constant, increase in money supply would cause the people to hold more money than they desire to hold. According to them, since money is held for making transactions of goods and services, they would spend excess money holdings on purchasing goods and services. The aggregate output of goods and services (Y) remaining the same, this new expenditure will push up the price level by the same proportion as the increase in money supply.

Let us go back to the question of determination of real wage rate and consider again panel (a) of Fig. 5.5 depicting labour market equilibrium. With the new higher price level determined after the increase in the quantity of money and, given the money wage, the real wage rate $(\frac{W}{P})$ will fall. The fall in the real wage rate would cause some temporary disturbance in the labour market. At a real wage rate below the equilibrium one, more labour would be demanded by the profit-maximizing firms than is offered at that wage rate (See panel (a) in Figure 5.5). This excess demand for labour at the new real wage rate would cause the money wage rate to rise so that once again the earlier full-employment real wage rate is restored.

According to the classical theory, money performs the function of merely a means for exchange of goods and services and is therefore demanded only for transaction purposes. This means alternative to holding money is the purchase of goods and services. Therefore, demand for and supply of money in the classical system does not determine the rate interest. When the quantity of money increases, it will leave the rate of interest unchanged and hence the amount of output saved and allocated to investment (i.e. real savings and investment) will remain the same. This means the increase in money does not disturb the saving –investment equality and consequently the continuation of full employment equilibrium. However, it may be noted that the higher level of prices of commodities would mean that investment expenditure in

money terms will increase in this same proportion as the rise in prices even though the output of commodities allocated for investment purposes remains the same. But this increase in monetary expenditure for investment is matched by the increase in monetary savings brought about by the rise in prices. The higher prices of commodities also mean a proportionate increase in the amount of money received from the sale of commodities so that savers are willing to provide proportionately larger amount of money at given rate of interest. Thus, as shown in Figure 5.5 (Panel d) with the increase in quantity of money, the supply curve of savings and investment demand curve shift by the same proportion so that the same rate of interest is maintained and the same amounts of real savings and investment in terms of commodities take place at the higher price level.

5.3.3 Graphic illustration of Complete Classical Model with Money and Prices

We illustrate the complete classical model of income and employment determination in a monetary economy in Fig. 4.5 In panel (a) of this figure labour market equilibrium is shown wherein it will be seen that the intersection of demand for and supply of labour determines the real wage rate. $\left(\frac{W_0}{P_0}\right)$

At this equilibrium real wage rate the amount of labour Nf is employed and, as explained above, this is full employment level. As depicted impanel (b) of the figure this full employment level of labour N_F produces Y_F level of output (or income). In panel (c) of Figure 5.5 we have shown the relationship between money and prices as explained by quantity theory of money. Thus, given the full-employment output Y_F and constant velocity of money V, the quantity of money Mo will determine the expenditure equal to MoV according to which aggregate demand curve (with flexible prices) is Ado. I twill be seen from panel (c) of Fig. 5.5 that intersection of vertical aggregate supply curve AS and aggregate demand curve Ado determines price level Po. It will be observed that with price level at (Po) the money wage rate is W_0 So that $\left(\frac{W_0}{P_0}\right)$ is the real wage rate as determined by the intersection of demand for and supply of labour.

Now, a relevant question is how this equilibrium level of real wage rate, price, employment and output (income), will change following the increase in the quantity of money. Suppose the quantity of money increase from Mo to M. With the given capital stock (as we are considering the short-run case) and the labour force already fully employed, the output cannot increase. Therefore, as depicted in panel (c) following the increase in money supply to M, aggregate expenditure will increase to M, V and thereby causing aggregate demand curve to shift to AD., As a result, price level rises from P_0 to P_1.

However, as explained above, with the given money wage rate W_0 the rise in price level will cause the fall in real wage rate. As will be seen from panel (a), with price level P, real wage rate falls to $\frac{W_1}{P_1}$. This will cause temporary disequilibrium in the labour market. At the real wage $\frac{W_1}{P_1}$ more labour is demanded than is supplied. Given the competition among the firms, this excess demand for labour will cause the money wage rate to rise to W1 level so that the real wage is bid up to the original level. $\frac{W_1}{P_1} = \frac{W_0}{P_0}$.

With the real wage rate being quickly restored to the original level, employment of labour Nf and total output or income Y_E will remain unaffected. To sum up, the result of increase in money supply is to raise money wages and prices in equal proportion, leaving real wages, employment and output unaffected. The results of decreased money supply can be similarly worked out.

5.3.4 Application of the Classical Model

1. In the classical system if supply of labour increase then it causes money wage to fall, employment and hence output increase. The larger output can be sold only at lower prices. At the eventual new equilibrium, money wages will have fallen by more than prices so that real wage is lower, a necessary condition for the higher output and employment. Saving, investment and interest rate remain unchanged.

2. An upward shift in the production function to larger demand of labour at every value of W/P output increases. Prices fall whether money wages rise, fall or remain the same; it depends on the elasticities of the production function and labour supply and the value of M. Anyway, even if there is a fall in money wage it is less than fall in prices. In the new equilibrium situation the real wage will necessarily increase.
3. Suppose there is an increase in money supply, this leads to unwanted money balances. This in turn leads to increased demand for output, and in turn for labour services. Prices and wages both increase. In course of time increased price level and a proportionate rise in the money wage maintains equality between the supply and demand for labour at the initial real wage, employment and output. Only money wages and prices would have changed both in the same proportion as the change in the supply of money.
4. Assuring both supply of labour and productivity of labour increase together, then output grows and prices fall. But whether real wage increases or decreases depend on whether labour supply grows faster or less rapidly than labour productivity.
5. If marginal productivity of investment increases then it raises investment function. This leads to higher interest rate along with higher investment and saving. However output and employment remain unchanged.

All the above interlinkage is smooth and ensures full employment because of flexibility in prices, interest rate and wages. If prices and wage rigidities are assumed especially in the downward direction then classical theory of Employment will break.

5.3.5 Criticism of Classical Analysis

Classical school considered a frictionless society. Many obstacles like presence of trade unions, minimum wage legislation, industrial monopoly, imperfect situations etc., were completely ignored. The fact of the modern world is such that it is full of such artificial obstacles and, as such cannot accept classical ideas as policy prescriptions for its present problems. In the modern world none of the variables especially wages are flexible. There is continuous change in technology, tastes, labour supply and so on. Immobility of factors of production imperfect information on costs

and their business conditions, Government interference etc. are the characteristic features of today's economy. These conditions no doubt, invalidate certain results of classical theory.

All the classical concepts were severely and vehemently criticized by Keynes for their inapplicability to macro economic problems and for their irrelevance in modern changed context. The criticism leveled against classical ideas will be discussed in detail in the next chapter before passing on to Keynesian theory of employment. So critical evaluation of classical ideas is postponed fro time being one fundamental mistake made by the classical school which invalidate majority of their contributions is that of application of micro principles to macro problems. They failed to integrate money market with value to real market. They failed to think about possibility of rigidities in economic system. They failed to visualize 'artificial' hindrances in the smooth working of the market. They had too much reliance on the automatic and self adjusting characteristic of the economy.

Thus contribution of classical school to the theory of employment and output, though great by itself is inapplicable, and irrelevant to modem economic problems. Keynes in his renowned book "General Theory" severely criticized the classical theory of employment. He criticized Say's law, especially the views of Pigou that a general cut in wages, during depression and unemployment will restore full employment in the economy. As we have said above, according to Say's law, every supply or production creates its own demand, as a result of which problems of over production and unemployment do not arise it is, of course true that supply's creates demand for goods because the various factors which are employed in productive activity earn incomes from it, which are in turn spent on goods. For example, when factors of production are employed in production cloth then the incomes in the form of wages, rent interest and profits accrue to them which they spend on various goods. But from this it does not follows that the supply of production will create its entire demand. The incomes earned by the various factors of production are equal to the value of output produced, but this does not mean that the whole income received by the factors of production will be spent on goods and services. A part of the income is saved and the saved part does not necessarily create demand for goods and services, if entrepreneurs do not invest equal to the desired savings, then aggregate demand which consists of demand for consumer

goods and capital goods, will not be enough to purchase available supply of output. Hence, if aggregate demand is not sufficient to purchase available supply, the producer would be unable to sell their whole output due to which their profits would decline and a result of which they would reduce their level of production giving rise to unemployment in the economy.

In a given period, consumers spend a part of their income on consumption and the rest they save. Likewise, in a period, the entrepreneurs plan to spend on factories and machines, that is, they plan to invest. Aggregate demand is sum of consumption demand and investment demand. But in a free enterprise capitalist economy, the persons who save are often different from those who invest and further that the factors that determine savings are different from the factors which determine investment by the entrepreneurs. People save to provide for their old age, to accumulate money for education and marriage of their children, but investment by entrepreneurs depends upon marginal efficiency of capital (that is, expected rate of profit), rate of interest, population growth and technological progress. We thus see that there is no such mechanism in a free enterprise economy which guarantees that investments made by the entrepreneurs are equal to the savings by the people. Desired savings by the people are generally not equal to the desired investment by entrepreneurs. If the desired investment by entrepreneurs falls short of the amount of savings at full-employment level of income, the equilibrium of the economy will be at less than full employment level and as a result of which unemployment will emerge in the economy. In this way, according to Keynes, there is no reason that sum of consumption expenditure and investment expenditure is necessarily equal to the value of output produced. In other words, there is no guarantee that aggregate demand will be equal to aggregates supply forthcoming at full employment level of resources. Hence, it is not necessary that the economy will be in equilibrium at the level of full employment. This invalidates Say's Law, since according to Say's Law over-production and unemployment cannot occur.

Keynes also criticized Pigou's view that a general cut in wages in times of depression will remove employment and that the full employment in the country will be achieved. According to Keynes, a general cut in wages will not bring about increase in employment because the reduction in wages will reduce the aggregate demand for goods. Keynes put forward the view that wages are not only the costs of production,

they are also incomes of the workers which constitute the majority of the population of the country. As a result of a general cut in wages, the income of the workers will fall due to which aggregate demand will decline. As a result of decline in aggregate demand, level of production will have to be reduced and less labour will have to be employed than before. This will crate more unemployment rather than reducing it. No doubt, as a result of a general cut in wages, cost of production of industries will fall but with the fall in costs, "the demand for the products will not increase because due to the all –round cut in wages, purchasing power of the working class will decreases. Hence an all-round cut in wages will reduce the level of employment by reducing aggregate demand and will thus deepen the depression. There is a fundamental difference between Keynes and Pigou in respect of the relationship between wages and employment. Pigou thought that level of employment in economy depends upon the level of money wages and therefore reduction in money wages will promote employment. On the other hand, Keynes thought that the level of employment depends upon the aggregate demand and the aggregate demand declines as a result of an all round cut in money wages. According to Keynes, even if the wage rates are perfectly flexible, the unemployment will prevail in the economy if the aggregate demand is deficient.

Classical economists thought that a general cut in wages would reduce the cost of production of various industries but the y ignored the fact that a general cut in wages will also reduce the incomes of the people. In view of the fall in incomes and aggregate demand how will manufactures be able to sell their whole output? It is the sales of output that makes the wheel of trade, output and employment going. However, note that the classical theory is valid in the case of an individual industry. With the decline in wages, the cost of the industry will decrease and as a result the prices of its product would fall. The industry will be able to sell a larger amount of output at a lower price because it is not necessary that the goods produced by the industry are to be purchased by the workers employed in that industry whose wages have been reduced. But in the case of the economy as a whole, this is not valid because a general cut in wages will reduce the incomes of the working class and as a result enough demand will not be there for the output produced by the whole economy. This deficiency in demand will reduce the demand for workers as a result of which unemployment will spread among

them. The fundamental flaw in Pigou's analysis is that he applied partial equilibrium analysis, which is valid in the case of in individual industry, to the determination of income and employment in the whole economy. The determination of the level of aggregate income and employment in the economy should be explained with the aid of general equilibrium analysis rather than with partial or particular equilibrium analysis of micro-economics.

Because of the above-mentioned shortcomings of the classical theory, there was a need for development of new theory which could provide a correct explanation of the determination of income and employment in the economy. Capitalist economy cannot automatically attain a state of full employment. Keynes in his famous work "General Theory of Employment, interest and Money" not only criticized the classical theory but also propounded the new one which is still regarded as valid and correct.

5.4 Summary

Classical School believed in free enterprise economy or Capitalistic System, it assumed perfect competitions both in factor market and product market. There is no deviation from full employment. The economy experiences full employment permanently and even if there are occasional slips from full employment they can be corrected because of flexibility of prices, interest and wages. A cut in wage will restore full employment Workers are prepared to accept a reduction in wages. In the production field supply always creates its won demand. When additional goods are produced additional factors are employed, and these factors in turn spend the income creating an equivalent demand. Both capital for labour are function of real wage. Since output is subject to the Law of Diminishing returns, more labour can be employed only at a lower wage. Because of increased number when marginal productivity falls, real wage must also fall to keep up the level employment. Money plays a very passive role. It is a more medium of exchange. The store of value function of money was completely ignored by the classical school. Money as such does not affect other variables in the system. When the quantity of money is doubled prices also are doubled. There is a direct and proportionate connection between money supply and price level. Classical school could not integrate money market with real market and as such these who markets remain loose and as two different compartments

with no interlinkage. Savings and investment are always equal and this equality is brought by the flexible interest rate. There are no rigidities in the economic system. All variables are flexible in both directions. This ensures full employment in the economy.

5.5 Revision Points

Laissez faire: Non interference from Govt. in the activities of Private individual.

Perfect competition : It is a market which have free entry and exit.

Productive potential : The capacity of the nation to produce goods and services.

5.6 In text questions

1. Explain fundamental ideas of classical theory.
2. Critically analyse of classical theory of output and employment.

5.7 Key Words

Laissez faire, Perfect competition and Productive potential.

LESSON-6

KEYNESIAN THEORY OF INCOME, EMPLOYMENT AND OUTPUT

6.1.Introduction

"This analysis supplies us with an explanation of the paradox of poverty in the midst of plenty. For the mere existence of an insufficient effective demand may, and often will bring the increase of employment. Moreover the richer the community, wider will tend to be the gap between its actual and its potential production. And therefore the more obvious and outrageous the defects of the economic system." J.K. Keynes. ["The General Theory of Employment, Interest and Money"- Harecurt, Brace and Co. Inc. 193. P. 30-31].

6.2.Objectives

- To analyse aggregate demand function and aggregate supply function.
- To examine importance of aggregate demand function
- To examine Keynes's theory of employment determine the equilibrium level of employment

6.3.Content

6.3.1 Aggregate Demand Function

6.3.2 Importance of ADF

6.3.3 Aggregate Supply Function

6.3.4 Aggregate Supply of Labour

6.3.5 Aggregate Demand for Labour

The logical starting point of Keynes' theory of employment is the principle of effective demand. Total employment in a country depends on aggregated or total demand and unemployment result from a deficiency of total demand. As employment increase. Consumption also increase, but by less than the increase in income. If employment level is to be sustained then sufficient demand must be there. This means any gap that arises between income and consumption is filled by real investment. In other words employment cannot increase when investment increases. But investment in matured economics do not increase because of Marginal Efficiency of Capital and

because of very poor prospects for further investment. This means aggregate demand or total demand, i.e. C+1 falls short of cannot increase when investment increases. But investment in matured economics do not increase because of Marginal Efficiency of Capital and because of very poor prospects for further investment. This means aggregate demand or total demand, i.e. C+1 falls short of Y (national income) which is supplied in a particular year and this causes reduction in employment. This is the essence of Keynesian theory of employment.

The concept of effective demand can be put in nutshell as follows: It is the level of employment where Aggregate Supply Function becomes equal to Aggregated Demand Function, Aggregate Demand Function refers to consumption expenditure and investment expenditure, i.e. (C+I). Aggregate Supply Function refers to total volume of goods supplied at a particular period of time for given cost conditions and for given price levels. If all the goods supplied in the market are take off or demanded then the level of employment can be maintained at that level without any difficulty and this is the point of effective demand. In other words it is the intersection point of ADF and ASF functions. Let us now see what we mean by ADF.

6.3.1 Aggregate Demand Function

The aggregate demand curve of aggregate demand function as Keynes calls it is a schedule of the proceeds expected from the sale of the output resulting from varying amounts of employment. If more labour is employed, more output it produced and the total proceeds are greater. To put it in another way aggregate demand price increase and decrease as amount of employment increase or decrease. Thus "Aggregate Demand Function(ADF) is a schedule of the various amount of money which all the entrepreneurs taken together do expect from the sale of their outputs at varying levels of employment. What the entrepreneurs do expect in turn depends upon the expenditure on consumption and investment. The ADF indicates total incomes at factor cost without including profit. It refers to the minimum expected receipts which all entrepreneurs put together must receive from business in order or continue in business in contrast to this ADF indicates maximum total receipts (i.e., cost of production and profit) including a margin profit.

Aggregate Demand Schedule

Level of Employment (in million men)	Maximum Expected Receipts form the Sales output (in million Rs.)
1	11
2	21
3	30
4	38
5	45

The aggregate demand curve slopes upward to the right establishing the fact that aggregate demand increases with increases in employment in the economy. One special features of aggregate demand curve is that it is not stable. Instability is its characteristic feature.

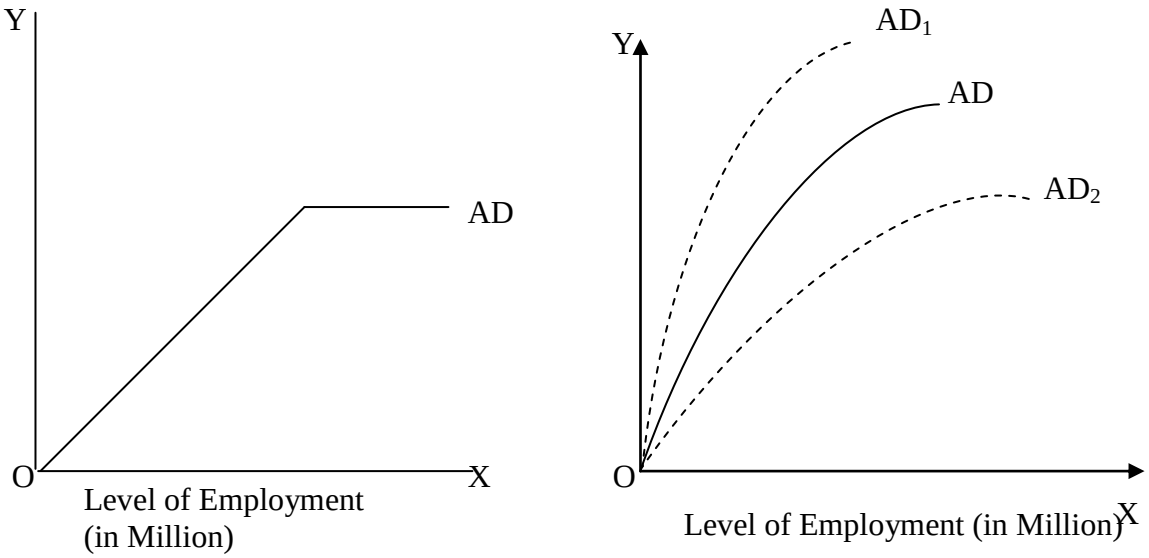


Fig. 6.1

The two constituent elements of ADF are consumption and investment. According to Keynes consumption is stable in the short run. The most volatile is the level of investment which causes a shift in ADF as shown in the above diagram.

6.3.2 Importance of ADF

1. The ADF refers to the maximum expected receipts and as such depends on the total expenditure of the community on goods and services.
2. The two main constituent elements of ADF re consumption and investment. An income increases, consumption also increase but by less than the increase in income. The entire income is not spent for consumption. Hence there arises a gap between income and consumption, i.e. between aggregate supply and aggregate demand. This must be filled by investment which is the other element in total demand.
3. Investment does not increase once the economy reaches a high level because of the falling tendency of marginal efficiency of capital on the one hand and increasing cost of production on the other. Investment opportunities becomes low. While savings of the community increase because of falling consumption, all these savings are not converted into investment. Some savings leak out of the economy and cause a reduction in employment and output in subsequent period.
4. Keynes considered only two determinants viz, private consumption and private investment. But post-Keynesians treated government expenditure as an important constituted of aggregate demand. Todays's government are welfare government and not police states and as such their expenditure are high. It forms an important part of aggregate demand. Some economists go further and include foreign trade also. It exports of a country are greater than import of that country, then money flows in from other countries to this country, causing multiple expansion of income. So this must be treated as another important element of aggregate demand. So we can say that ADF or Y = C+I+G+(E-M). Where Y = Income; C= Consumption, I = Investment , G = Government expenditure and E-M = Income from other countries, i.e., exports-imports.

6.3.3 Aggregate Supply Function

The two basic constituents of effective demand are ADF and ASF. Of the two we have learnt enough on ADF. Now we can pass on to a discussion of aggregate

supply function for the economy as a whole which can be defined as follows: "The Aggregate Supply Function (ASF) is a schedule of the various minimum amount of money which the entrepreneurs in the economy taken together must expect to receive from the sale of output at varying levels of employment". Aggregate Supply Function must be distinguished from the supply of a single firm or industry. The supply of a firm or industry means a schedule of various amounts of a commodity which will be supplied at a series of prices. Prices means the amount of money received from the sale of a given physical quantity of output such as one kilograms of rice or a ton of steel. Since the output of the entire economy cannot be expressed in any simple physical unit like kilogram or ton. Keynes uses the amount of labour employed as the measure of output as a whole. So the aggregate supply 'price' for the output of given amount of employment is the total sum of money or produced when the amount of labour is employed.

The shape of Aggregate Supple Curve needs some elucidation. The derivation of this curve can be understood by a study of

(a) Factors that affect aggregate demand for labour

(b) Factors that affect aggregate supply of labour.

(c) Price level

(d) Wage level and

(e) The connection between price level and aggregate supply schedule.

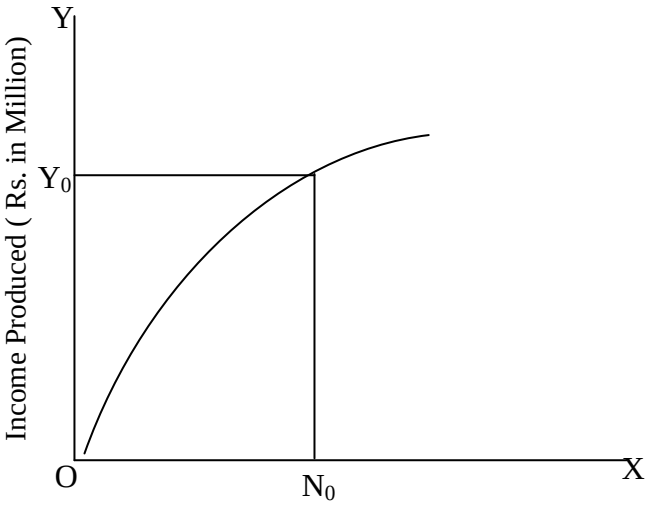


Fig. 6.2

The level of national income that an economy can produce depends on the quantity of its factors of production (labour and capital) and on its level of technology. Aggregate Production Function = Y = F (K.N.L.T) where 'Y' stands for national income; i.e., 'F' for function, 'K' for tangible capital; 'N' for human capital: i.e., labour 'L' and 'T' for technology. It is reasonable to assume that in the short run capital, land and technology are fixed. Labour alone is variable. Hence Y = f(N). The aggregate production function is depicted in the following diagram:

The shape of the aggregate production curve is concave from below indicating that as more and more workers are combined with the fixed factors of production the additional or marginal worker adds a smaller and smaller amount to the quantity to national income. This means the production function assumes diminishing marginal returns to labour at all levels of employment. For level of employment of labour of N_0 the level of national income is Y_0. But we do not know the level of employment. So the task is to construct a theory that determines employment. This depends on aggregate supply of labour.

6.3.4 Aggregate Supply of Labour

Aggregate supply of labour depends on the individual preference as to how much of the total available time should be devoted to work and how much for leisure. We assume that division of an individual's time between work and leisure will be influenced by the real wage he is offered. The real wage is nothing but money wage divided by price.

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

Where 'W' stands for real wage, "W" for normal wage or money wages and P' for price level. Since the price determines the purchasing power of money wage, by dividing the nominal wage by price level we get real wage. We also assume that the individuals behave rationally and this means they trade off leisure for work and the extent of this trade depends on the real wages they are offered. At very high level of real wage, many may be willing to sacrifice leisure to earn an income. To derive the aggregate supply of labour curve we simply sum the quantity of labour supply by all

economy as a given real wage. But varying the wage offered we can obtain a series of points that constitute the aggregate supply of labour curve S_0.

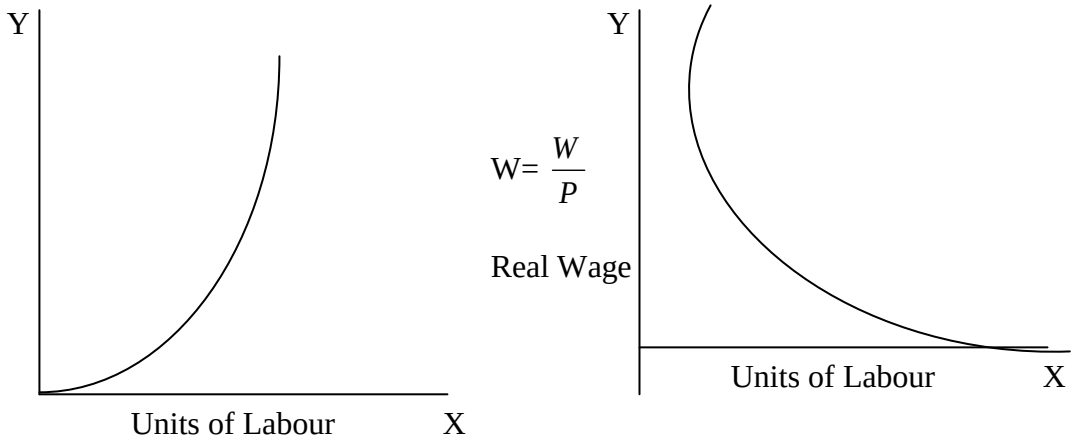


Fig. 6.3

6.3.5 Aggregate Demand for Labour

The aggregate demand for labour, like the aggregate supply of labour is obtained by simply summing up the total number of units of labour demanded by all firms in the economy at various real wages. The aggregate demand curve of labour Dn is a function of real wage is indicated in the above figure 6.3 (b). The higher the real wage the lower will be the demand for labour to avoid high unit costs.

Now let us pass on to a discussion of aggregate supply function. The aggregate supply curve depict the quantity of national income that would be produced at different price levels. We can think of two different aggregate supply curves. Under perfect competition money or nominal wage paid to workers is perfectly flexible upward and downward. The second type of supply curve is based on the assumption that perfect competition exist in all markets except the labour market. Here we assume that the money wage paid to workers is perfectly flexible upward but absolutely rigid downward. This means workers will not accept any reduction in money wages irrespective of the price level and there irrespective of their real wages.

Importance of ASF

The importance of implications of aggregate supply function in the theory of employment of Keynes can be summarized as follows:

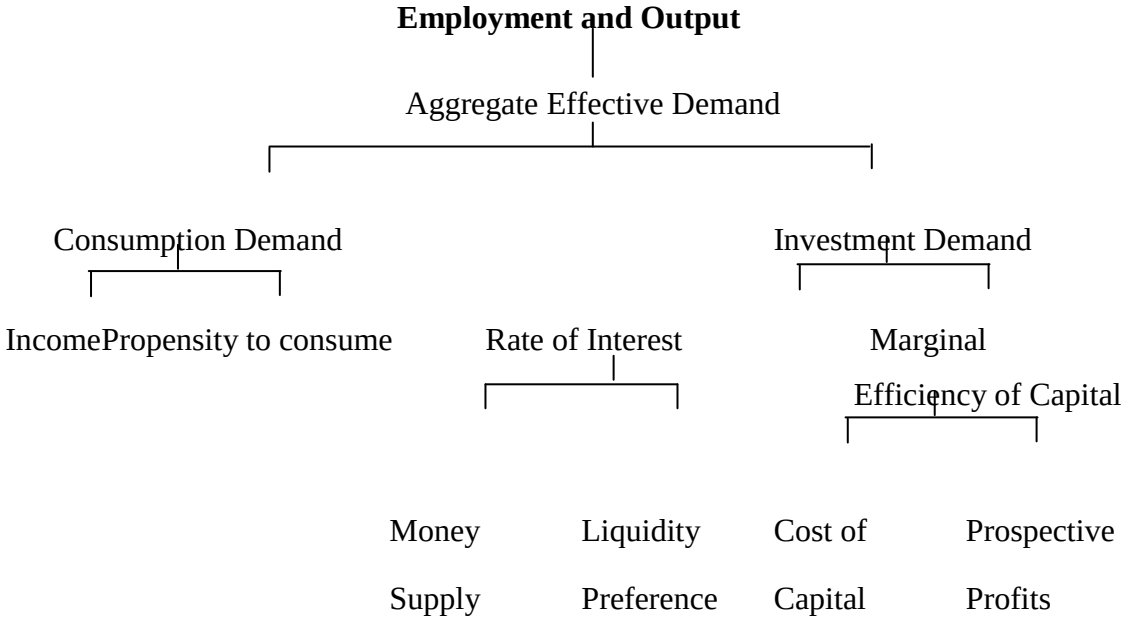
1. Of the two function, viz, ASF and ADF, ASF is given only secondary importance by Keynes because of its very characteristics. But still it is one of the forces that determine effective demand.
2. In Keynes theory of employment ASF is assumed as given. This is so because he deals with short run and in the short run supply conditions do not alter. Supply conditions depend very much

Summarised Keynes's theory of employment determine the equilibrium level of employment for the following:-

1. Level of output or income of a country depends on the level of employment. Given the capital stock and technology, greater the employment of labour, the higher the level of aggregate output or national income.
2. The level of employment depends on the magnitude of effective demand which is the sum of consumption demand and investment demand at the point where aggregate supply curve intersects the aggregate demand curve.
3. Aggregate supply of an economy depends on physical and technical conditions of production. Since these factors do not change much in the short run, aggregate supply curve remains constant in the short run. Aggregate supply curve slopes upward to the right as level of employment increases. This is because with the increase in labour employment, the greater cost has to be incurred.
4. Aggregate demand in a simple Keynesian model consists of consumption demand and investment demand. Since the consumption demand increases with the increase in labour employment, aggregate demand curve also slopes upward to the right. In the Keynes's model, investment demand is regarded as autonomous of changes in income or employment.
5. Consumption demand depend on propensity to consume on the one hand and disposable income on the other. Propensity to consume of a community does not change much in the short run. Therefore, consumption function which relates consumption demand with the level of income remains stable in the short run.

6. Investment demand depends on the rate of interest and marginal efficiency of capital. According to Keynes, rate of interest is determined by supply of money and the state of liquidity preference. Marginal efficiency of capital (i.e., expected rate of profit) depends on the expected future yields or profit expectations of entrepreneurs on the one hand and replacement cost of capital on the other.

7. According to Keynes, while rate of interest is more or less sticky it is frequent changes in profit expectations of the entrepreneurs, that is, changes in marginal efficiency of capital that cause a great deal of fluctuations in investment by entrepreneurs. Investment demand is thus highly volatile and causes recession or depression when it falls, and boom and prosperity when it increases significantly.



6.4. Summary

The above text we have to known Keynes' theory of employment is the principle of effective demand. Total employment in a country depends on aggregated or total demand and unemployment result from a deficiency of total demand. As employment increase. Consumption also increases, but by less than the increase in income. If employment level is to be sustained then sufficient demand must be there. This means any gap that arises between income and consumption is filled by real investment.

6.5. In text questions

1. Analyse aggregate demand function and aggregate supply function.
2. Examine importance of aggregate demand function
3. Explain Keynes's theory of employment determine the equilibrium level of employment.

6.6. Key Words

Aggregate Demand Function, Aggregate Supply Function, Aggregate Supply of Labour and Aggregate Demand for Labour.

LESSON-7

CONSUMPTION FUNCTION- DETERMINANTS OF CONSUMPTION

7.1. Introduction

This chapter is deals with the various factors which determine the levels of national income and employment. As we have seen, given the aggregate supply, the level of income or employment is determined by the level of aggregate demand; the greater the aggregate demand, the greater the level of income and employment and vice versa. Keynes was not interested in the factors determining the aggregate supply since he was concerned with the short run and the existing productive capacity. Aggregate demand consists of two parts-consumption demand and investment demand. In this chapter we will explain the consumption demand and the factors on which it depends and how it changes over a period of time. Consumption demand depends upon the level of income and the propensity to consume. We shall explain below the meaning of the consumption function and the factors on which it depends.

7.2.Objectives

- To define Propensity to Consume
- To examine average and marginal propensity to consume
- To identify factors affecting consumption function

7.3.Content

7.3.1 Propensity to Consume

7.3.2 Average and Marginal Propensity to Consume

7.3.3 Marginal Propensity to Consume

7.3.4 Concept of Consumption Function

7.3.5 Factors affecting consumption Function

The distinction between consumption and consumption function will make the meaning of consumption function clear. Consumption means the amount spent on consumption at a given level of income, but consumption function or propensity to consume means the whole of the schedule showing consumption expenditure at various levels of income. It means how consumption expenditure increases as income

increases. The consumption function or propensity to consume, therefore, indicates a functional relationship between two aggregates, viz., total consumption expenditure and the gross national income. It is a schedule that expresses relationship between consumption and disposable income.

7.3.1 Propensity to Consume

Propensity to Consume means the relationship between income and consumption, i.e. propensity consume is also called "consumption function". Aggregate consumption depends on consumption function (or) propensity to consume.

Consumption means the amount spent on consumption at a given level of income. The factors influenced consumption are ;

(a) the real income of the individual,

(b) his past savings

(c) rate of interest consumption function (or) propensity to consume means how consumption expenditure increases as income increases.

Consumption demands depends on income and propensity to consume. Propensity to consume depends on various factors such as price level, interest rate, stock of wealth and other subjective factors.

7.3.2 Average and Marginal Propensity to Consume:

There are two important concepts of propensity to consume (1) Average propensity to consume and (2) marginal Propensity to consume

Average Propensity to Consume

The average propensity to consume is a relationship between total consumption and total income in a given period of time. Therefore, average propensity to consume is calculated by dividing the amount of consumption by the total income.

$$APC = \frac{C}{Y}, \text{ where}$$

APC stands for average propensity to consume

C for amount of consumption, and

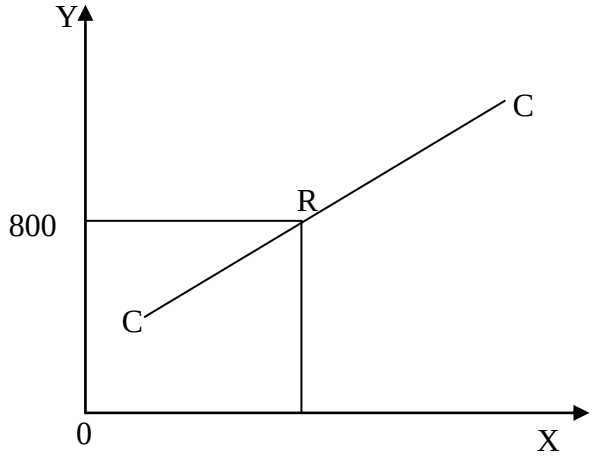
Y for the level of income.

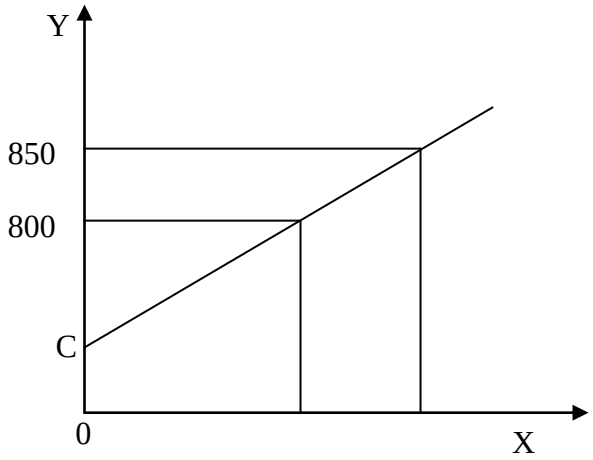
∴ Average propensity consume is the ratio of consumption to income.

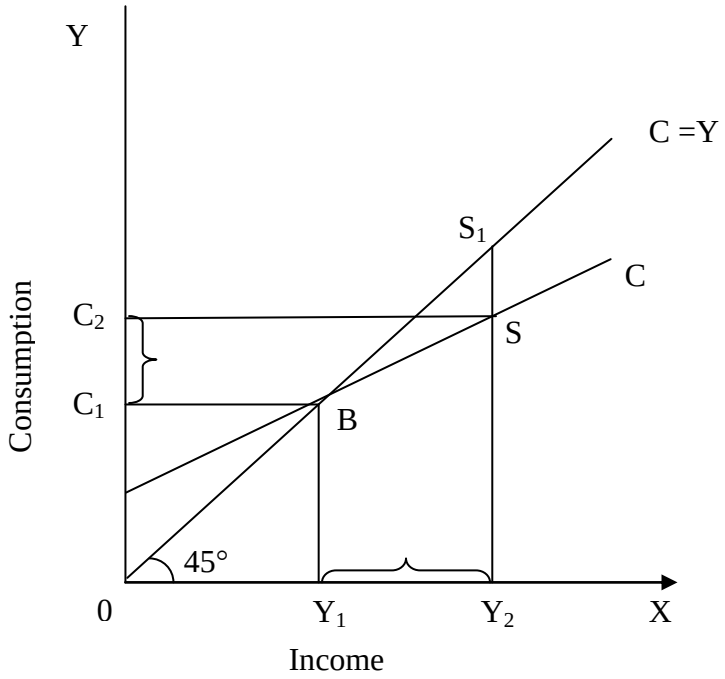
For example.

Consumption (C)

$$\text{Income (Y)} = \frac{800}{1000} = \frac{8}{10} = 0.8$$







7.3.3 Marginal Propensity to Consume

The marginal propensity to consume measures the incremental change in consumption as a result of a given increment in income-is how much consumed and how much saved. Marginal propensity to consume is the ratio of change in consumption of the change in income. Thus:

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

Where, MPC stands for marginal propensity to consume

ΔC for change in consumption, and

Δfor change in income.

For example, the table 7.1 shows that the marginal propensity to consume at various levels of income. In this schedule when income rises from Rs. 1000/- crores to Rs. 1100/- crores, the consumption increases from Rs. 950 crores to Rs. 1040 crores. Here the increment in consumption is Rs. 90/- crores. Therefore marginal propensity to consume which is $\frac{\Delta C}{\Delta Y}$ is here equal to $\frac{90}{100}$ or 0.9.

7.3.4 Concept of Consumption Function

As the demand for a good depends upon its price, similarly consumption of a community depends upon the level of income. In other words, consumption is a function of income. The consumption function relates the amount of consumption to the level of income. When the income of a community rises, consumption also rises. How much consumption rises in response to a given increase in income depends upon the propensity to consume or consumption function. It should be borne in mind that the consumption function or the propensity to consume is the whole schedule which describes the amounts of consumption at various levels of income. We give below such a schedule of consumption function.

Consumption function should be carefully distinguished from the amount of consumption. By consumption function is meant the whole schedule which shows consumption at various levels of income, whereas amount of consumption means the amount consumed at a specific level of income. The schedule described above reflects

the propensity to consume of a community i.e., it indicates how the consumption changes in response to the change in income. In the above schedule it will be seen that at the level of income equal to Rs. 1200 crores, the amount of consumption is Rs. 900 crores. As the national income increases to Rs. 1500 crores, the consumption rises to Rs. 1125 crores. Thus, with the given propensity to consume or consumption function, amount of consumption is different at different levels of income.

7.1 Consumption Function Schedule

Income (Rs. In crores)	**Consumption (Rs. In crores)**	**Average Propensity to consume**	**Marginal propensity to consume**
Y	**C**	$\frac{C}{Y}$	$\frac{\Delta C}{\Delta Y}$
1000	750	$\frac{750}{1000}$ = 0.75	-
1100	825	$\frac{825}{1100}$ = 0.75	$\frac{75}{100}$ = .75
1200	900	$\frac{900}{1200}$ = 0.75	$\frac{75}{100}$ = .75
1300	975	$\frac{975}{1300}$ = 0.75	$\frac{75}{100}$ = .75
1400	1050	$\frac{1050}{1400}$ = 0.75	$\frac{75}{100}$ = .75
1500	1125	$\frac{1125}{1500}$ = 0.75	$\frac{75}{100}$ = .75
1600	1200	$\frac{1200}{1600}$ = 0.75	$\frac{75}{100}$ = .75

The above schedule of consumption function reveals an important fact that when income rises, consumption also rises but not as much as the increase in income.

This fact about consumption function was emphasized by Keynes, who first of all evolved the concept of consumption function. The reason why consumption rises less than increases in income is that a part of increment in income saved. Therefore, we see that when income increases from Rs. 1000 crores to Rs. 1100 crores, the amount of consumptom rises from Rs. 750 crores to 825 crores. Thus, with the increase in income by Rs. 100 crores, consumption rises by Rs. 75 crores; the remaining Rs. 25 crores is saved. Similarly, when income rises from Rs. 1100 crores to Rs. 1200 crores, the amount of consumption increases from Rs. 825 crores to Rs. 900 crores. Here also, as a result of increase in income by Rs. 100, the amount of consumption has risen by Rs. 75 crores and the remaining Rs. 25 crores has been saved. The same applies to further increases in income and consumption. We shall see later that Keynes based his theory of multiplier on the proposition that consumption increases less than income and his theory of multiplier occupies an important place in macroeconomics.

7.3.5 Factors affecting Consumption Function

The factors that determining consumption function are of two types, (a) Objectives factors; (b) Subjective factors.

Objective Factors

1. Distribution of Income

This is an important factor determining the propensities to consume. Normally the average and marginal propensities to consume of the poor people are higher than those of the rich. This is because the poor have a lot of unsatisfied wants and are likely to spend every additional unit of money that they obtained in satisfying their wants. In contrast, the rich have a high standard of living and relatively less urgent wants remain to be satisfied. Additional income in their case is more likely to be saved. Hence, the more equal the consume.

2. Fiscal Policy

The Fiscal Policy of the government is related to taxation. Expenditure and public debt affects the propensity to consume. A reduction in taxation will leave more post – tax incomes with people which would tend to increase their expenditure on consumption. In contrast, an increase in taxation will decrease consumption. A highly

progressive tax system decreases inequalities in the distribution of income which increases the propensity to consume.

3. Financial Policies of Corporations

If corporations and companies retain more reserves and distribute lesser profits in the form of dividends, the disposable incomes of the share holders will be smaller. In contrast if more profits are distributed more will be spent on consumption.

4. Change in Expectations

If the consumers expect a shortage or rise in prices of certain goods they may rush to purchase such goods in excess of their current needs. This would raise the consumption function. On the other hand, if the people expect a decline in price they would tend to postpone purchases of such goods which would lower the consumption function.

The consumption of a person is also influenced by expectation as to what his income will be in the future. If he expects an increases in income in future he will tend to consume more.

5. Windfall Gains or Losses

Sudden and unexpected gains and losses in income affect consumption function. It is believed that the beneficiaries of windfall gains increase their consumption above the normal level.

6. Liquid Assets

Changes in liquid assets of people affect their consumption with an increase in their liquid assets, the people have a tendency to increase their consumption.

7. Rate of Interest

It is not possible to say with certainly as to which way a change in the rate of interest will affect the consumption function. One possibility is that a higher regard for savings may stimulate savings and thereby decrease consumption. Keyness, however, considered the effect of variations in the rate of interest on savings as highly complex and uncertain.

8. Duesenberry Hypothesis

Prof Duesenberry had made two important observations on the factors affecting consumption function, which are called Duesenberry hypothesis. In his view, consumption expenditure of an individual is determine not only by his current income but also by his standard of living in the past. If income falls, the expenditure on consumption also falls but not to the same extent because people find it difficult to adjust their expenditure to the changed income.

Secondly, he has suggested that an individuals consumption depends not only on the amount of his income but also on the size of income of others. His reaction to a change in income will differ according to others. The consumption standards of low income groups are considerably influenced by the consumption standards of high income groups.

9. Selling Effort

Given the level of income an increase in selling effort may increase the total volume of consumer's expenditure. But this factor has not been given much attention in the theory of aggregate demand.

10. Relative prices

There is a tendency among economists to ignore the effect of changes in relative prices on the aggregate demand. But infact changes in relative prices can affect aggregate consumer demand.

11. Volume of Wealth

The larger the wealth possessed by a person, the lower would be its marginal utility to him and as such the weaker would be the desire to add to future wealth by reducing current consumption.

12. Demographic Factors

Even at a given level of income the consumption expenditure may differ from family to family. Such differences consumption can be explained by demographic factors which include size of the family, place of residence, occupation. Other things remaining unchanged the large sized families would spend more. Families with

children of college age would spend more than those with children of primary school age further the urban families have tendency to spend more than the rural families.

13. Terms of Consumer Credit

The terms of consumer credit exert an important influence on consumer purchases of durables. In recent years there has been considerable increase in the volume of purchases of consumer durables financed by consumer credit. It is generally recognized that the interest rate paid on installment credit is not of so much importance.

14. Permanent Income

A family's expenditure on consumption is determined not by its current income but by its permanent income.

15. Consumer Durables

The short run instability of consumption expenditure in relation to income is considerably concentrated in the area of consumer durables. The logic of the consumption function suggests that it is the current services rendered by durable goods which are desired in an amount related to current income. The purchase of durables are considerably influenced by the size of the existing stock of durable goods possessed by the consumers.

Subjective Factors

Keynes mentions the following important motives of a subjective nature which lead people to refrain from spending.

1. To build up reserve against unforeseen circumstances.
2. To provide for an anticipated future relation between income and the needs of the individual different from that which exists in the present.
3. A larger real consumption at a later date is preferred to a smaller immediate consumption.
4. To enjoy a gradually increasing expenditure.
5. To enjoy a sense of independence and the power to do things.
6. To carry out speculative projects.
7. To bequeath a fortune.
8. To satisfy a pure miserliness.

The above motives are called by Keynes as the motives of precaution, foresight, calculation, improvement, independence, enterprises, pride and avarice and the corresponding motives to consumption are called enjoyment, short sightedness, generosity, miscalculation, ostentation, and extravagance.

In addition, Keynes gave the motives of enterprise, liquidity improvement and financial precedence whereby firms and corporations save, thus reducing consumption expenditure. But these psychological characteristic of human nature do not undergo much change in a short period. Therefore Dillard concluded that although the propensity to consumer is stable in the short period it is not absolutely rigid. Subjective factors can bring shifts in consumption function effectively.

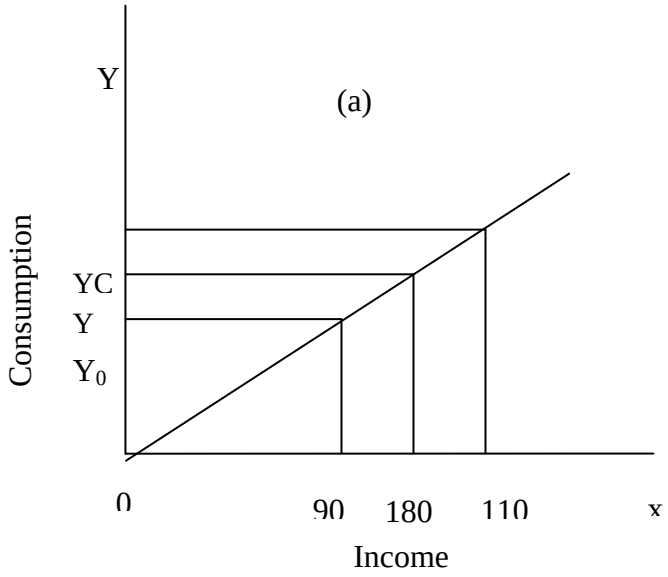


Fig. 11. A

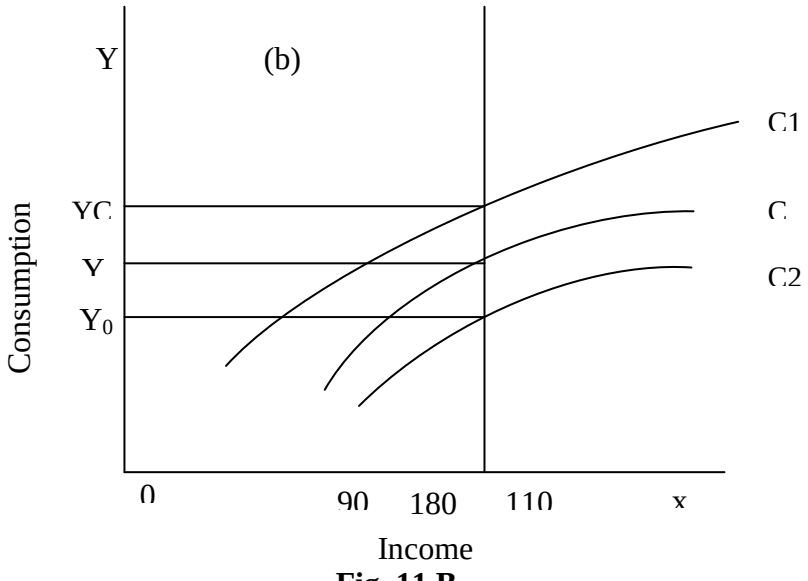


Fig. 11.B

7.4. Summary

The text expressed the consumption demand depends upon the level of income and the propensity to consume. Consumption function or propensity to consume means the whole of the expenditure at various levels of income. It means how consumption expenditure increases as income increases. The consumption function or propensity to consume, therefore, indicates a functional relationship between two aggregates, viz., total consumption expenditure and the gross national income. It is a schedule that expresses relationship between consumption and disposable income.

7.5. In text questions

1. Define propensity to consume.
2. Explain average and marginal propensity to consume.
3. Identify factors affecting consumption function.

7.6. Key Words

Propensity to consume, average propensity to consume, marginal propensity to consume and consumption function.

LESSON-8

THEORIES OF CONSUMPTION FUNCTION- KEYNESIAN-POST-KEYNESIAN THEORIES-RELATIVE INCOME HYPOTHESIS-PERMANENT INCOME HYPOTHESIS AND LIFE CYCLE HYPOTHESIS

8.1 Introduction

This chapter is explaining different theories of consumption function namely (a) Absolute Income Theory; (b) The Relative Income Hypothesis and (c) The Permanent Income Hypothesis and (d) Life Cycle Hypothesis.

8.2 Objective

- To explain different theories of consumption function.

8.3 Content

8.3.1 Absolute Income Theory

8.3.2 Relative Income Hypothesis

8.3.3 Permanent Income Hypothesis

8.3.4 Life Cycle Hypothesis

8.3.1 Absolute Income Theory

According to Keynes, on average "men increase their consumption as their income increases, but not by as much as the increase in income". In other words, the average propensity to consume goes down as the absolute level of income goes up. Hence, according to this theory, the level of consumption expenditure depends upon the absolute level of income and the relationship between the two variable is non-proportionate. However, it is pointed out that although this relationship is one of non-proportionality caused by factors other than income, viz., accumulated wealth, migration to urban areas, new consumer goods, etc. Owing to such factors as these, the consumers spend more and the relationship appears to be proportional.

8.3.2 Relative Income Hypothesis

The Relative Income Hypothesis was first introduced by Dorothy Brady and Rose Friedman. It states that the consumption expenditure does not depend on the absolute level of income but instead on the relative level of income. Dussenberry lent it empirical and psychological support.

According to Dussenberry, there is a strong tendency for the people to emulate and initiate the consumption pattern of their neighbouts. This is the 'demonstration effect already explained above i.e., relative income affecting consumption.

Also, the relative income theory tells us that the level of consumption spending is determined by the households level of current income relative to the highest level of income earned previously. People are then reluctant to revert to the previous low level of consumption. This is the 'Rachet Effect' discussed above.

The Relative Income Theory states that if the current and peak incomes grow together changes in consumption are always proportional to change in income. That is, when the current income rises proportionally with peak income, the average propensity to consume (APC) remains constant.

This proportionality relationship can be illustrated by the following diagrams.

Figure (A) depicts long run relationship. Solid lines Y and C show proportional relationship, when income grows steadily. Similarly, if income grows in spurts and dips, the response of consumption is the same. Thus, C'Y' show proportional relationship. However, show non-proportional relationship. Here we have only one cycle as compared with many.

8.3.3 Permanent Income Hypothesis

Milton Friedman draws a distinction between permanent consumption and transitory consumption. Permanent consumption stands for that part of consumer expenditure which the consumer regards as permanent and the rest is transitory. Distinction can also be made between durable and non-durable consumer goods. Durable consumption is concerned with purchasing capital assets and in the case of non-durable goods the act of consumption destroys the goods. Ordinary consumer expenditure relates to non-durable consumption, i.e., consumption of goods which are quickly used in consumption. These are the 'flow' items since a flow of them is being continuously consumed. On the other hand, durable consumption, which relates to the purchase of capital assets, is an act of investment. They are the stock items.

The permanent income hypothesis takes into account this distinction. This hypothesis gives the relationship between permanent income and permanent

consumption and states that the ratio between the two does not merely depends on the size of the permanent income, it also depends on some other variables.

Friedman gives his permanent hypothesis in the form of three equations.

1. $Y = Yp+Yt$

2. $C= Cp +Ct$

3. $Cp= k(I,w,u)\ Yp$

Here Y stands for income, Yp is permanent income, Yt is transitory income. Similarly, C stands for consumption; therefore, Cp is permanent consumption and Ct is transitory consumption.

Equation No. (1) means that total income Y is made up of permanent income Yp and transitory income Yt, and equation No. (2) means that total consumption C is equal to permanent consumption Cp and transitory consumption Ct. In other words, the first two equations state that both income and consumption are made up of permanent and transitory elements.

Equation 3 gives the permanent income hypothesis. Look at equation 3 again. As mentioned already it gives the relationship between permanent income and permanent consumption. It gives the variables on which the ratio between the two depends. These variables are interest (i); the relationship between the income from his property and that from his own abilities and efforts (w); and the preference of the consumer for immediate or transitory consumption as distinguished from addition to his wealth, i.e., permanent consumption (u).

Thus equation (3) means that permanent consumption Cp is a function of (a) the rate of interest (b) rates of consumer's income from property and his personal effort, i.e., human and non-human wealth (w) and (c) his preference for immediate consumption (u) multiplied by permanent income Yp.

Actually, it is the size of income rather than the rate of interest which determines consumption. As for the second element, viz., human and non-human wealth, statistical evidence suggests that the size of consumption expenditure depends a great deal on the value of consumer's assets. A consumer, who has considerable income from his assets, is likely to spend more on consumption and save a smaller

proportion of his income than one who has no assets at all but desires to have them. This shows the importance of (u) in equation (3).

Permanent income is derived both from human and non-human capital of the consumer. The permanent income hypothesis really emphasizes the important role of capital assets or wealth in determining the size of consumption. It shows how both income and consumption are closely linked with the consumer's wealth. It is capital and wealth (both human and non-human) which affects the level of consumption rather consumer's income.

Implications

The permanent-income hypothesis solves the consumption puzzle by suggesting that the standard Keynesian consumption function uses the wrong variable. According to the permanent-income hypothesis, consumption depends on permanent income Y^p ; yet many studies of the consumption function try to relate consumption to current income Y. Friedman's hypothesis implies for the average propensity to consume divide both sides of his consumption function by Y to obtain

$$APC = C/Y = \alpha Y^P / Y$$

According to the permanent-income hypothesis, the average propensity to consume depends on the ratio of permanent income to current income. When current income temporarily rises above permanent income, the average propensity to consume temporarily falls; when current income temporarily falls below permanent income, the average propensity to consume temporarily rises.

8.3.4 Life Cycle Hypothesis

There is another approach to consumer expenditure. It is said that consumption function is affected more by consumer's whole life income rather than his current income. This view has been put forward by Franco Modigliani, Richard Brumberg and Albert Ando in the 1950s. The permanent income hypothesis focuses attention on the income of the consumer earned in recent past as well as expected future earnings (and wealth). But the 'Life Cycle' hypothesis makes the consumption function depend upon consumer's whole life income. In childhood, the consumer earns nothing but spends all the same (his parents spend on him); in the middle age, when he comes to have a family, he earns and spends. But he will be earning more than he spends. He tries to

save enough to maintain himself in his old age when he will not be able to earn to earn much. Over his life span, the consumer tries to maintain a certain uniform standard and with that end in view he organizes whole life's uneven income flows of cash receipts. In other words, he will arrange his income and expenditure in such a manner as to maintain a certain standard of living which he desires.

If all individuals forming the community earn just enough to maintain their standard of living till the end of their life, such a community will have no net savings. But since nobody can say precisely when he would die it will not be possible for people just to balance their income and expenditure. Hence it is very likely that people will leave some saving at their death. Most people consciously want to leave some money for their heirs. Hence, over life time, people will earn more than they spend and savings is inevitable. The amount of net savings of the community will depend on the growth of population, their age –structure, on income and the amount they desire to leave to their heirs.

Thus, the life cycle theory links the net saving of the community to the growth rate of population and to the rate of increase in incomes. When in a country population is increasing and people are earning to spend, at any moment of time there will be net saving. Net savings will go on increasing as time passes; there will be more saving in each year than in the previous year. If people are better off than their parents, as is usually the case, more saving will be effected.

The 'Life Cycle' hypothesis seems to be quite realistic and plausible. It may be noted, however, that this hypothesis emphasizes income as derived from wealth more than cash receipts. It also draws our attention to the fact that consumers have to make a choice between immediate consumption and accumulating of assets for future use. Thus, economic theory is progressively moving from theory of consumption of the theory of capital. In other words, the life cycle hypothesis brings out the fact that consumers build up capital stock which they might hold in cash or invest in various ways and a part of the consumer's stock invested is in durables. It is clear that the theory of consumption function in future is likely to be firmly linked to capital theory. The consumer are keen to build up a stock of capital assets of a certain size which they consider appropriate to their level of income.

Implications

According to the life-cycle model of consumer behviuor can solve the consumption puzzle. According to the life-cycle consumption function, the average propensity to consume is

$$C/Y = \alpha (W/Y) + \beta$$

Because wealth does not vary proportionately with income from person to person or from year to, we should find that high income corresponds to a low average propensity to consume when looking at data across individuals or over short periods of time. But, over long periods of time, wealth and income grow together, resulting in a constant ratio W/Y and thus a constant average propensity to consume.

8.4. Summary

From the above text we have to understand absolute income theory reveals that the average propensity to consume goes down as the absolute level of income goes up. The relative income hypothesis states that the consumption expenditure does not depend on the absolute level of income but instead on the relative level of income. The permanent income hypothesis gives the relationship between permanent income and permanent consumption and states that the ratio between the two does not merely depends on the size of the permanent income; it also depends on some other variables. ' Life Cycle' hypothesis makes the consumption function depend upon consumer's whole life income.

8.5. In text questions

1. Explain different theories of consumption function.
2. Examine absolute income theory and relative income hypothesis.
3. Distinguish between permanent income hypothesis and life cycle hypothesis.
4. Examine permanent income hypothesis.
5. Explain life cycle hypothesis.

8.6. Key Words

Absolute Income Theory, Relative Income Hypothesis, Permanent Income Hypothesis, Life Cycle Hypothesis

LESSON-9

MARGINAL EFFICIENCY OF CAPITAL AND MARGINAL EFFICIENCY OF INVESTMENT

9.1.Introduction

This chapter is deals with marginal efficiency of capital and marginal efficiency of investment by Keynesian theory means the net addition to the stock of capital goods like machinery, equipments etc. It also includes inventories investment in this sense does not mean the total stock of capital goods in existence but the net addition in a certain period.

9.2.Objectives

- To examine theory of investment
- To analyse savings and investment equality
- To examine stock of capital and rate of investment

9.3.Content

9.3.1 Theory of Investment

9.3.2 Importance

9.3.3 Savings and Investment Equality

9.3.4 Investment Function

9.3.5 Autonomous Investment

9.3.6 Theory of Investment

9.3.7 Stock of capital and Rate of Investment

9.3.1 Theory of Investment

Types of Investment

There are various type of investment induced investment, autonomous investment, private investment, public investment, foreign investments. Induced investment is a function of income. It is undertaken to produce a larger output of existing commodities. As in come in an economy increases people demand more goods and necessity to meet the increased demand is known induced investment.

Autonomous investment results from independent forces. It is not affected variation in output and income. The private investment is mainly made by the private sector, and depends of MEC and rate of interest. On the other hand public investment is made by the public sector and it is not guided by the profit motive and is done in the interest of the entire economy. Foreign investment is the money invested by the people living in other countries.

9.3.2 Importance

Investment affects the working of the economy. According to Keynes the level of national income and expenditure depends upon effective demand. Effective demand in turn depends on investment and consumption. It is investment which causes changes in the level of income and employment. Employment cannot increase unless investment increases. This is the importance for investment. In Keynesian analysis aggregate investment-aggregate savings.

9.3.3 Savings and Investment Equality

Prior to Keynes' classical Economics also propagated that savings are equal to investment. But their analysis was different from Keynesian analysis. Classical economists were of the opinion that equality between savings and investment is brought by interest rate fluctuations. But to Keynes it is brought through changes in the level of national income. This savings and investment equality is an important notion in macro economic equilibrium. In fact it is an indispensable condition of equilibrium.

The classical visualized the equality between savings and investment at the point of full employment. But Keynes pointed out the possibility that savings and investment could normally be equal other at even less than full employment level.

Savings and investment equality can be explained in two ways (1) Accounting or logical identity (2) functional equality Logical identity between savings and investment is brought out in the following manner.

1. Accounting or logical identity

At any point of time an economic output is equal to consumption goods and investment goods (1).

O = C + I. We also know that income is also equal to consumption and savings Y = C + S, N.I. = National output at any point of time i.e. O = Ym or C + I = C+S therefore S = I.

But this logical identity has some defects. It does into explain the causal factors that determine the level of S.I.Y and C. Further it can be seen how S and I equality is brought out a change in equilibrium. In short, accounting equality is only a static approach.

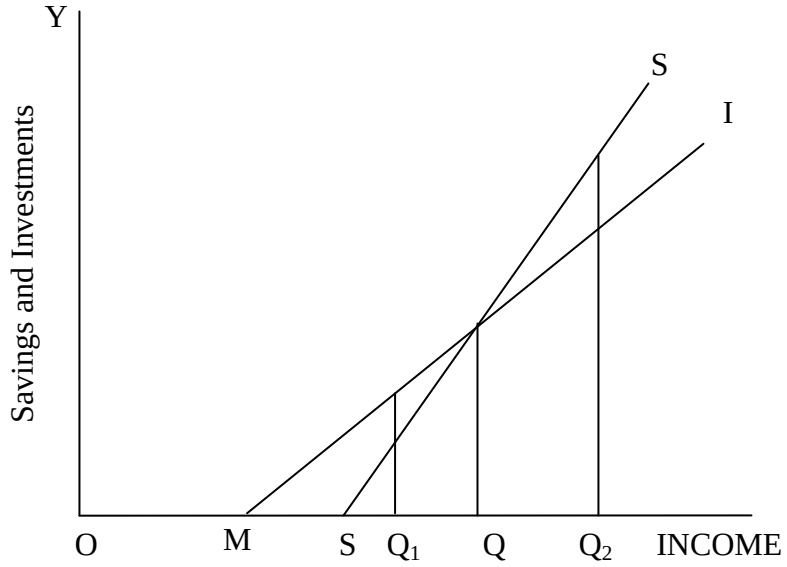


Figure 9.1

2. Functional Equality

Functional equality between savings and investment make full reference to the level of income and to the concept of equilibrium. It explains the actual process by which S and I equality is brought out. It can be explained with the help of a diagram.

Point P refers to the equilibrium level where S = I. QQ is the equilibrium level of income. When income is OQ1 investment is Q1 P1 savings is K1Q1. Therefore investment is greater than savings. So the income level increases due to the multiplier effect till it reaches OQ level where S = I. Suppose if the income level is OQY the savings is P2 Q2 and investment is K2 Q2 i.e. investment is less than savings. Therefore income begins to decline till it comes to OQ level. According to Keynes the economy is in disequilibrium when either S is excess of I or I is excess of S. It should

be remembered that the functional equality of S and I provides as the dynamic approach to the problem. Hence it is superior to the accounting approach.

Keynes explained that the mere act of investment does not immediately lead to increase in savings. Along with the increase in investment a number of events follows. When investment increase initially business activity increase. Due to this, more people are employed in the capital goods industries. Their income goes up and consumption too. As a result employment increases in consumption goods industries and at each level the increase result in higher savings.

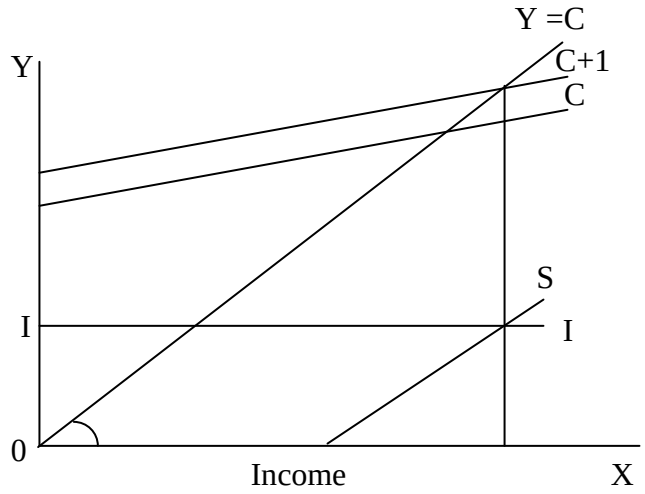


Figure 9.2

Savings and investment equality is an important aspect of macro economic equilibrium. The C and I line intersecting the 45° line is the same as saving line intersecting the investment line.

9.3.4 Investment Function

The level of output, income and employment in an economy depends on effective demand. Effective demand in turn depends on consumption and investment. As consumption depends mainly on MPC which is more or less stable greater importance is given only to investment function. Fluctuation in effective demand occur mainly due to fluctuations in investment. Thus investment plays an important role in determining, the level of income, output and employment.

Investment means real investment i.e. Investment in the building of new machines, new factories, buildings, roads and other form of productive activities in the

economy. It does not include the purchase of existing stocks, shares and securities. Real investment will lead to an increase in the demand for human resources leading to an increase in employment as already stated.

Investment may be private of public, induced or autonomous, extant and expost, replacement and it may be gross and net also.

Gross investment refers to the total real investment. But part of the new capital is actually a replacement of the capital depreciated. Hence the amount should be deducted from the gross investment. The remaining amount denotes the net investment is the part is gross investment which represents the net additions to the total existing capital in the economy.

Replacement investment refers to the investment the is necessary for replacing the depreciated machinery. When the MPC increases the capital equipment will be over worked so as to produce goods to meet the increased demand and as such as the capital will wear out quickly. So some amount of money should be invested to replace the wear out machinery with new ones. So replacement investment is the function of current rate of consumption.

Investment which depends directly upon income is known as induced investment. Entrepreneurs take up investment. Programmes when the economy is busy with business activity. They will be encouraged when sales of goods are going up and profits increase. Given the MPC an increase in income will lead to an expansion in aggregate demand and it will lead to an increase in investment. This is called induced investment which increases or decreases with an increase or decrease in the level of income. Therefore induced investment is income elastic.

9.3.5 Autonomous Investment

Autonomous investment is independent of income. It will take place as a result of changes in factors like public policy, innovation change in the population etc.

Normally investment will be private as they are taken up by the private people with profit motive. Government investment in public utilities like construction of roads, railways post and telegraphs etc will be of the nature of public investment. Welfare motive stands behind public investment.

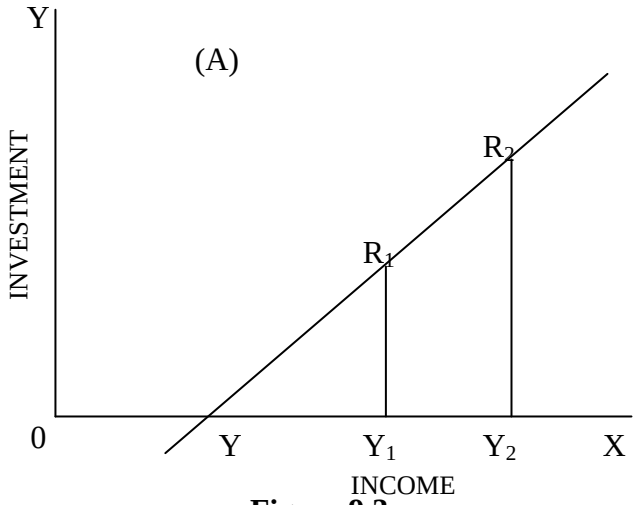


Figure 9.3

The induced investment which income elastic and the autonomous investment which income inelastic are depicted.

Figure 9. 3 shows a shows induced investment at various levels of income. At OY_2 level of income induced investment is R_2 Y_2 when Income is OY_2 the induced investment is R_1 Y_1. When income falls to OY investment falls to zero. Thus larger the income greater is the investment.

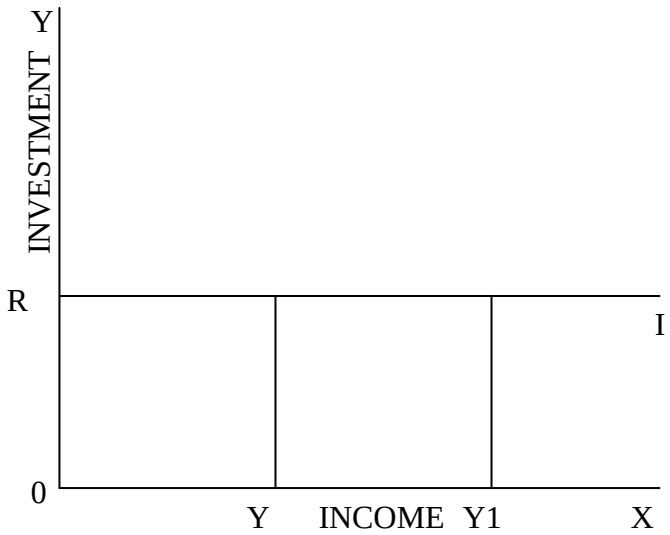


Figure 9.4

Figure 9.4 illustrate autonomous investment which is constant at different levels of income. At any given time the aggregate investment will be total of induced and autonomous investment.

Private investment depends on MEC. But the classical economists regarded it as dependent on rate of interest. That is why they relied on the interest to control fluctuations. But Keynes believed that investment depended on MEC than on rate of interest. MEC is the villain of peace against which investment rates changes often.

Factors influencing investment are summarized as follows:

I. Endogenous (or) internal factors

1. The level of income or rate of change of income.
2. The level and the trend or rate of consumer demand.
3. The existing stock of capital, especially fixed capital.
4. The price of factors of production.
5. The level of stock exchange activity.

II. Exogenous (or) external factors

1. Technological change.
2. Population growth.
3. Natural resources.
4. Investment rate.
5. Government policies –fiscal and monetary.
6. Political stability.
7. War versus peace conditions.
8. Labour movement.

III. Cultural and institutional Factors

1. Attitudes towards risk, profits success, capital accumulation and power.
2. Consumer psychology.
3. Socio-legal institutions.
4. Religious institutions
5. Education on the Population.
6. Attitudes towards thrift.

9.3.6 Theory of Investment

According to Keynes, investment can be broadly classified into two types namely gross investment and net investments. Gross investment refers to the stock of capital that is available during a period of time. Net investment should be understood to mean only an addition to the stock of capital. In other words net investment i.e. equal to gross investment minus deprecation changes.

All else being equal, an addition to the stock of capital increases the productive capacity of the economy. This must be the result when a large physical stock of capital is available for use with an existing labour force, natural resources and technology which are assumed as constant factors. But in actual practice we do not find the presence of these constant elements. In fact productive capacity increase with increasing labour force and technological improvement.

A business man will invest an amount of capital in the exception that it will be profitable for him. The decision to invest depends upon the inter relationship among three elements namely (1) the expected income flow from the capital good in question (2) the purchase price of the machinery and (3) the rate of interest.

Of course, there is an element of uncertainly which prevails in all these Factors because (1) the expected income flow from the capital goods depends upon the durability of capital good (2) the purchase price of the machine differs from one period to another period because the present value is different from future value of dollars (3) there is a possibility that the rate of interest will fluctuate due to disequilibrium between the demand for and supply of money.

To trace through the basic relationship among the three elements involved in the investment decision. Let us for the moment ignore the matter of uncertainty. Suppose the management estimates that a particular machine has a life period of five years. Now the Gross income is equal to the estimated marginal physical productivity (MPP) multiplied by the price per unit. However in producing the output and selling the additional output, extra raw materials power, adversting and labour will probably be required. When we subtract these types of cost from the gross income, we will get net income figures for the five years make up a series of figures that may be designated as R1, R2, R3, R4 and R5.

Suppose the sum of R1, R2, R3, R4 and R5 exceeds the cost of the machinery, can this excess be treated as profit? It can not be treated as profit because (1) income will trickle over a period of time (2) we have not made any allowance for replacement requirement (3) the present value of the dollar is different from future value of dollar. As a general rule, investment is profitable only when the rate of return expected from the capital good exceeds the current rate of interest. Here comes the importance of marginal efficiency of capital.

MEC: It is clear that investment expenditure cannot be separated from profitability. The entrepreneur under-takes investment expenditure in the hope that will be profitable. He therefore views an item of capital asset as a stream of expected income. Keynes calls it as series of prospective returns. But this alone is not enough to decide whether investment is profitable. The cost of capital good has also be taken into account, Keynes called the cost of capital good as the supply price the supply price of capital yields a prospective profit. It is this relationship between the prospective yield and the supply price of capital asset which has been called as MEC by Keynes. Keynes defines the term MEC as being equal to that rate of discount which would make the present value of the series of return excepted from the capital asset during its life just equal to its supply price.

In terms of equation

$$C = \frac{R1}{1+1} + \frac{R2}{(1+i)2} \ldots - + \frac{Rn}{(1+i)1}$$

Where I MEC C- purchase price of the machine, R1, R2.. Rn expected income flow from machine. By comparing the MEC with the rate of interest 'r' one can say whether the contemplated investment promises to be profitable or unprofitable. Investment is profitable so long as MEC exceeds the rate of interest. Investment is unprofitable when the rate of interest exceeds the MEC, when r=MEC, it is wise form the entrepreneur to stop incurring additional expenditure.

9.3.7 Stock of capital and Rate of Investment

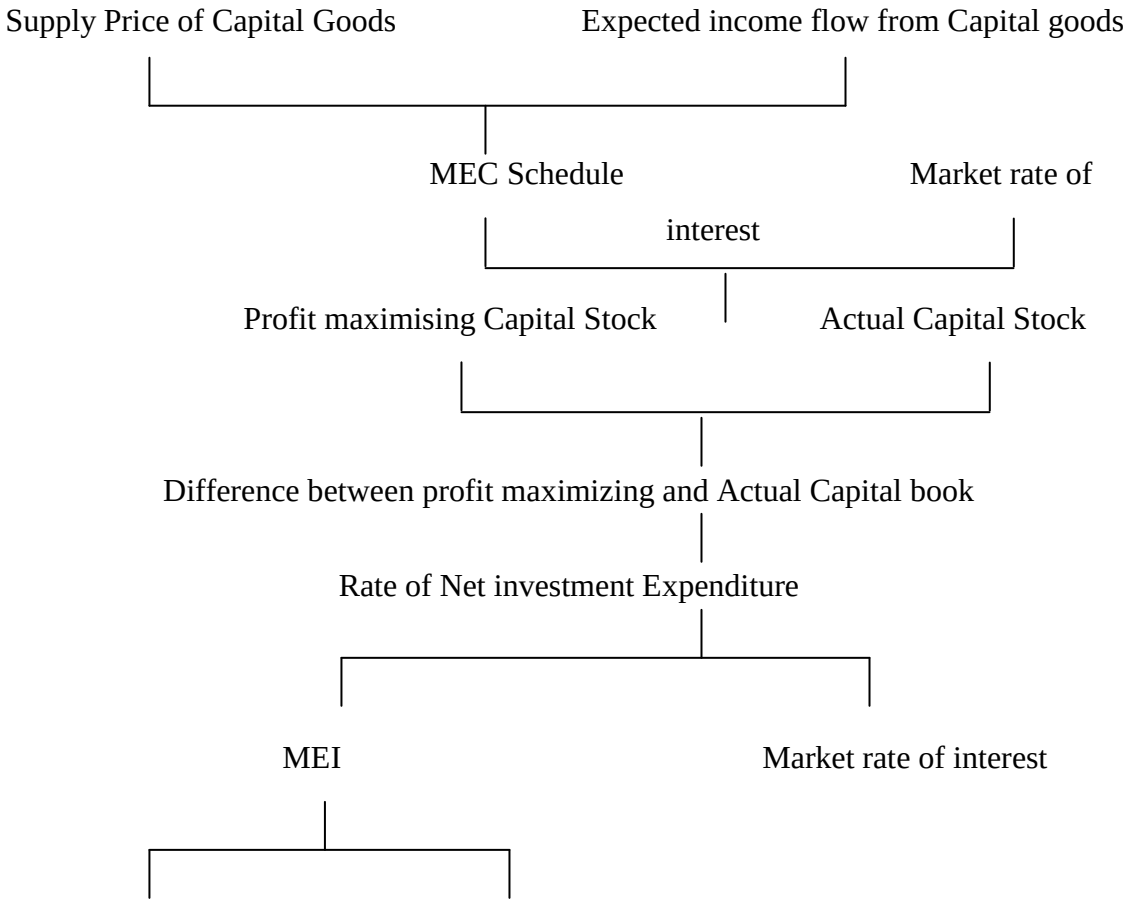
Keynes in this theory of investment explains clearly the basis relationship between the flow called investment and stock called capital. The process of capital accumulation due to fall in the rate of interest may be shown as follows.

Figure explains the level of investment as determined by the rate of interest 6% and the capital stock would be 400. The actual capital stock is equal to the profit maximizing capital stock. Because MEC = r. Now suppose the rate of interest falls to 3% due to an action of the monitory authorities. The actual capital stock is 400 now but the rate of interest being 3% MEC would be 3% only for the capital stock of 480. That is 480 is the profit maximizing stock of capital. The profit maximizing stock of capital is higher than the actual capital stock by 80. Thus net investment would take place so long as profit maximizing stock exceeds the capital stock which is determined by the values of 'r' and MEC. This is the essence of Keynesian theory of investment.

But will this investment be instantaneous or take some time to be effective? In short there are other considerations which decide the rate of investment (e.g.) when extra capital stock 80 is added the capital goods industry supplying this capital is facing the Marginal Efficiency of Investment (MEI) represented by MEIa. When the rate of interest falls to 3% capital goods industry is at the equilibrium position at the point J. Hence for the first period, it can supply an extra 30 capital stock besides 40 for replacement. This 30 is added to original 400 makes the actual capital stock 430 which is short of profit maximizing stock of capital 480 for a given 'r' 3%. So they order for 50. Therefore the capital goods industry faces a downward shift of MEI curve whose starting point is 5% MEIb curve shows this now for 3% interest, equilibrium is at L and capital goods industry supplies 30 capital stock for the second period. So 20 stocks are added to existing 430 making it 450 still the actual capital stock falls short of profit maximizing stock 480. So they order about 30 extra capital stock. This will shift down the MEI curve to MEIc in the capital goods industry and for the third period, it supplies only 10 capital stock. This process goes on till the actual capital stock equals to the profit maximizing stock at 3% interest rate. Thus in Keynesisan theory of investment, that for a given decrease in rate of interest, net investment will grow up. We may now say with the title modification that the investment does go up for a given fall in interest rate but the net addition to the stock of capital comes only in stages depending upon the capacity of capital goods industry.

Thus there is possibility of profit maximizing stock being more than the actual stock that brings about net investment. This depend upon the MEC schedule and the market rate of interest.

The following chart presents the various factors we have introduced so for in Keynesian theory of investment.



If there is a change in any of these factors, it is sufficient to produce a difference between actual capital and profit maximizing capital stock. The lower point of chart gives the factors that determine the rate of net investment and the time needed to raise the actual capital stock to the profit maximizing level. For short run analysis, it is the change in the MEC schedule shifting upward or a fall the rate of interest that brings about net investment. Keynesian theory investment considers these aspects.

9.4. Summary

The text clearly concluded various type of investment such as induced investment, autonomous investment, private investment, public investment, foreign investments. The induced investment is a function of income. Keynes pointed out the possibility that savings and investment could normally be equal other at even less than full employment level. Again he pointed out the investment function is the level of

output, income and employment in an economy depends on effective demand. Finally he concluded Private investment depends on MEC.

9.5. In text questions

1. Examine theory of investment.
2. Analyse savings and investment equality.
3. Examine stock of capital and rate of investment.

9.6. Key Words

Marginal efficiency of capital, marginal efficiency of investment, induced investment, autonomous investment, private investment, public investment and foreign investment.

LESSON-10

THE CONCEPT OF MULTIPLIER

10.1 Introduction

This chapter is concerned with the definitions of multiplier. Multiplier is one of the interrelationships with marginal propensity to consume. This concept is an important theory propounded by Keynes. Prof. Goodwin says, it is on the basis of turn new economic thoughts. The concept of multiplier was first developed by R.F. Kahn. In 1921 July he wrote in his essays entitled "Relation of Home Investment to Unemployment" discussed in detail regarding multiplier. Kahn's multiplier was the Employment Multiplier. Keynes took the idea from Kahn and formulated the investment Multiplier.

10.2.Objectives

- To explain types of multiplier
- To identify assumptions of multiplier
- To examine leakages of the multiplier
- To analyse limitations of multiplier
- To analyse importance of multiplier.

10.3 Content

10.3.1 The Investment Multiplier

10.3.2 Working of the Multiplier

10.3.3 Backward Operation of the Multiplier

10.3.4 Assumptions of Multiplier

10.3.5 Leakages of Multiplier

10.3.6 Criticism of Multiplier

10.3.7 Importance of Multiplier

10.3.8 Types of Multiplier

10.3.1 The Investment Multiplier

Keynes considers his theory of multiplier s an integral part of his theory of employment. The multiplier, according to Keynes, "establishers a prices relationship given the propensity to consume, between aggregate employment and incomes and the rate of investment. It tell us that, when there is an increment of investment, income will increase by an amount which is k times the increment of investment" i.e. ρ Y = KρI. In the words of Hanse, Keynes, investment multiplier is the coefficient relating to an increment of investment to an increment of income, i.e., K= ρY/ρI, where y is income, I is investment, ρ is change (increment or decrement and K is the multiplier.

In the multiplier theory the important element is the multiplier coefficient , K which refers to the power by which any initial investment expenditure is multiplier is determined by the marginal propensity to consume. The higher the marginal propensity to consume, the higher is the value of the multiplier and vice versa. The relationship between the multiplier and the marginal propensity to consume is as follows.

$\Delta Y = \Delta C + \Delta I$

$\Delta Y = C\Delta Y + \Delta I \ (\therefore C = CY)$

$YC\Delta Y = \Delta I$

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

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

$$K = \frac{I}{I - C} \therefore K = \frac{Y}{I}$$

Since C is the marginal propensity to consume, the multiplier K is, by definition equal to I-I/C. The multiplier can also be derived from the marginal propensity to save (MPS) and it is the reciprocal of MPS, K=I/MPC

Derivation of the Multiplier

C/Δ	S/ΔY (MPS)	K (Multiplier Coefficient)
0	1	1
½	½	2
1/3	1/3	3
¾	¼	4
4/5	1/5	9
8/9	1/9	9
9/10	1/10	10
1	0	(infinity)

The table show that the size of the multiplier varies directory with the MPC and inversely with the MPC. Since the MPC is always greater than zero and less than one (i.e.O<MPC<I), the multiplier always between one and infinity (i.e., = I <K). If the multiplier is one, it means that the whole increment of income is saved and nothing is spent because the MPC is zero. On the other hand, an infinite multiplier implies that MPC is equal to one and the entire increment of income is spent on consumption. It will soon lead to full employment in the economy and then create a limitless inflationary spiral. But there are rare phenomena. Therefore, the multiplier coefficient varies between one and infinity.

10.3.2 Working of the Multiplier

The multiplier works both forward and backward. First we study its forward working.

We first take the "sequence analysis" which shows a "motion picture" or the process of income propagation. An increase in investment leads to increased production which creates income and generates consumption expenditure. This process countries in dwindling series till no further increase in income and expenditure is possible. This is a lagless instantaneous process in a static framework, as explained by Keynes.

Suppose that in an economy MPC is ½ and investment is raised by Rs. 100 cores. This will immediately spent on consumption goods which will lead to increase in production and income by the same amount and so on. The process is set out in table 11. It reveals that an increment of Rs. 100 crores of investment in the primary round leads to the same in increase in income. Of this Rs. 50 crores are saved and Rs. 50 crores are spent on consumption which go to increase in income by the same amount in the second round. This dwindling process of income generation continues in the second rounds till the total income generated form Rs. 100 crores of the multiplier formula $\Delta Y = K \Delta I$ 200 = 2 X 100 , where K =2 ($\therefore$MPC = ½) and ΔI = Rs. 100 crores. This process of income propagation as a result of increase in investment is shown diagrammatically in Figure, 10.1

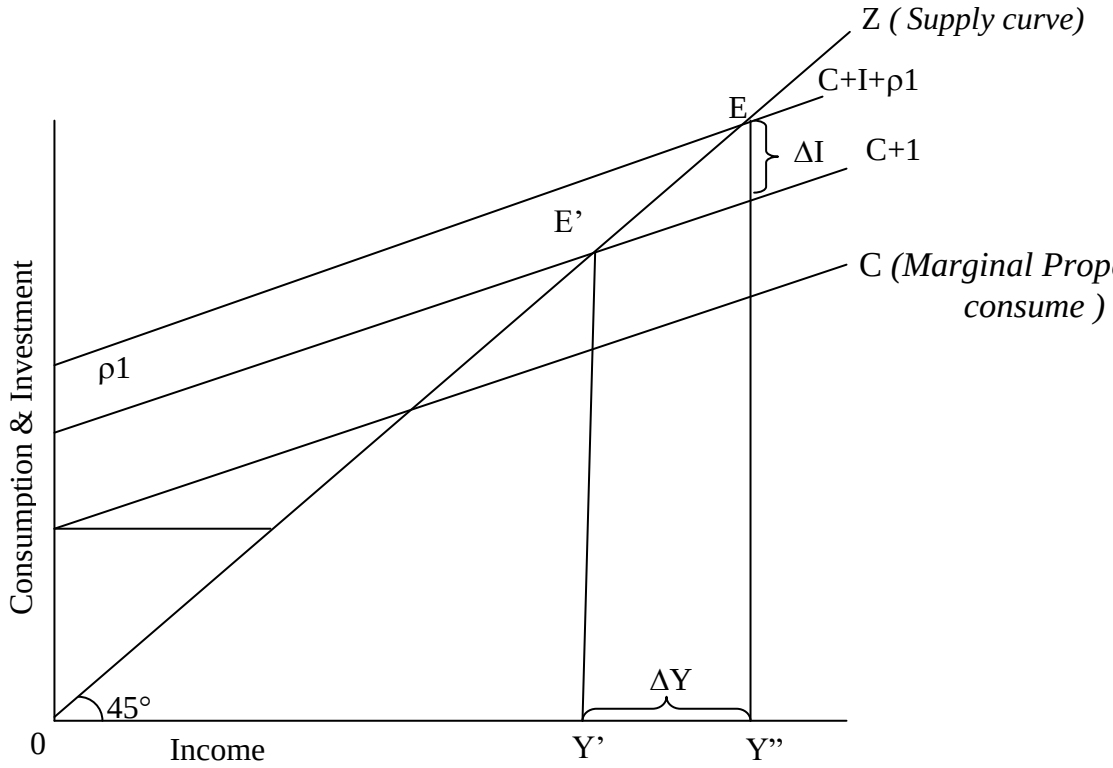


Fig. 10.1

The C curve has a slope of 0.5 to show the MPC equal one-half. C+I is the investment curve which intersects the 45 line at Economy' so that the old equilibrium level of income is OY'. Now there is an increase in investment of ΔI as shown by the distance between C+I and C+I+ΔI curves. This curve intersects the 45 line at E" to give OY' as the new income. Thus the rise in income Y' Y" as shown by ΔY is twice the distance between C+I and C+I+ΔI, since the MPC is one-half.

Sequence Multiplier

Rs. Crores

Round	ΔI (Increment in investment)	ΔY (Increment in income)	ΔC = C ΔY C= 0.5	ΔS(Y=ΔC) (Increment in saving)
0				
1	100	100	50	50
2		50	25	25
3		25	12.50	12.50
4		12.5	6.25	6.25
5		6.25	3.12	3.12
		0	0	0
Finally	100	200	100	100

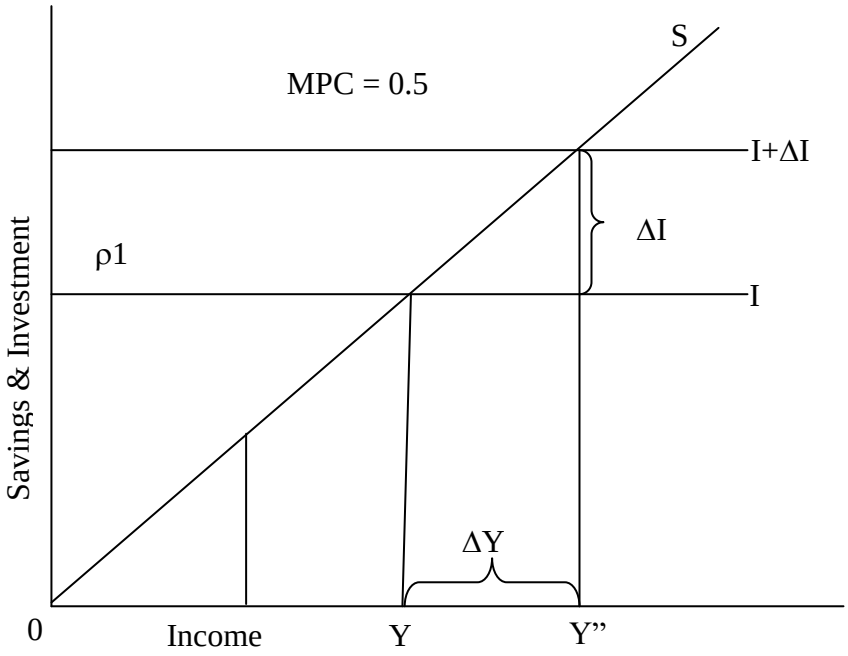


Fig. 10.2

The same results can be obtained if MPS is taken so that when income increases, savings also increase to equal the new investment at a new equilibrium level of income. This is shown in Figure 10.2. S is the saving function with a slope of 0.5 to show MPS of one-half. I is the old investment curve which cuts S at Economy' so that OY' is the old equilibrium level of income. The increase in investment ΔI is superimposed on the I curve in the shape of a new investment curve I+I which is intersected by the S curve at Economy" to give OY" as the new equilibrium level of income. The rise in income Y'Y" is exactly double the increase in investment ΔI, as the MPS is one-half.

10.3.3 Backward Operation of the Multiplier

The above analysis pertains to the forward operation of the multiplier. If however, investment decrease, instead of increasing, the multiplier operates backward. A reduction in investment will lead to contraction decline in income and consumption till the contraction in aggregate income is the multiple of the initial decrease in investment. Suppose investment decreased by Rs. 100 crores, with an MPC = declining till aggregate income is decreased by Rs. 100 crores. In terms of multiplier formula' - $\Delta Y = K(-\Delta I,)$ we get $-200 = 2(-100)$.

The magnitude of contraction due to the backward operation of the multiplier depends on the value of the multiplier and the smaller the cumulative decline in income and vice versa. Thus, a community with a high propensity to consume (or low propensity to save) will be hurt more by the reverse operation of the multiplier than one with a low propensity to consumer (or high propensity to save).

Diagrammatically, the reverse operation can be explained in terms of Figure 10.1 and 10.2, we taking Figure 10.1, when investment decreases, the investment function C +I+ ΔI shifts downward to C+I. As a result, the equilibrium level also shifts from E" to E' and income declines from OY" to OY". The MPC being 0.5, the fall in income Y"Y' is exactly double the decline in investment as shown by the distance between C+I +ΔI and C+I. Similarly, in Figure10.2. When investment falls, the investment function I+I shifts downward as I curve and income decreases from OY' to OY". The MPS being 0.5 the decreases in income Y" Y' is double the decline in investment as measured by the distance between I + ΔI and I curves.

10.3.4 Assumptions of Multiplier

Keynes' theory of the multiplier works under certain assumptions which limit the operation of the multiplier. They are as follows:

1. There is change in autonomous investment and that induced investment is absent.
2. The marginal propensity to consume is constant
3. Consumption is a function of current income.
4. There are no time lags in the multiplier process. An increased (decrease) in investment instantaneously lead. To a multiple increase (decrease) in income.
5. The new level of investment is maintained steadily for the completion of the multiplier process.
6. There is net increase in investment.
7. Consumer goods are available in response to effective demand for them with the increase in income due to an increase in investment.
8. There is surplus capacity in consumer good industries to meet the increased demand for consumer goods in response to a rise in income following increased investment.
9. Other resources of production are also easily available within the economy.
10. There is an industrialized economy in which the multiplier process operates.
11. There is a closed economy unaffected by foreign influences.
12. There are no changes in prices.
13. The accelerator effect of consumption on investment is ignored.
14. There is less than full employment level in the economy.

10.3.5 Leakages of Multiplier

Leakages are the potential diversion from the income stream which tends to weaken the multiplier effect of new investment. Given the marginal propensity to consume, the increase in income in each round declines due to leakages in the income

stream and ultimately the process of income propagation. "peters out". (see Table 10.2).

The following are the Important Leakages

1. Savings is the most important leakage of the multiplier process. Thus the higher the marginal propensity to save, the smaller the size of the multiplier and the greater the amount of leakage out of the income stream, and vice vesa, for instance. If MPS = 1/6, the multiplier is 6 according to the formula K= 1/MPS; and the MPS of 1,3 gives a multiplier of 3.
2. Strong Liquidity Preference if people prefer to hoard the increased income in the form of idle cash balances to satisfy a strong liquidity preference for the transaction, precautionary and speculative motives, that will act as a leakage out of the income stream. As income increases people will hoard money in inactive bank deposits and the multiplier process is checked.
3. Purchase of old stocks and securities. If a part of the increased income is used in buying old stocks and securities instead of consumer goods, the consumption expenditure will fall and its cumulative effect on income will be less than before. In other words, the size of the multiplier will fall with a fall in consumption expenditure when people buy old stocks and arrested.
4. Debt cancellation. If a part of increased income is used to repay debts to bank, instead of spending it for further consumption that part of the income peters out of the income stream. In case, this part of the increased income is rapid to other creditors who save or hoard it, the multiplier process will be arrested.
5. Net Imports: If increased income is spent on the purchase of imported goods it acts as a leakage out of the domestic income stream. Such expenditure fails to effect the consumption of domestic goods. This argument can be extended to net imports when there is an excess imports over exports there by causing a net outflow of funds to other countries.
6. Price Inflation: When increased investment leads to price inflation, the multiplier effect of increased income may be dissipated on higher prices. A rise in prices and the real consumption and income fall. Thus price inflation

is an consumption on higher prices rather than in increasing output and employment.

7. Undistributed Profits: If profits accruing to joint stock companies are not distributed to the shareholders is the form of dividend but are kept in the reverse fund, it is a leakage from the income stream. Undistributed profits with the companies tend to reduce the income and hence further expenditure on consumption goods thereby weakening the multiplier process.
8. Taxation. Taxation policy is also an important factor in weakening the multiplier process. Progressive taxes have the effect of lowering the disposable income of the taxpayers and reducing their consumption expenditure. Similarly commodity taxation tends to raise the prices of goods and a part of increased income may be dissipated on stream and lowers the size of the multiplier.
9. Excess Stocks of consumption Goods. If the increased demand for consumption goods is met from the existing excess stocks of consumption goods there will be no further increase in output, employment and income and the multiplier process will come to a halt till the old stocks are exhausted.
10. Public investment programmes. If the increase in income as result of increase in investment is affected by public expenditures, it may fail to induce private enterprise to spend that income for further investment due to the following reasons.
    a. Public investment programmes may raise the demand for labour and materials leading to a rise in the costs of construction so as to make the understanding of some private projects unprofitable.
    b. Government borrowing may, if not, accompanied by a sufficiently liberal credit policy on the part of the monetary authority, increase the rate of interest and thus discourage private investment.
    c. Government operations may also injure private investors, confidence by arousing animosity or fears of nationalization.

10.3.6 Criticism of Multiplier

The multiplier theory has been severely criticized by the Post-Keynesian economists on the following grounds.

(1) Prof. Haberker has critisied Keynes' multiplier as tautological. It is a truism. Which defines the multiplier as necessarily true as.

$K = \frac{1}{1 - \frac{\Delta C}{\Delta Y}}$ As pointed by Professor Hansen, such a Co-efficient is a mere arithmetic.

Multiplier (i.e. a truism) and not a true behaviour multiplier based on a behaviour pattern which establishes a verifiable relation between consumption and income. A mere arithmetic multiplier.

$\frac{1}{1 - \frac{\Delta C}{\Delta Y}}$ is tautological

(2) Keynes' logical theory of the multiplier is an instantaneous process without time la. It is a timeless static equilibrium analysis in which the total effect of a change in investment of income is instantaneous so that consumption goods are produced simultaneously and consumption expenditure is also incurred instantaneously. But this is not borne out by facts because time lag is always involved between the receipt of income and its expenditure on consumption goods and also in producing consumption goods. Thus "the timeless multiplier analysis disregards the transition and deals only with the new equilibrium income level" and is therefore unrealistic.

(3) According to Hazlitt, the Keynesian multiplier "is a strange concept about which some Keynesians make more fuss than about anything else in the keynesian system. It is a myth for there can never be precise, predeterminable or mechanical relationship between investment and income". Thus he regards it as "a worthless theoretical toy".

(4) One of the weaknesses of the multiplier theory is that it studies the effects of investment on income through changes in consumption expenditure. But

it ignores the effect of consumption on investment which is known as the acceleration principle. Hicks Samuelson and others have shown that is the interaction of the multiplier and the accelerator which helps in controlling business fluctuations.

(5) Gorden points out that the greatest weakness of the multiplier concept is its exclusive emphasis on consumption. He favours the use of the term 'marginal propensity to spend' in place of marginal propensity to consume to make the concept more realistic. He also objects to the constancy of the marginal propensity to spend (or consume) because in a dynamic economy, it is not likely to remain constant. If it is assumed to be constant, it is not possible "to predict with much accuracy the multiplying effect over the cycle of a given increase in private investment or public spending".

(6) Keynes, multiplier theory established a linear relation between consumption and income with the hypothesis that the MPC is less than one and greater than zero. Empirical studies of the behaviours of consumption in relation to income show that the relationship between the two is complicated and non-linear. As pointed out by Gardner Ackley, "the relationship does not run simply from current income to current consumption, but rather involves some complex average of past and excepted income and consumption. There are other factors than income to consider".

Other economics have not been lagging behind in their criticism of the multiplier concept. Prof. Hart considers it "a useless fifth wheel". To stigler, it is the fuzziest part of the Keynes's theory. While Hault calls it a "rubbish apparatus" which should be expunged from text books.

But despite its scathing criticism, the multiplier principle has considerable practical applicability to economic problems are below.

10.3.7 Importance of Multiplier

The concept of multiplier is one of the important contributions of keynes', the income and employment theory. As apply observed by Richard Goodwin, "Lord Keynes did not discover the multiplier; that honour goes to Mr. R.F. Kahn. But he gave it the role it plays today by transforming it from an instrument for the analysis of road

building into one for the analysis of income building. It set a fresh wind blowing through the structure of economic thought". Its importance lies in the following:

1. **Investment:** The multiplier theory highlights the importance of investment in income and employment theory. Since the consumption function is stable during the short-run fluctuations in income and employment are due to fluctuations in the rate of investment. A fall in investment leads to a cumulative decline in income and employment by the importance of investment and explains the process of income propagation.

2. **Trade Cycle:** As a corollary to the above, when there are fluctuations in the rate of income and employment due to variations in the rate of investment, the multiplier process throws a spotlight on the different phases of the trade cycle. When there is a fall in investment, income and employment decline in a cumulative manner leading to recession and ultimately to depression. On the contrary, an increase in investment leads to revival and is this process continues to a boom. Thus the multiplier is regarded as an indispensable tool in trade cycles.

3. **Saving investment equality.** It also helps in bringing the equality between saving and investment. If there is a divergence between saving and investment, an increase in investment leads to rise in income via the multiplier process by more than the increase in initial investment. As a result of the increase in income, saving also increases and equals investment.

4. **Formulation of economic policies.** The multiplier is an important tool in the hands of modern states in formulating economic policies. Thus this principle presupposes state intervention in economic affairs.

a) **To achieve full employment.** The state decides upon the amount of investment to be injected into the economy to remove unemployment and achieve full employment. As initial increase in investment leads to the rise in income and employment by the multiplier time the increase in investment. If a single does of investment is insufficient to bring full employment, the state can inject regular doses of investment for this purpose till the full employment level is reached.

b) **To control trade cycles.** The state can control booms and depressions in a trade cycle on the basis of the multiplier effect on income and employment. When the economy is experiencing inflationary pressures the state can control them by a reduction in investment which leads for a cumulative decline in income and employment via the multiplier process. On the other hand, in a deflationary situation and increase in investment can help increase the level of income and employment through the multiplier process.

c) **Deficit financing.** The multiplier principle highlights the importance of deficit budgeting. In a state of depression cheap money policy of lowering the rate of interest is not helpful because the marginal efficiency of capital is so low that a low rate of interest fails to encourage private investment. In such a situation, increased public expenditure through public investment programmes by creating a budget deficit helps in increasing income and employment by multiplier time the increase in investment.

d) **Public investment .** The above discussion reveals the importance of the multiplier in public investment policy. Public investment refer to the state expenditure on public works and other works meant to increase public welfare. It is autonomous and is free from profit motive. It therefore, applies with greater force in overcoming inflationary and deflationary pressures in the economy and in achieving and maintaining full employment.

10.3.8 Types of Multiplier

1. Employment Multiplier
2. Foreign Trade Multiplier
3. Static Multiplier
4. Dynamic Multiplier
5. Super Multiplier
6. The Balanced Budget Multiplier

1. The Employment Multiplier

The concept of employment multiplier was introduced by R.F. Kahn in 1931 as a ratio between the total increase in employment and primary employment. i.e. k1 =

ρN / ρN1 Where K1 stands for the employment multiplier ρN1 for the increase in primary employment. Thus the "employment multiplier is a coefficient relating to an increment or primary and secondary combined. To illustrate it, suppose 2,00, 000 additional men are employed in public works so that the (secondary) employment increased by 4,00,000. The total employment is increased by 6,00,000 = 2,00,000 primary + 4,00,000 secondary). The employment multiplier would be 6,00, 000/6,00,000/2,00,000 =3.

Algebraically the Keynesian multiplier $\rho Y = K\rho I$ is analogous to Kahn's multiplier $\rho N = K \rho N_1$. But Keynes points out that there is no reason in general to suppose that $K = K_1$ because income in terms of wage units may rise more than employment, if in the process, non wage earner's income should rise proportionately more than wage earners income. Moreover, with decreasing return, total product would rise proportionately less than employment. In short, income in terms of wage units would rise-most, employment next and output the least. Still according to Hansen in the short-run, all three would trend to rises fall together as envisaged by the Keynesian income and employment theory. He concludes that thus for practical purpose we do no great violence to the facts if we assume that the employment multiplier K_1 equals the investment multiplier K.

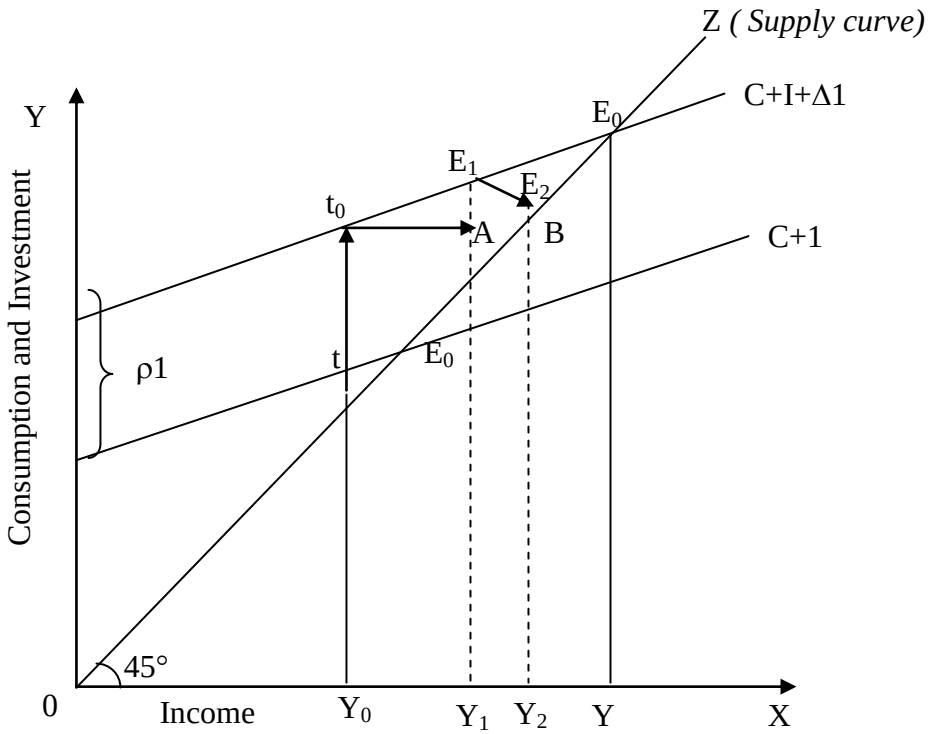


Fig. 10.3

If, however, output increases towards the full employment output, per unit of labour will fall due to decreasing returns. In such a situation, K1 is larger than K when the multiplier is working to increase output and employment. But is K1 smaller than K if the multiplier is working in the opposite direction.

Dillard points out the employment multiplier is useful for showing the relation between primary and secondary employment from public works. (But keynes' conception is superior to Kahn's for in the works godwin, "he gave it the role it plays today the transforming it from an instrument for the analysis of income building".)

2. Foreign Trade Multiplier

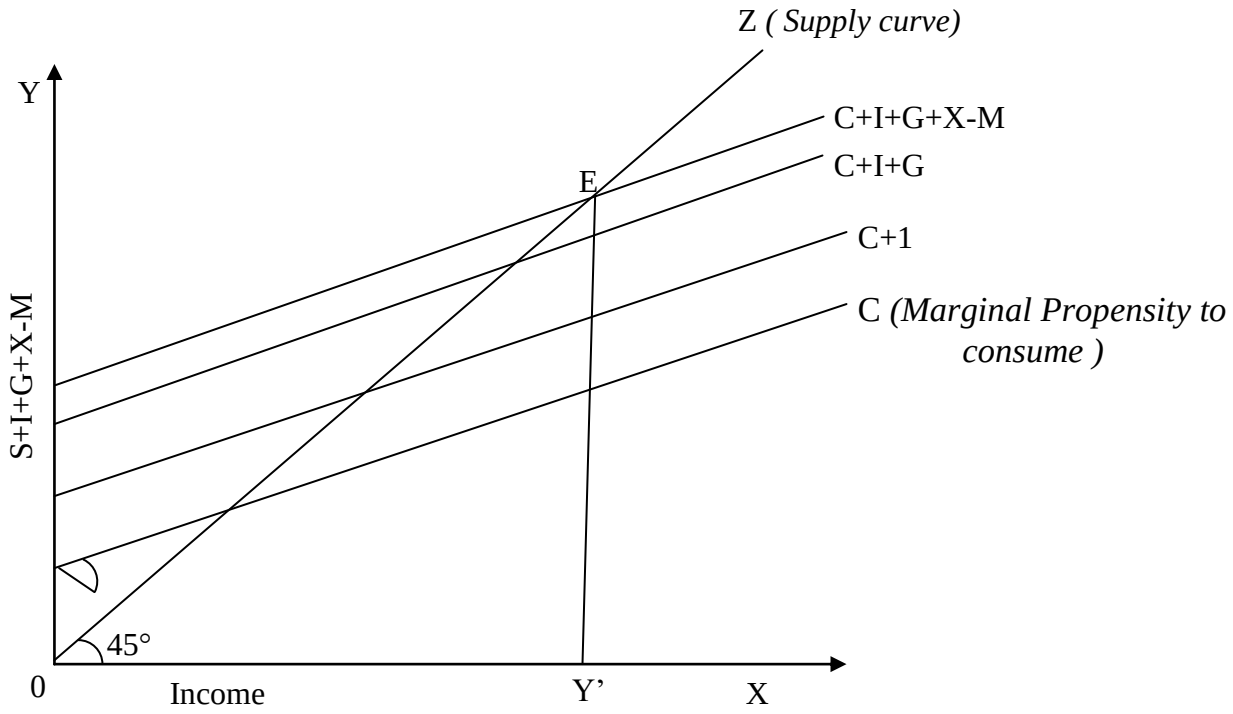


Fig. 10.4

The foreign trade multiplier, also known as the export multiplier, operates like the investment multiplier or Keynes. As exports increase, there is an increase in the income of all persons associated with the export industries. These, in turn credit demand for goods. But this is dependent upon their marginal propensity to import. The smaller these two marginal propensities, the larger will be the value of the multiplier and vice versa. The foreign trade multiplier process can be explained like this. Suppose the exporters will sell their products to foreign countries and receive more incomes. In order to meet the foreign demand, they will enage more factors of

production to produce more. This will raise the income of the owner of factors of production. This process will continue and the national income increases by the value of the multiplier. The value of the multiplier depends on the value of the marginal propensity to save and the marginal propensity to import, there being an inverse relation between the two propensities and the export multiplier.

The foreign trade multiplier can be derived algebraically as follows:

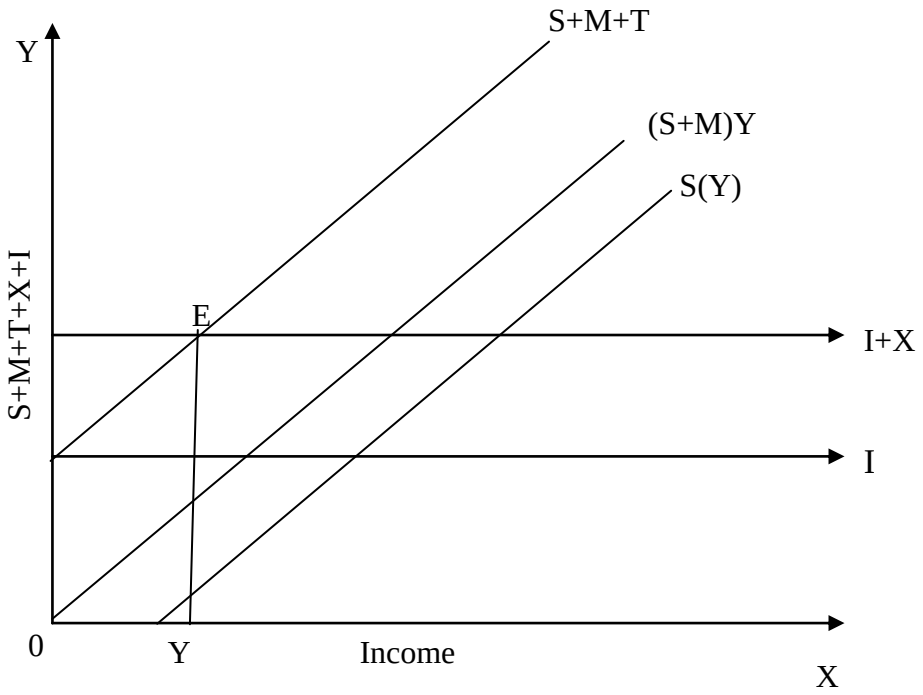


Fig. 10.5

The national income identity in an open economy.

Y=C+1+X-M

Where Y is the national income. C is the national consumption. I is total investment, x is exports and M is imports.

The above relationship can be solved as

Y-C=I+X-M

Or S=I +X-M

S+M = I + X (∴ S = Y -C)

Thus at equilibrium levels of income the sum of the savings and exports (S+M) must equals the sum of investment and exports (I+x).

In an open economy the investment (I) consumption is divided into domestic investment (Ia) and foreign investment

$$I = S(i)$$

$$Ia + If = S\ (i)$$

Foreign investment (Ia) is the different between export and imports of goods and services.

$$If = X - N\ (ii)$$

Substituting (ii)into (i), we have

$$Ia + X\text{-}M = S$$

$$Or\ Ia + X = S + M$$

Which is the equilibrium condition of national income in an open economy. The foreign trade multiplier coefficient (K) is equal to.

$$\frac{\Delta Y}{\Delta X}$$

$$\Delta X = \Delta S + \Delta M$$

$$\frac{\Delta X}{\Delta Y} = \frac{\Delta S + \Delta M}{\Delta Y}$$

$$or\ \frac{1}{Kt} = \frac{\Delta S + \Delta M}{\Delta Y} (\because Kt = \frac{\Delta Y}{\Delta X})$$

$$or\ Kt = \frac{\Delta Y}{\Delta S - + \Delta M}$$

$$\therefore Kt = \frac{1}{\frac{\Delta S}{\Delta Y} + \frac{\Delta M}{\Delta Y}} (\therefore dividing\ by\ \Delta Y)$$

Hence $Kt = \frac{1}{MPS + MPM}$

In the above analysis, the foreign trade multiplier has been studied in the case one of only country. But in reality, countries are inter related with each other through trade. A country's exports or imports affects the national income of the other country, which in turn, affects the foreign trade and national income of the first country. The is known as the foreign repercussion or the backwash effect. The smaller the country in relation to the other trading partner, the negligible is the foreign repercussion. But the foreign repercussion will be high in the case of a large country will have significant foreign repercussions or backwash effects. The foreign repercussions can be explained as under, assuming two countries. A and B.

In the accompanying Figure10.6 when domestic investment (Id) increases in country. A, it increases its exports to country B. Thus country A's national increases (+Y).

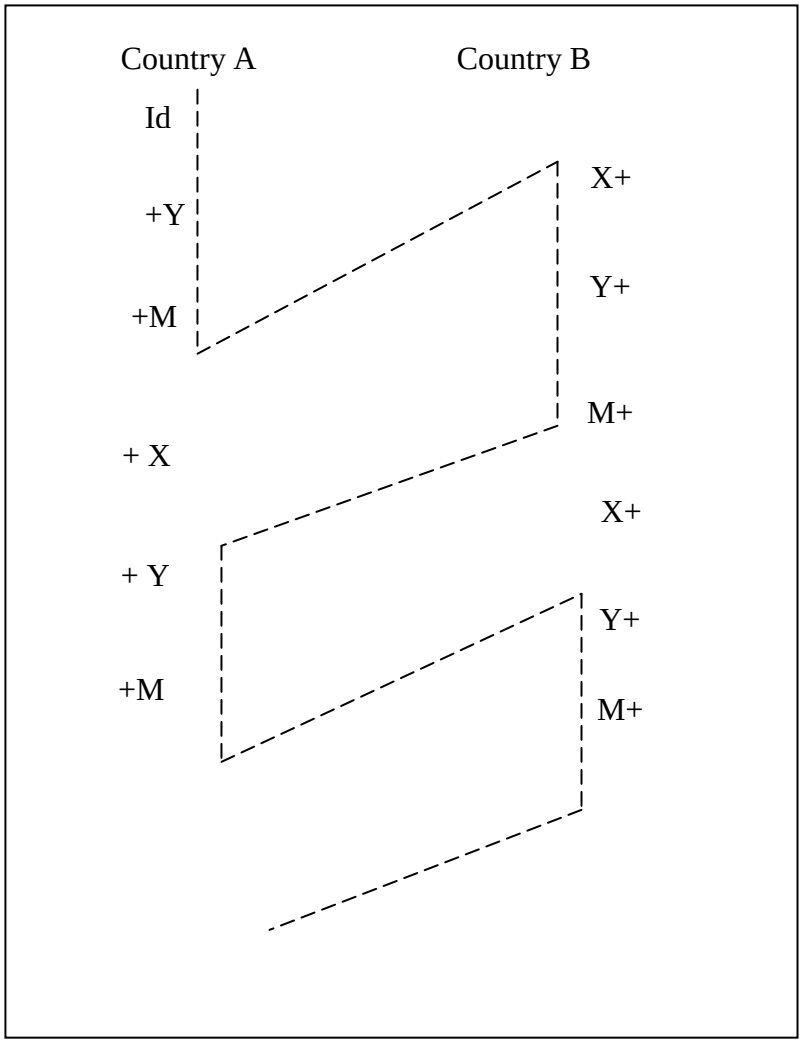


Fig.10.6

It induces country A to import more from country B; increasing demand for country B's exports (X+). Consequently, national income in country B increases (Y+). Now this country imports more (M+) from country. A's exports increases, its national income increases further. This is the foreign repercussion or the backwash effect for country A. These stages of foreign repercussion are explained in the adjacent diagrams. 10, 11 and 12.

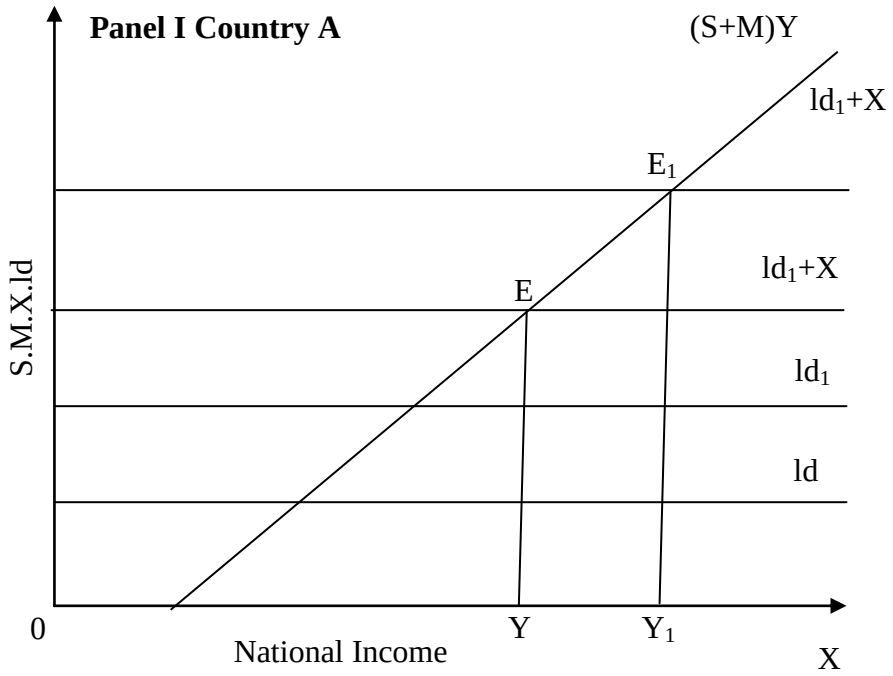


Fig.10.7

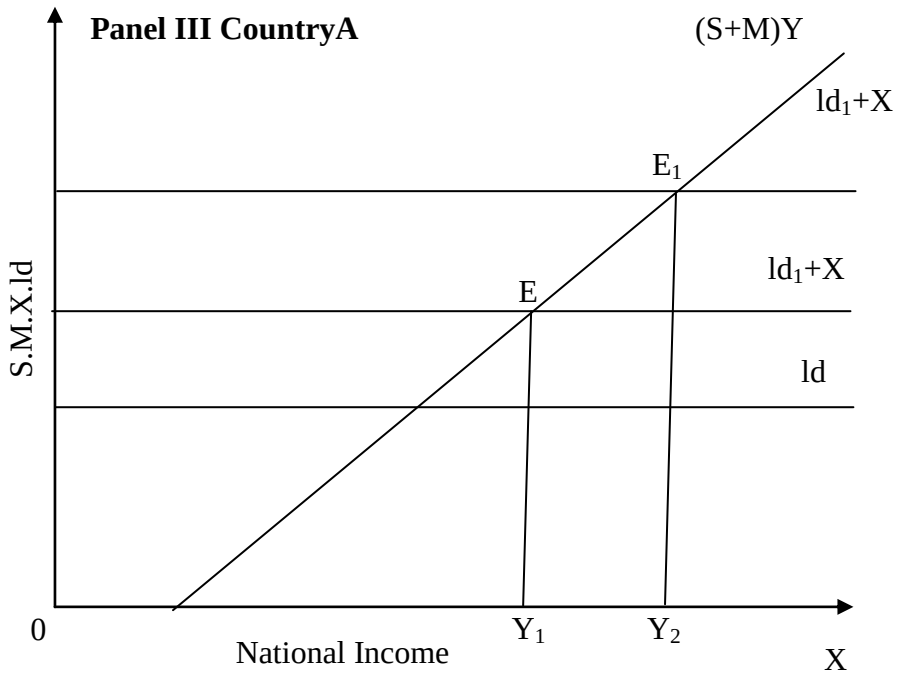


Fig.10.8

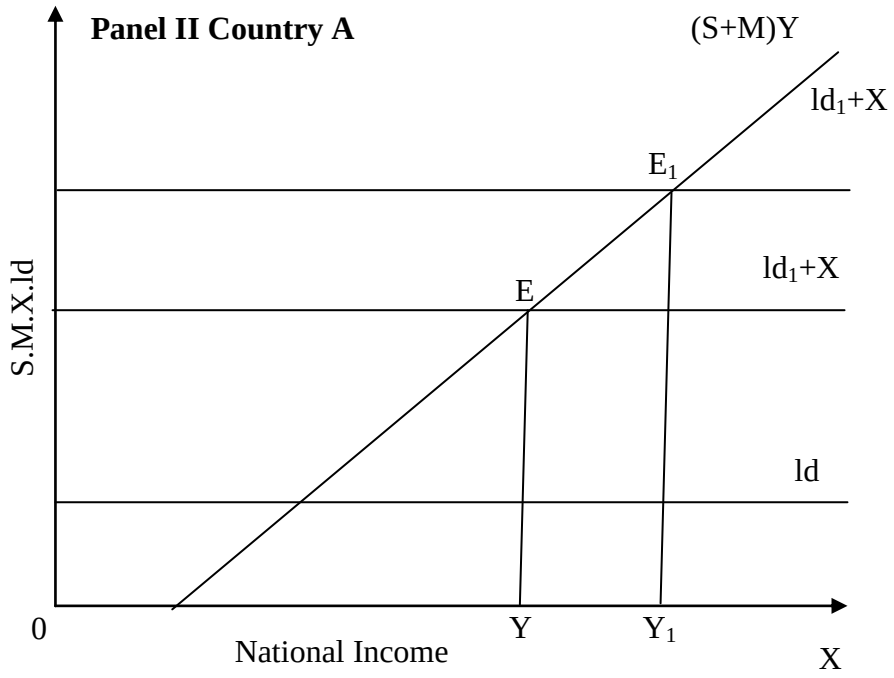


Fig.10.9

In stage I, domestic investment in country A increases from Id1 to d1 in panel I of figure. This leads to an upward shift in the Id1 +X. As a result, the new equilibrium point is at Eq, which shows an increase in national income from Y to Y1. As national income increases the demand for imports from country B also increases. This means increase in the exports of country B. This shown in panel II of Figure. When the Id + X schedule of country B shifts upward as Id+X_1 consequently, the national income in country B shifts upward as B increases from y1 to Y' at the higher equilibrium level E'. As country B's income increases. This in turn, leads to the back wash effect in the form of increase in the demand for exports to country A. this is shown in panel III of Figure where the Id1 +X schedule (of panel I) further shifts upward to Id1 + X1 and consequently the national income increases further from Y1 to Y2.

This shows how the foreign repercussions in one country affect its own national income and that of the other country which, in turn, again affects its own national income through the backwash effect with greater force.

Criticism of the Foreign Trade Multiplier

The two model's of the foreign trade multiplier presented above are based upon comparative static analysis and on certain assumptions which make the analysis unrealistic.

First, the analysis is based on the assumption that export and investment (both domestic and foreign) are independent of change in the level of national income. But, in reality, this is not so. A rise in exports does not always lead to increase in national income. On the country, certain imports, of say capital goods, have the effect of increasing the national income.

Second, the foreign trade multiplier is assumed to be an instantaneous process whereby it supplies the final results. Thus it involves no lags and is unrealistic.

Third, the analysis is based on the assumption of a fully employed economy. But there is less than full employment in every economy. Thus the foreign trade multiplier does not find clear expression in an economy with less than full employment.

Fourth, the whole analysis is applicable to a two-country model. If there are more than two countries, it becomes complicated to analysis and interpret the foreign repercussions of this theory.

Despite these shortcomings, the foreign trade multiplier is powerful tool of economic analysis which help in formulations.

3. Static Multiplier

In static multiplier, changes in income and induced consumption consequent to the change in investment, are analysed without considering the time path of these changes. Static multiplier can be derived algebraically as follows:

Writing the equation for the equilibrium level of income we have

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

As in the multiplier analysis we are concerned with changes in income induced by changes in investment, rewriting the equation (1) in terms of changes in the variables we have

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

In the simple Keynesian model of income determination, change in investment is considered to be autonomous or independent of changes in income while changes in consumption are function of changes in income.

In the consumption function,

$$C = a+bY$$

Where a is constant term, b is marginal propensity to consume which is also assumed to remain constant. Therefore, change in consumption can occur only if there is change in income. Thus

$$\Delta C = b \Delta Y \quad \ldots(3)$$

Substituting (3) into (2) we have

$$\Delta Y = b \Delta Y + \Delta I$$

$$\Delta Y - b \Delta Y = \Delta I$$

$$\Delta Y (1-b) = \Delta I$$

$$\Delta Y = \frac{1}{1-b} \Delta I$$

or $$\frac{\Delta Y}{\Delta I} = \frac{1}{1-b}$$

As b stands for marginal propensity to consume

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1-MPC} = \frac{1}{MPS}$$

This is the same formula of multiplier as obtained earlier. Note that the value of multiplier $\frac{\Delta Y}{\Delta I}$ will remain constant as long as marginal propensity to consume remain the same.

4. The Dynamic Multiplier

The dynamic multiplier relates to the time lags is the process of income generation. The series of adjustment in income and consumption may take months or even years for the multiplier process to complete, depending upon the assumption made about the period involved. This is explained in Table increase where if each round is of

one month it takes seventeen rounds for an initial investment of Rs. 100 crores to generation as income of Rs. 200 crores, given the value of MPC to be 0.5, then the multiplier process will take 17 months to complete.

Dynamic multiplier

Period in Months	**I (increment in Investment)**	**C=Cy = 0.5 (Increment in Consumption)**	**Y (increment in income)**
0	0	0	0
t+1	100	0	100
t+2	100	50	100+50
t+3	100	25	150+25
t+4	100	12.5	175+12.5
t+n	100	100	200

The Table shows that if the MPC remains constant at 0.5 throughout, an initial increase of Rs. 100 Crores of investment will first raise income by Rs. 100 crores in the first month out of this of Rs. 50 crores will be spent on consumption. This will raise income in the second month to of Rs. 50 crores and out of this, of Rs. 25 crores and so on till in the seventeenth month the income increases by of Rs. 0.001 crore. This can also be explained algebraically as:

$\Delta Yn = \Delta I + \Delta IC + \Delta IC^2 + IC^3 + \ldots + \Delta IC^{N-1}$ (C is MPC)

$= 100 + 100\ (0.5)^2 + 100(0.5)^3 + \ldots 100(0.5)^{n-1}$

= Rs. 200 crores.

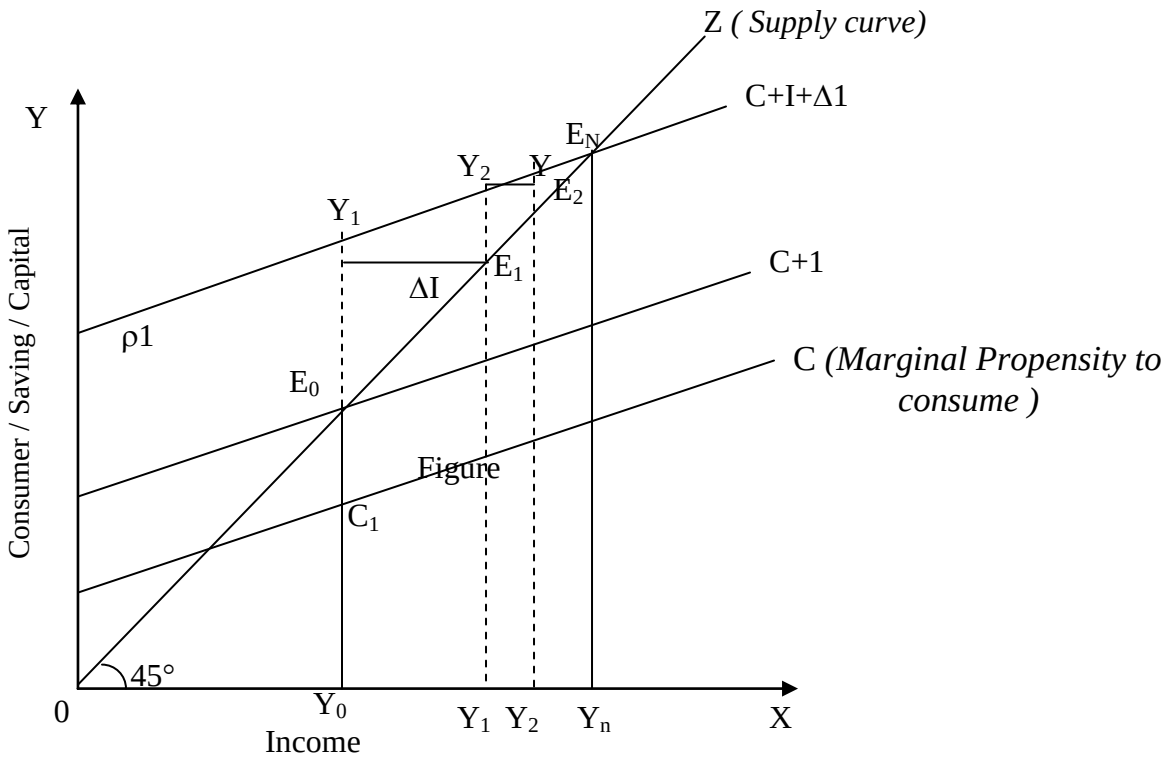


Fig.10.10

This process of dynamic income propagation assumes that there is a consumption lag and no investment lag so that consumption is a function of the proceeding period i.e. ct = f(Y_{t-1}) and investment is a function of time (t) and of constant autonomous investment ρI, i.e., It = f (ρI). In fig. 3 C % I is the aggregate demand function and the 45 line is the aggregate supply function. If we begin in period to where with an equilibrium level of OY. Income, investment is increased by ρI, then in period t income rises by the amount of the increased investment (from t_0 to t). The increased investment is shown by the new aggregate demand function C+I+ρI. But in period to consumption lags behind and is still equal to the original income E_0. But at Y_0 level total demand rises from Y_0 toY_0. there is not an excess of demand over supply equal to t. In period t+I consumption rises due to the rise in demand to Y0t new investment it increases income still higher to OY_1. But at this level. Total demand Y1 E1 is which exceeds total supply by AE1. This will further tend to raise income to OY2 and to a rise in demand Y2 E2 leading to an excess of total demand over total supply by BE2. This process of income generation will continue till the aggregate supply function C+I+ ρI equals the aggregate supply function 45 line at E0 in the nth period and new equilibrium level of income is determined at OY_n. The curved steps to

en is the path of income propagation showing the dynamic process of multiplier. "This suggests that in an advanced economy where all shorts of uncertainties and rigidities exist, consumption expenditure may lag considerably behind the receipt of income, production behind sales and divided payment, behind corporate profits all tending to lengthen each round and so to slow the speed of income propagation".

5. Super Multiplier

In order to measure that total effect of initial investment on income, Hicks has combined the multiplier and the accelerator mathematically and given it the name of the super multiplier and the accelerator is also called the leverage effect which may lead the economy to very high or low level of income propagation.

The super-multiplier is worked out by combining both induced consumption (cy or Δ C' Δ Y or MCP) and induced investment (vY or ΔI/ΔY or MPI). Hicks divides the investment component into autonomous investment I = I a + v Y. where Ia is autonomous investment and vY is induced investment.

Since $Y = C + I$

There fore $\Delta Y = C = Y + I_a + v \Delta Y$

$$\Delta Y - C \Delta Y - v \Delta Y = I_a$$

$$\Delta Y (I - C - v) = \Delta Y I_a$$

$$\frac{\Delta Y}{\Delta Ia} = \frac{1}{1 - c - v} = \frac{1}{s - v}$$

$$Ks = \frac{1}{1 - c - v} = \frac{1}{1 - v}$$

Where Ks is the super –multiplier, c is the marginal propensity to consume, v is the marginal propensity to investment and s is the marginal propensity to save (s=1= c).

The super – multiplier, tells us that if there is an initial increase in autonomous investment, income will increase by K times the autonomous investment. So the super-multiplier in general form will be

$$\Delta Y = \frac{1}{1 - c - v} \Delta I_a$$
$$= Ks \Delta Ia$$

Let us explain the combined operation of the multiplier and the accelerator in terms of the above equation. Suppose c=0.5, v = 0.4 and autonomous investment increased by Rs 100 crores. The increase in aggregate income will be

$$\Delta Y = \frac{1}{1-0.5-04} \times 100$$

$$= \frac{1}{0.1} \times 100 = 10 \times 100 = 1000$$

It shows that a rise in autonomous investment by Rs.100 crores has raised income to Rs.1000 crores. The simple multiplier would have raised income to only Rs. 200 crores, given the value of K the multiplier as 2 (since MPC = 0.5). But the multiplier combined with the accelerator (Ks =10) has raised income to Rs. 1000 crores which is higher than generated by the simple multiplier. Table II explains how the process of income propagation via the multiplier and the accerator with the value of the super –multiplier Ks=10 leads to rise in income to Rs. 1000 crores with an initial investment of Rs 100 crores.

In period t + 1 constant investment of 1, 00 is injected into the economy but there is no immediate induced consumption or investment. In period t+2 induced consumption of 50 takes place out of the income 100 of period t+1, since the marginal propensity to consumer is 0.5, while there is an induced investment of 40 out of 100 income (v being 0.4). The increase in income in different periods can be calculated is $\Delta Yt+2 = c\Delta Yt+1+v\Delta Yt+1 = 0.5 X100+0.4X100=90$. Similarly, the increase in income in period t +3 can be calculated as $\Delta Yt+3 = c\Delta Yt+2 = 0.5X90+0.4 X 90 = 45+36 =81$. The total increase in income (column 6) is arrived at by adding the increase in income (column 5) of the current period to the total increase in income (column 6) in period t + 2 of 190 is arrived at by adding the increase in income (column 6) of

This period to the total increase in income (100 of column 6) of the previous period t + 1. Similarly, the total increase in income in period t + 3 of 271 = increase in income of 81 in this period plus 190 of column 6 of period t + 2. This cumulative process of income propagation continues till in period t + n induced consumption induced investment and increase in income dwindle to zero. If we add up the increase in consumption, investment and income from period t + 1 to t + n, the total income

increases to Rs. 1,000 crores, total consumption to Rs. 500 crores and total investment to Rs. 400 crores, given the initial investment of Rs. 100 crores.

Table.10.4 Multiplier – Accelerator Interaction

Period	Initial Investment	Induced Investment (C=0.5)	Induced Investment (v=0.4)	Increase in Income (ΔY=c+v)	Total Increase in Income
(1)	(2)	(3)	(4)	(5)	(6)
T+0	0	0	0	0	0
T+1	100	-	-	100	100
T+2	100	50	40	90	190
T+3	100	45	36	81	271
t+4	100	40.5	32.4	72.9	343.9
t+5	100	36.45	29.16	65.61	409.51
	…	…	…	…	…
T+n	100	0	0	0	1000

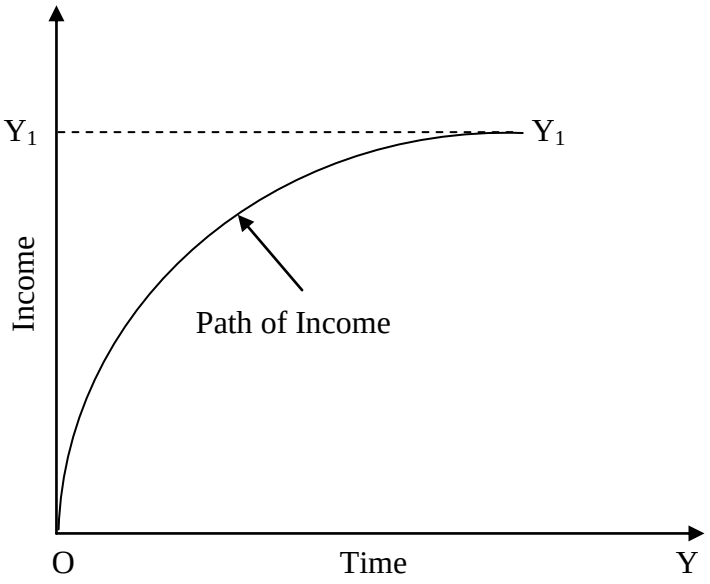


Fig.10.11

The dynamic path of income is shown in the adjoining Figure. Income is measured vertically and time horizontally. The curve OYt shows the time-path of income with a super multiplier of 10. The curve rises with time and reaches the new equilibrium level of income Y_1 and flattens out. It indicates that income increases at a decreasing rate.

6. Balanced Budget Multiplier

The balanced budget multiplier is used to shown an expansionist fiscal policy. In this the increase in taxes (ρT) and in government expenditure (ρG) are of and equal amount (ρT = ρG) still there is increase in income. " the basis for the expansionary effect of this kind of balanced budget is this a tax merely tends to reduce the level of disposable income. Therefore, when only a portion of an economy's disposable income is used for consumption purpose, the economy's consumption expenditure will not fall by the full amount of the tax. On the other hand, government expenditure increases by the full amount of the tax". Thus the government expenditure rises more than the fall in consumption expenditure due to the tax and there is not increase in national income.

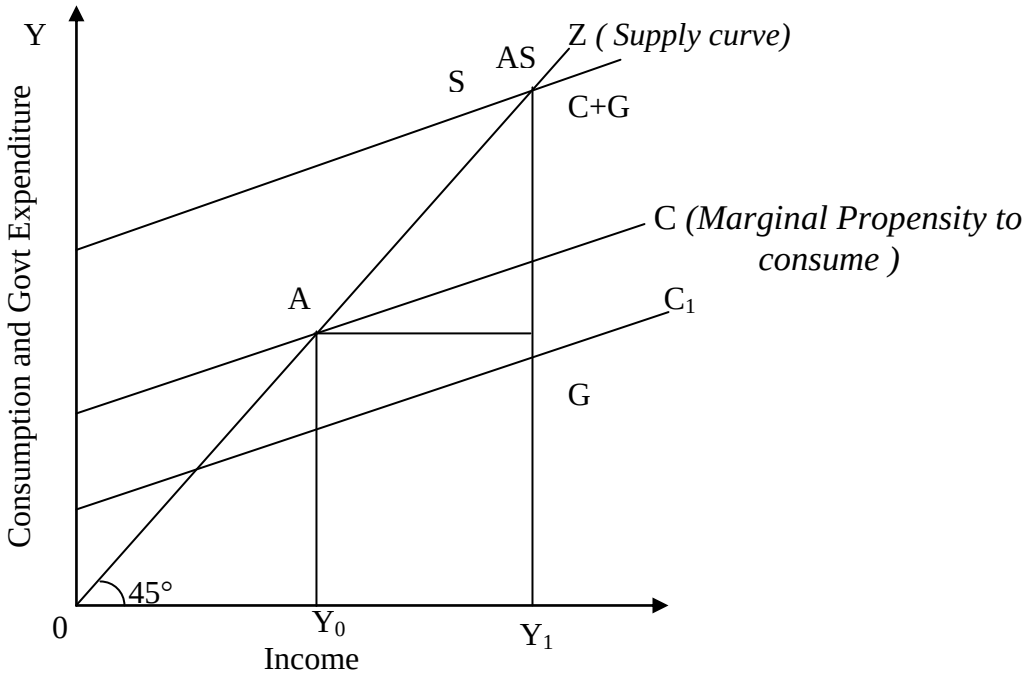


Fig.10.12

The balanced budget multiplier or theory is based on the combined operation of the tax multiplier and the government expenditure multiplier. In the balanced budget multiplier, the tax multiplier is smaller than the government expenditure multiplier. The government expenditure multiplier is

$$Y = C + I + G$$

G = Government expenditure

ADF = Aggregate Demand

C= a+by

$$Y = a + by = I + G$$

$$Y - by = a + I + G$$

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

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

$$Y = \frac{a}{1-b} + \frac{I}{1-b} + \frac{G}{1-b}$$

$$\Delta Y = \frac{\Delta a}{1-b} + \frac{\Delta I}{1-b} + \frac{\Delta G}{1-b}$$

If there is an increase in total income autonomous government expenditures. (a,I and G)

$\frac{I}{1-b}$ refers to equals the increase in government expenditure

$$\frac{\Delta Y}{\Delta a} = \frac{\Delta Y}{\Delta I} = \frac{\Delta Y}{\Delta G} = \frac{1}{1-b}$$

$\frac{\Delta Y}{\Delta I}$ refers to keynesion investment multiplier

$\frac{\Delta Y}{\Delta a}$ refers to consumption multiplier

Here a refers to

$$(\Delta G = \frac{1}{1-b} = 100x\frac{1}{1-b} = 100 \times \frac{1}{1-3/4} = Rs.400crores$$

10. 4. Summary

The text summarized the meaning of multiplier, various types of multiplier such as the investment multiplier, working of the multiplier, backward operation of the multiplier. Theory explain the important element of the multiplier coefficient is K which refers to the power by which any initial investment expenditure is multiplier is determined by the marginal propensity to consume. The higher the marginal propensity to consume, the higher is the value of the multiplier and vice versa. It explains the importance of multiplier, assumptions of multiplier, and leakages of multiplier and so on.

10.5. In text questions

a).Short answer Questions

1. Explain the concept of multiplier and its role in the theory employment
2. Describe the backward operation of the multiplier
3. Examine the assumptions of Multiplier
4. Explain the limitations and leakages of multiplier
5. Discuss different kinds of multiplier
6. Distinguish between Static and Dynamic Multiplier

b).Essay type questions

7. Explain the importance of Multiplier in economic analysis
8. Describe working of investment Multiplier along with its limitations.

10.6. Key Words

Multiplier, Employment multiplier, Foreign trade multiplier, Static multiplier, Dynamic multiplier, Super multiplier, The Balanced Budget multiplier, Leakages of multiplier, Backward operation of multiplier,

LESSON-11

THE ACCELERATION PRINCIPLE, THE MULTIPLIER – ACCELERATION INTERACTION

11.1 Introduction

This chapter is concerned with the meaning and definitions of acceleration principle. The principle of acceleration is based on the fact that the demand for capital goods is derived from the demand for consumer goods which the former help to produce. The acceleration principle explains the process by which an increase (or decrease) in the demand for consumption goods leads to an increase (or decrease) in investment on capital goods. According to Kurchara, "The accelerator coefficient is the rate between induced investment an d an initial change in consumption expenditure".

11.2 Objectives

- To examine operation of the acceleration principle and its assumptions
- To analyse use of multiplier – accelerator interaction in business – cycles
- To examine acceleration principle and the MEC and MEI schedules

11.3 Content

11.3.1 The Principle of Acceleration

Symbolically, $B = \rho I/\rho C$ or $\rho I = B\rho C$ where B is the accelerator coefficient. I is net change in investment and ρC is the net change in consumption expenditure. If the increase in consumption expenditure of Rs. 10 crores leads to an increase in investment of 30 crores, the accelerator coefficient is 3.

This version of the acceleration principle has been more broadly interpreted by Hicks as the ratio of induced investment to changes in output it calls forth. This the accelerator v is equal to $\rho I/\rho Y$ or the capital –output ratio. It depends on the relevant change in output (ρY) and the change in investment (ρI). It shows that the demand for capital goods is not derived from consumer goods alone but from any direct of national output.

In an economy, the required stock of capital depends on the change in the demand for output. Any change in output will lead to a change in the capital stock. This change equals v times to changes in output. Thus $\rho I = v\ \rho Y$ where v is the accelerator. If a machine has a value of Rs. 4 lahks and produces output worth Rs. 1 lakh, then the value of V is. An entrepreneur who wishes to increase his output by Rs. 1 lakh every year must invest Rs.4 lakh on the machine. This equally applies to an economy where if the value of the accelerator is greater than one, more capital is required per unit of output so that the increase in net investment is greater than the increase in output that causes it. Gross investment in the economy will equal replacement investment plus net investment. Assuming replacement investment (i.e. replacement demand for machines due to obsolescence and depreciation) to be constant, gross investment will vary with the levels of investment corresponding to each level of output.

The acceleration principle can be expressed in the form of the following equations given by Brooman.

$$I_{gt} = (Y_t - y_t - 1) + R$$

$$= v\ Y_t + R$$

where I_{gt} is gross investment in period t, v is the accelerator Yt is the national output in period t, y_t -1 is the national output in the previous period (t-1) and R is the replacement investment

The equation tells that gross investment during period t depends on the change in output (Y) from period t-1 to period t multiplied by the accelerator (v) plus replacement investment R.

In order to arrive at net investment (in) R must be deducted both sides of the equation so that net investment in period t is

$I_nt = v(Y_t-Y_t-1)$

$= v\rho_{Yt}$

This equation is noting but ρI = v =Y, since Y = Yt-1. As a matter of fact, there is little difference between ρI =v = Y as defined by Hicks and ρI = B ρ C, as defined by Samuelson and others. The accelerator V and B are the same. Hicks takes the increase in final output (ρY) while Samuelson takes the increase in the demand for consumer goods (ρC). In Hicks' model net investment equals Int = v (Yt-Yt-1) while in Samuelson's model Int = (B Ct-C 1). It ahs become customary to explain the acceleration principle in terms of final output (Y).

Operation of the Acceleration Principle

Period in Years	**Total output**	**Required Capital**	**Replacement investment**	**Net investment (In)**	**Gross investment (Ig)**
(1)	(2)	(3)	(4)	(5)	(6)
T	100	400	40	0	40
t+1	100	400	40	0	40
t+2	105	420	40	20	60
t+3	150	460	40	40	80
t+4	130	520	40	60	100
t+5	140	560	40	60	80
t+6	145	580	40	20	60
t+7	140	560	40	-20	20
t+8	130	520	40	-40	0
t+9	125	600	40	20	20

It Yt > Yt-1, net investment is positive during period t. on the other hand, if Yt < Yt-1, net investment is negative during period in t.

11.3.2 Operation of the Acceleration Principle

The working of the acceleration principle is explained with the help of an hypothetical example given in Table.

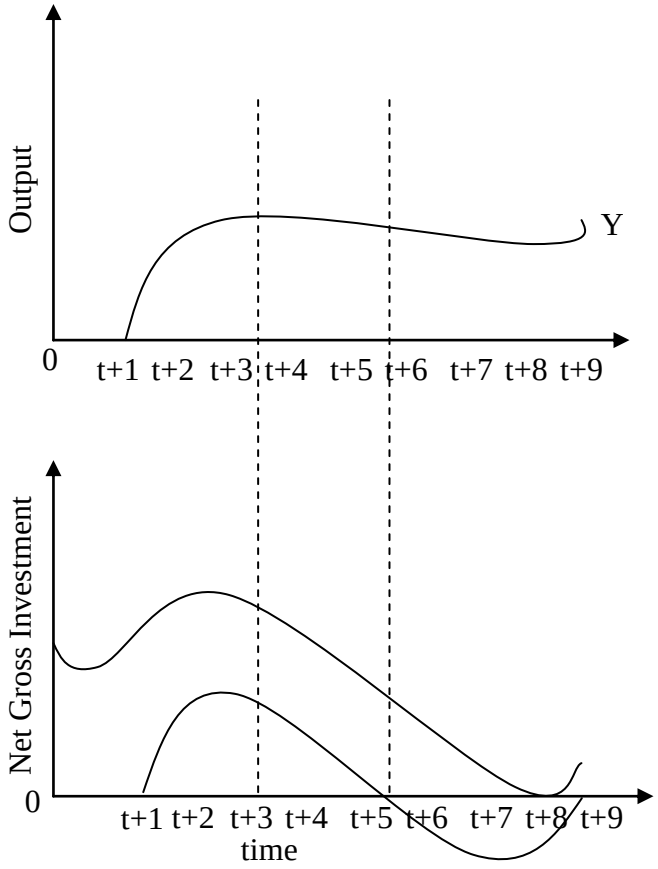


Fig.11.1

The table traces changes in total output, capital stock net investment and gross investment over ten time periods. Assuming the value of the acceleration v =4, the required capital stock in each period is 4 times the corresponding output of that period, as shown in column (3). The replacement investment is assumed to be equal to 10 percent of the capital stock in period. Net investment in column (5) equals v times the change in output between one period and the proceeding period t +3 = v (Yt-3Yt+2) or 40 =4 (115 -105). It means that given the acceleration of 4, the increase of 10 in the demand for final output leads to an increase of 40 in the demand for capital goods (machines). Accordingly the total demand for capital goods (machines) rises to 80 made up of 40 for replacement and 40 of net investment. Thus the table recalls that net investment depends on the change in total output, given the value of the accelerator. So

long as the demand for final goods (output) rise net investment is positive. But when it falls investment in negative. In the table I total output (column 2) increases at an increasing rate from period t +1 to t + 4 and so des not investment (column 4). Then it increases at a diminishing rate from period t + 5 to t + 6 and net investment declines from period t + 7 to t +9, total output falls and net investment becomes negative.

The acceleration principle is illustrated diagrammatically y in figure 13 where in the upper position. Total output curve Y increases at an increasing rate up to period t + 6. After this it starts diminishing . The curve in the lower part of due figure, shows that the rising output leads to increasing at an increasing at an increasing rate. But when output increasing at an increasing rate between t +4 and t+6 periods, net investment declines. When output starts declining in period t + 7 net investment becomes negative. The curve Ig represents gross investment is not negative and once it become zero in period t + 8 the curve is again starts rising. This is because despite net investment being negative, the replacement investment is taking place at a uniform rate.

11.3.3 Assumptions

The acceleration principle is based upon the following assumption.

1. The acceleration principle assumes a constant capital output ratio.
2. It assumes that resources are easily available.
3. The acceleration principle assumes that there is no excess or idle capacity in plants.
4. It is assumed that the increased demand is permanent.
5. The acceleration principle also assumes that there is elastic supply of credit and capital.
6. It further assumes that an increase in output immediately leads to a rise in net investment

Criticisms

The acceleration principle has been criticized by economists for its rigid assumptions which tend to limit its smooth working. The following are its limitations:

1) The acceleration principle is based on a constant capital-output ratio. But this ratio does not remain constant in the modern dynamic world. Inventions and improvements in techniques of production are constantly taking place which lead to increase in output per unit of capita. Or existing capital equipment may be worked more intensively. Moreover changes in the expectations of businessmen with regard to prices, wages, interest may affect future demand and vary the capital – output ratio. Thus the capital – output ratio does not remain constant but changes in the different phases of the trade cycle.

2) The acceleration principle assumes the availability of resources. Resources should be elastic so that they are employed in the capital goods industries to capable then to expand. This is possible when there is unemployment in the economy. But once the economy reaches the full employment level, the capital goods industries fall to expand due to the non availability of sufficient resources. This limits the working of the acceleration principle.

3) The acceleration theory assumes that there is no unsued (or idle) capacity in plants. If some machines are not working to their full capacity and are lying idle, then an increase in the demand for consumer goods will not lead to the increased for capital goods. In such a situation the acceleration principle will non work.

4) As a corollary, the assumption of the existence of full capacity implies that increased demand for output immediately leads to induced investment. The acceleration principle, therefore, fails to explain the timing of investment. At best it explains the volume of investment. As a matter of fact, there may be a time lag before new investment can be generated. For instance, if the time lag is four years, but effect of new investment will not be felt in one year but in four years.

5) Further, the timing of the acquisition of capital goods depends on the availability and cost of financing them.

6) It is assumed that no increased demand for consumer goods had been foreseen and provided for in previous capital invest. If by anticipating future demand capital equipment has already been installed, it would not lead to induced investment the acceleration effect will be zero.

7) This theory further assume that the increased demand is permanent. In case the demand for consumer goods is expected to be temporary the produces will refrain from investing in new capita goods. Instead they may meet the increased demand by working the existing capital equipment more intensely. So the acceleration will not materialize.

8) The acceleration principle assumes an elastic supply of credit so that when is induced investment as a result of induced consumption. Cheap credit is easily available for investment in capital goods industries. If cheap credit is not available in sufficient quantities, the rate of interest will be high and investment in capital goods will be very low. Thus the acceleration will not work fully.

This assumption further implies that firms resort to external sources of finance for investment purposes. But empirical evidence has shown that firms prefer internal sources of finance to external sources. The acceleration principle is weak in that it neglects profits is a major determinant of investment.

1. The acceleration principle neglects the role of expectations in decision – making on the part to entrepreneurs. The investment decisions are not influenced by demand alone. They are also affected by future anticipations like stock market changes, political developments, international events, economic climate, et. As pointed by J.W. Angell' "Regardless of the state of the present demand entrepreneurs will not increase present capacity unless their anticipations for the future warrant the step".
2. The acceleration principle is weak in that it neglects the role of technological factors in investment. Technological changes may be either capital –saving or labour-saving. They may, therefore, reduce or increase the volume of investment,

further, as pointed out by professor Knox, Capital equipment may be bulkey and the employment of additional plant is justified only when output has risen considerably. This factors is all the more important because usually what is added is a complex of machines and not a machine.

3. Despite these limitation, the principle of acceleration makes the purposes of income propagation clear and more realistic then the multiplier theory. The multiplier shows the effects of a change in investment on income via the consumption while the acceleration shows the effects of consumption or output on investment and income. Thus the acceleration explains voiatile fluctuations in income and employment as a result of fluctuations in capital goods industries. But it can explain upper turning points better than lower turning points.

According to Professor Knox, "The acceleration principle is … Not precise and is unsatisfactory as an explanation of the timing of investment. It suffers as an explanation of the timing of investment. It suffers from a further weakness; it is not of much use for explaining the lower turning point. … The acceleration principle by itself is inadequate as theory of investment. But prof. Shapiro opines that – "the acceleration principle, however, inadequate by itself, clearly emerges as one of a number of major factors that are needed in combination with the multiplier to explain the fluctuations observed in the world of investment spending".

11.3.4 Use of Multiplier – Accelerator interaction in Business – Cycles

However, with different values of MPC and the accelerator the multiplier-accelerator may show different results in terms of cyclical coefficient is 2. given the same assumptions and the initial investment of Rs. 100 crores, let us study how changes in income take place. Table III explains this process of income propagation.

Table reveals that in period t+1 there is an increase of Rs. 100 crores by the amount of initial investment. This increase in income leads to arise in consumption of Rs. 50 crores (column 3) in period t +2 because the value of MPC is 0.5 this rise in consumption induces investment to Rs. 100 crores = 50 X 2(column 4) the accelerator coefficient being 2 . And income increases Rs. 250 crores (column 2 + column 3 + column 4). The increased income, in turn, leads to an increase in consumption of Rs. 250 crores as the MPC is 0.5. But consumption in period t is a function of income

of the previous period. Therefore, the actual increase in consumption in period t+3 and t+3 i.e., 125.50 =75. If we multiply this increase in consumption 75 by the value of the accelerator 2, we get induced investment of 150 =75 +2 (column 4) in period 1 +3. Thus the total of columns 2 +3 + 4 gives increase in income of Rs. 375 crores in period t +3. This increased income leads to induced consumption of 187.50 (column 3) in period t+ 4 and t+3 (187.50 minus 125) is 62.50 which multiplied by the value of the accelerator 2 gives the figure of 125 of induced investment (column 4) and the total of columns 23 and give the increase in income of Rs. 412.50 crores (column 5) in period t+8. From period t + 9, it again starts rising which shows the revival phase of the cycle. This behaviour of income as a result of the combined operation of the multiplier and the falls and again on the values of the multiplier and the accelerator as shown by somuelson in his model.

Period	**Initial Investment**	**Induced Investment (C=0.5)**	**Induced Investment (v=0.4)**	**Increase in Income (ΔY=c+v)**
(1)	(2)	(3)	(4)	(5)
T+0	0	0	0	0
T+1	100	-	-	100
T+2	100	50	100	250
T+3	100	125	150	375
t+4	100	187.50	125	412.50
t+5	100	206.25	37.50	343.75
t+6	100	171.88	68.74	203.14
t+7	100	101.57	140.62	60.95
t+8	100	30.48	142.18	11.70
t+9	100	-5.48	72.66	21.42
t+10	100	10.75	32.20	143.95

Professor kurihara points out that a less than unity marginal propensity to consume provides an answer to the question. Why does the cumulative process come to a stop before a complete collaps or before full employment? According to Hansen, this is due to the fact that a large part of the increase in income in each period is not

spent on consumption in each successive period. This eventually leads to a decline in the volume of induced investment and when such a decline exceeds the increase in induced consumption, a decline in income sets in. Thus, writes professor Hanseni "It is the marginal propensity to save which calls a halt to the expansion process even when the expansion is intensified by the process of acceleration top of the multiplier process".

11.3.5 Acceleration Principle

The basic relationship between the change in the level of output and the volume of investment spending is known as the acceleration principle. The capital – output ratio, w, is known as the accelerator. The theory of investment based on this relationship is known as the accelerator theory.

The acceleration principle as expressed in equation form in the preceding section is straightforward. If the economy is already producing the most that can be produced with the existing capital stock (that is, there is no excess capacity or $X_t = 0$), and if there is a fixed ratio between output and capital (that is, w is a constant), any expansion of output requires an expansion of the capital stock. Furthermore, if the accelerator has a value greater than 1, the needed increase in capital stock must exceed the increase in output, so that the increase in investment spending will be greater than the increase in output that causes it. Otherwise expressed, to the extent that the demand for additional plant and equipment is derived from the demand for output, a change in the demand for output, given an accelerator grater than 1 leads to a magnification of the derived demand for the plant and equipment necessary to the production of additional output.

The working of the Acceleration Principle, W =2

(1) Period	(2) Output	(3) Desired Capital	(4) Actual Capital	(5) Replacement Investment	(6) Net Investment	(7) Gross Investment
1	200	400	400	20	0	20
2	200	400	400	20	0	20

3	210	420	420	20	20	40
4	220	440	440	20	20	40
5	250	500	500	20	60	80
6	270	540	540	20	40	60
7	260	520	520	20	-20	0
8	256	512	512	20	-8	12
9	250	500	500	-	-12	8
10	230	460	460	-	-	0
11	200	400	400	-	-	0
12	190	380	380	-	-	0
13	210	420	420	-	-	0
14	220	440	440	20	20	40

With the demand for output unchanged from period 1 to period 2, firms need simply maintain the existing capital stock of 400. This is done by replacing the 20 that wears out during the period. However, when demand for output increases by 10 in period 3, new capital facilities of 20 are wanted. In terms of the equation in which I measure net investment only, we have I, = W (Y_t-Y_{11}) or 20 = 2 (210-200). Total expenditure for capital goods-made up of 20 of replacement and 20 of net investment – accordingly rise from 20 in period 2 to 40 in period 3. With an accelerator of 2, the increase of 10 in expenditures for final output produces an increase of 20 in expenditures for capital goods. In percentage terms, a 5 per cent increase in expenditures for final product calls for a 100 per cent increase in expenditures fro capital goods. It is this relationship that gives the acceleration principle its name.

From period 3 to period 4, output rises by 10, as it did from period 2 to period 3. This indicates net investment of 20 in period 4 to effect the increase of 20 in desired capital. Net investment in period 4 is therefore the same as in period 3, the gross

investment in period 4 is 40, as it was in period 3. This brings out one of a number of relationships between changes in output and the level of investment suggested by the acceleration principle. In order for gross investment merely to be maintained at the same higher level after it has been increased (to remain at 40 in period 4 after increasing from 20 in period 2 to 40 in period 3), output must continue to rise. Gross investment can stand still period after period only if output rises period after period. To be more precise, gross investment will remain unchanged form one period to the next if the absolute increase in output remains unchanged from one period to the next.

Under what conditions will gross investment increase from one period to the next? Expenditures for output must increase by ever larger absolute amounts from one period to the next. Gross investment in period 5 rises above that in period 4 because the absolute increase in output from period 4 to period 5 exceeds that from period 3 to period 4. However, note next that despite the further increase in output from period 5 to period 6, gross investment actually declines. The absolute increase in output from period 4 to period 5 was 30, but the absolute increase from period 5 to period 6 was only 20. This illustrates another relationship that follows from the acceleration principle. A mere decrease in the absolute amount of increase in the level of output will lead to an absolute decrease in the level of gross investment. For gross investment to show any absolute increase period after period, the economy's output must show successively absolute increases period after period. Roughly speaking, the economy must run faster and faster in order for gross investment spending to move ahead at all.

As a next step, the economy's output is assumed to begin a decline in period 7. Output in that period drops 10 below the output of period 6, which means that desired capital in period 7 is 20 less than in period 6. Net investment is therefore-20 in period 7. Because 20 of the capital carried over from period 6 will wear out during period 7, business is able to work down the capital stock to the desired lower level simply by not replacing the 20 that wears out during period 7. Gross investment is zero for the period.

Output continues to decline in period 8, but gross investment actually increases. This is the result of the fact that there is a smaller absolute decrease in output in period 8 than there is in period 7. This is just the reverse of the relationship in periods 5 and 6,

where gross investment decreased because, although output was increasing in both periods, the absolute increase was less in period 6 than in period 5. Viewed on the downside, this relationship suggests that an upturn in gross investment need not necessarily await an upturn in output – it may occur even in the face of a decline in output once that decline begins to proceed more slowly. This helps to explain a phenomenon observed in some business cycles. The peaks and thoughts in real expenditures for capital goods will occur earlier than the peaks and troughs in real expenditures for final output as a whole.

To bring out another important feature of the acceleration principle, it is next assumed that the slowing of the decline in output is followed by a speedup in the decline. Starting in period 8, the absolute decrease in output in the next three periods is 6, 20 and 30. A decrease in output greater than 10 in any period presents a situation not confronted earlier. For example, the decrease in output from 250 in period 9 to 230 in period 10 reduces desired capital from 500 to 460. However, for the economy as a whole, the maximum amount by which the capital stock can be reduced in any period is the amount of the goods that wear out. Individual firms may be able to cut back more rapidly by selling unwanted capital goods to other firms, but this is plainly not possible for all firms combined. In our illustration, the amount that wears out in each period is 20, so 20 becomes the maximum possible net disinvestment per period. Therefore, in period 10, a discrepancy appears between desired capital and actual capital, the former having declined by 40 from period 9 but the later by only the maximum possible 20. Another decline in output greater than 10 occurs in period 11, this further enlarge the discrepancy between required and actual capital stock. Finally, the figures assumed in the subsequent period are such that the discrepancy is fully removed in period 13.

The discrepancy over period 10 through 12 means that firms are operating with excess capacity during these periods (that X1 exceeds $w (Y_t-Y_{t-1}) + D_t$ in each period). Therefore, the slowing in the absolute amount of decline in output in period 12 is not sufficient to raise gross investment to a positive figure as it did in period 8 when there was no excess capacity present. Not even an absolute increase in the level of output as in period 13 is sufficient to lift gross investment above the zero level. It is not until the excess capacity is eliminated that the acceleration principle becomes operative once again; this occurs in period 14.

Although the acceleration principle becomes temporarily inoperative during periods of excess capacity, the simple mechanics traced for the other periods of Table 11.1 still show that the principle can explain the relatively wider fluctuations that occur in the expenditures for capital goods than in the expenditures for final goods in general (a real-world phenomenon that economists have long recognized). However, even in those periods during which the economy is operating with no excess capacity, the results shown by the table can be produced only by making certain other assumptions, some of which may be unrealistic. It is clearly necessary to look at these assumptions in order to evaluate the practical significance of the principle.

Closely related to the assumption that firms are operating without excess capacity is the assumption that firms will increase capacity to meet every increase in real spending. In effect, this means that business people act as autonomous, responding to an increase in the quantity of goods sold by increasing investment spending and to a decrease in the quantity of goods sold by decreasing investment spending. Ion Practice, however, even if their capital facilities are operating at capacity, business people will try to squeeze additional output from existing plant and equipment unless and until they are convinced that the observed increase in the quantity of goods sold is likely to be permanent.

Similarly, if and when an expansion of capital facilities appears warranted, the expansion may not be exactly that needed to meet the current increase in sales; it will probably be sufficient to meet the increase in sales anticipated over a number of years. Piecemeal expansion of facilities in response to short-run increases in quantity of goods sold may be uneconomical or even, depending on the industry, technologically impossible (one cannot add one-half of a blast furnace).

The assumption of a constant capital-output ratio or accelerator, W, is necessary to out simple mechanical model, but it also is rather unrealistic. Even if firms could automatically adjust their capital stock to each change in current sales, the capital-output ratio would not be constant. An increase in sales might be concentrated at one time on the output of industries whose technology calls for high capital-output ratios and at another time on the output of industries with low ratios. Consequently, even in the absence of technological changes, the degree to which investment spending

responds to any increase in quantity of output sold depends on the distribution of that increase among the goods of different industries in which output is subject to different capital-output –ratios.

This point suggests another qualification. Investment for the economy as a whole may increase even without an increase in the quantity of output sold. Though the acceleration principle, redistribution of a given total of expenditures among available goods may lead to more net investment in industries enjoying the increased spending than disinvestment in those suffering the decreased spending-because, at the limit, disinvestment in any industry cannot exceed the rate at which capital facilities are used up.

Another assumption of the simple acceleration principle is that any gap between the amount of capital desired by business people and the amount they actually have is closed within a single time period. This may be physically impossible. As we saw earlier, if the desired capital stock falls below the actual by an amount greater than the amount of depreciation for the period, it will require more than the current period to reduce the actual capital stock to the desired level. During that interval, the acceleration principle becomes inoperative. Note now that a related situation may be confronted in the other direction. If the capacity output of the capital goods industries for one time period is less than the sum of that period's replacement investment and the excess of the desired over the actual capital stock, the gap cannot be closed in one time period. For example, if the capacity of these industries is $50 billion per year with replacement investment currently absorbing be filled within one single year. However, the simple acceleration principle will show net investment of $40 billion for a gap of $40 billion, despite the fact that this rate of net investment may be impossible.

Moreover, even if the production capacity of the capital goods industries were always physically sufficient to close any gap in one time period, it does not follow that this would happen. As we saw in Chapter 17, the amount of net investment spending in one time period may fall below the amount needed to close an existing gap during that time period, not because the capital goods industries do not have the physical capacity to produce the amount of capital goods needed but because net investment spending itself is restrained below that amount by the effect on the MEI of the rising cost of

capital goods as these industries expand output closer to their capacity levels. We may illustrate the simple acceleration principle and this particular qualification of it by building on the graphic apparatus developed in Chapter*.

11.3.6 The Acceleration Principle and the MEC and MEI Schedules

The accelerator theory of investment and the acceleration principle on which it rests make the desired capital stock proportional to the level of output. If the accelerator is 2, as in Part A of Figure *, the desired capital stock is equal to twice the level of output. The curve in Part A also shows that for any change in the output level-for example, a rise from $200 to$220-there is a rise in the desired capital stock equal to twice the output change-a rise from $400 to $440. Because the acceleration principle in its rigid form assumes that any gap between the desired and actual capital stock is filed within a single time period, it follows that net investment in that single time period will equal the accelerator times the change in the level of output. In terms of the equation derived earlier.

$$L_t = K_t - K_{t1} = W(Y_T - Y_{T-1})$$

In terms of the numerical illustration just given.

$40=$440-$400=2 ($220-$200)

This result, in which the actual capital stock grows to the desired capital stock within the same period that a gap between the two appears. Can occur only if the conditions noted earlier are satisfied. Parts B and C of Figure * show graphically what is involved.

These two parts bring in the familiar MEC and MEI curves. In Part B, two MEC curves are plotted, one corresponding to Y of $200 and one to Y of $220. The acceleration principle alone indicates the desired capital stock will be $ 400 with Y of $200 and an accelerator of 2. However, the desired capital stock will also vary with the rate of interest. With Y of $200, the curve so labeled shows that desired capital will be $400 when r is 6 per cent, $420 when r is 5 per cent and $380 when r is 7 per cent. With Y of $220, desired capital will vary with the rate of interest as shown by the MEC curve labeled y = $220.

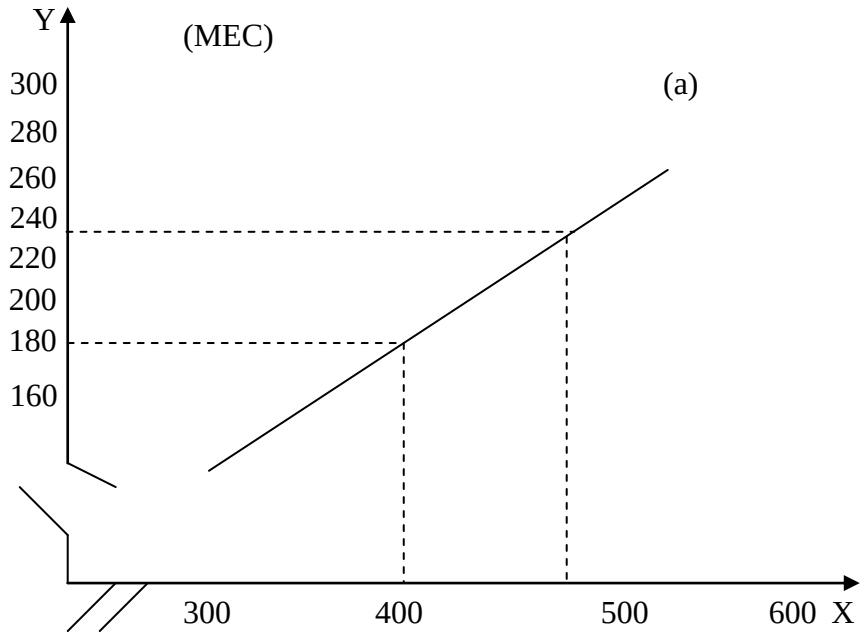
Suppose now that the actual level of Y is $200, the market rate of interest is 6 percent and the actual capital stock is $400. Because the actual and the desired capital stocks are equal, net investment is zero and gross investment is equal to replacement investment. Assuming, as in Table 11.1, that the average life of capital goods is 20 years, replacement investment $20. The MEI curve in Part C labeled Y= $200 therefore shows gross investment of $20 and net investment of zero and the market interest rate of 6 per cent.

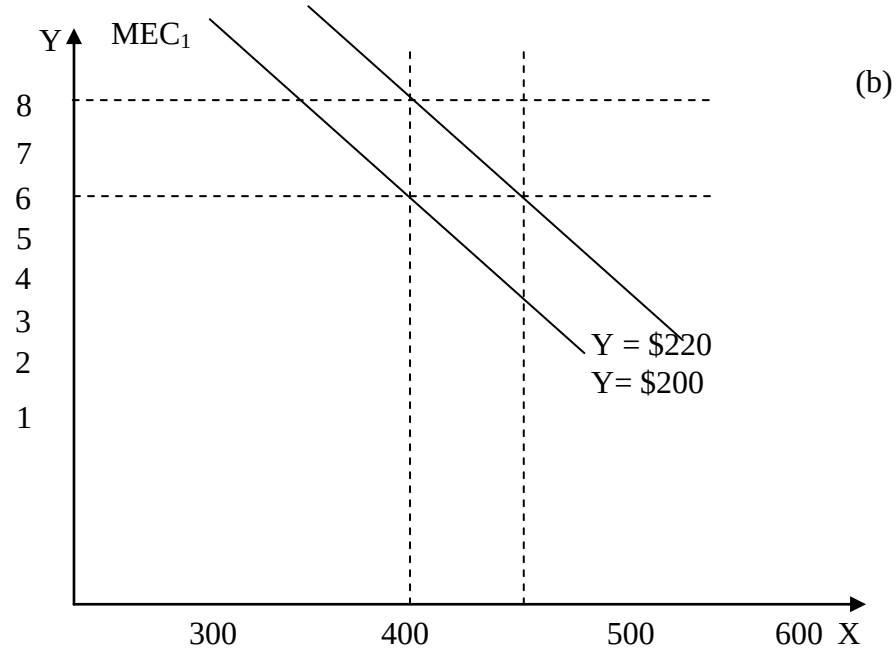
Suppose, next, that the output level rises from $200 to $220 so that we move from the lower to the upper MEC curve in Part B. With the interest rate at 6 per cent and the actual or existing capital stock still at $400, desired capital exceeds actual capital by $40. The MEI curve in Part C labeled Y= $ 220 shows that in the first time period gross investment will be $40 and, accordingly, net investment will be $20(less than the full amount of the desired increase in the capital stock). It will therefore actually take a series of time periods to adjust the capital stock to the desired level.

Because the simple acceleration principle assumes that net investment sufficient to close the gap between actual and desired capital stock will occur in a single time period, no matter how large the amount involved ($40 in the present illustration), it must also assume, quite unrealistically, that the short-run supply curves of the capital gods industries are perfectly elastic over an unlimited range. In other words, it must assume not only that these firms do not run into short-run rising costs as they expand output but also that their capacity to expand output is unlimited in the short run. This would be described graphically in Part C by the dotted-line MEI curves, which remain perfectly flat over an unlimited range. The assumed rise in output in Part A would then lead to a shift in the MEI curve in Part C from the lower to the upper dotted line. Gross investment, which had been equal to $20 for the time period in which output was $200, would now jump to $60 in the next time period in response to the increase in output to $220 in that time period. If the MEI curve were actually perfectly elastic, there would be no barrier to achieving the amount of net investment needed to close the gap between actual and desired capital stock in one time period.

Although the MEL curve may not run down as soon or as sharply as the solid-line MEI curves illustrated, it must turn down at some level of investment. Expansion

of output by the capital goods industries must sooner or later run into rising marginal costs, given the fact that the productive capacity of these industries is limited in the short run. The assumption of the simple acceleration principle that any increase in the desired capital stock will be met in a single time period, therefore, cannot always be satisfied. The answer to the and other problems that arise from the simple version of the acceleration principle is to resort to a more flexible and refined version that can handle them.





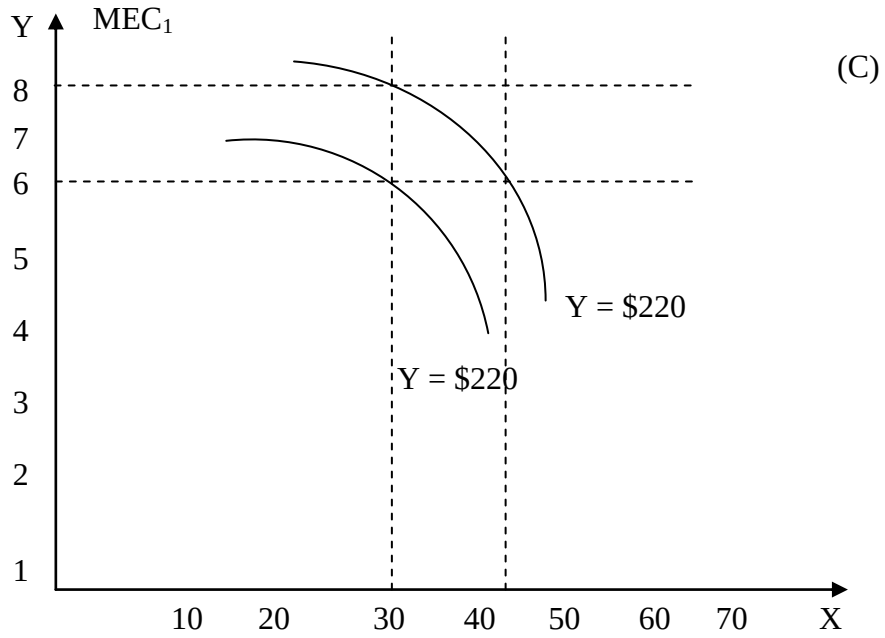


Fig. 11.2

Both the simple version of the accelerator theory of investment and the profits theory of investment considered earlier operate on investment spending by first causing a shift in the MEC curve, as has been seen in Figure 11.2.

11.4. Summary

Income is determined by the aggregate investment expenditure because of the simple model of investment is merely assumed to be some fixed amount in a given period of time or is assumed to change by some amount from one period to the next period without any benefit of any explanation. But, in modern times investment is shown to be a function of interest rate. This lesson shows investment responsiveness and factors that causes the investment curve to shift and there by increase or decrease the amount of investment at any particular interest rate. This lesson also explains the relationship and the important concept of marginal efficiency of capital, multiplier and accelerator.

11.5. Revision Points

Real Investment **:** The addition to the stock of physical capital

Autonomous Investment **:** Investment does not change with the change in the

income level

Induced Investment : Investment which is affected by the changes in the income level

Marginal Efficiency of Capital : The rate of profit expected to be made from investment in certain capital assets.

11.6 Intext questions

1. Explain the term multiplier. Show its forward and backward working. How is Keynes' investment multiplier related to MPC?
2. Explain the multiplier principle and indicate the conditions under which income increases according to this principle.
3. Explain the concept and working of acceleration principle.
4. What is supper multiplier? Explain the interaction between multiplier and acceleration.

11.7 Key Words

Real Investment, Autonomous Investment, Induced Investment, Marginal Efficiency of Capital .

LESSON-12

BUSINESS CYCLE THEORY: KALDOR-HICKS-GOODWIN

12.1.Introduction

This chapter is concerned with the business cycle theory by: Kaldor-Hicks-Goodwin. Economic activity is subject to periodical fluctuations. The fluctuations that occur in a business activity in a cyclical fashion are called business cycles. According to Shapiro, business cycles are the movements that occur in economic activity over years. There are four phases of trade cycle viz depression, recovery boom and recession. The older theories of trade cycles are those associated. With the names of Jevons. Hawtrey, pigou. Hopson. Hayek Schumpeter and others. As they are in adequate to explain the full meaning of the business cycles, modern economist have developed some new theories of business cycle.

12.2.Objectives

- To examine business cycle theory
- To analyse Hicks's theory and Kaldor' model of the business cycle

12.3.Content

12.3.1 Samuelson's Theory

12.3.2 Hicks's Theory

12.3.3 Kaldor' Model of the Business Cycle

12.3.4 Methods of Controlling Business Cycle

12.3.1 Samuelson's Theory

Samuelson made a study of the multiplier and the accelerator. And he derived a model in which a series of equations express the way in which the two forces interact to cause changes in income, consumption and investment overtime. The subscripts it in the equations represent time periods. It is a given time-period t-1 is the previous period, t+1 is one period in the future and so on.

12.3.2 Hicks's Theory

Hicks discussed his theory of the trade cycle in his book 'A Contribution to the Theory of the Trade Cycle, published in 1950. Although 30 years have passed, the theory still occupies a prominent place in the business cycle literature. According to Hicks, cyclical fluctuations are movements of the system above and below the rising trend or growth lines. In other words, the growth path to the economy is characterized by cyclical fluctuations. The long-run equilibrium growth path for the economy is determined by the growth rate of autonomous investment. The ratio of the equilibrium income to autonomous investment depends upon the size of the accelerator and the multiplier Hicks waves his theory around interaction of the multiplier and the theory of the accelerator are the two sides of the theory of fluctuations. Just as the theory of demand and the theory of supply are two sides of the theory of value".

In Hick's trade cycle theory, multiplies, accelerator and warranted rate of growth of income –the rate of growth which maintains itself over time-play a crucial role. The warranted rate of growth of income is consistent with the saving investment equilibrium. The system is said to be growing at the warranted rate of growth when real investment in the economy is taking place at the same rate at which real saving is taking place in the economy. The interaction between the multiplier and the accelerator weaves its path of movements of income around the warranted rate of growth which is the equilibrium output growth path. Basic to Hicks trade cycle model are a consumption function, an induced investment function with a fixed accelerator and an autonomous investment. As in Samuelson's trade cycle model, the consumption function, which shows a lagged income-consumption relationship, is of the following one time period lagged relationship form.

$$C_t = by_{t-I}$$

Hicks assumes that both the induced investment and autonomous investment co-exist in the economy. Autonomous investment is not affected by changes in the level of income. I.e. , it is that part of the total net investment which is not related to the growth of the economy. It is exogenously determined. Stating that autonomous investment is not a function of changes in the aggregate output (income), Hicks writes;

while "there can be little doubt that quite a large proportion of the net investment which goes on in normal.

12.3.3 Kaldor' Model of the Business Cycle

Kaldor discussed his model in his article "A Model of the trade Cycle". In his model the consumption function or the savings function depends on income and the investment function is of the stock adjustment type which is variation of the accelerator. Kaldor's originality lies in his use of nonlinear consumption and investment functions, and this aspect has been pressed into use and further developed by later theorists.

If marginal propensity to invest (m p 1) is smaller than marginal prosperity to save (m p s) as in Fig. 12.1 (a) there will be stable equilibrium. If, however, mpl is greater than mps as in Figure 12.1 (b) there will be unstable equilibrium. In both these cases, there will be no cycles. In both cases the investment (1) and savings (Savings) curves are linear in relation to income. In case certain regions where mpl, mps and some regions where mpl mps. The core of Kaldor's theory is that in such a case (i.e. when mpl or mps), gross national product might shift back and forth between multiple equilibrium (many points of equilibrium) and this would lead cyclical fluctuations.

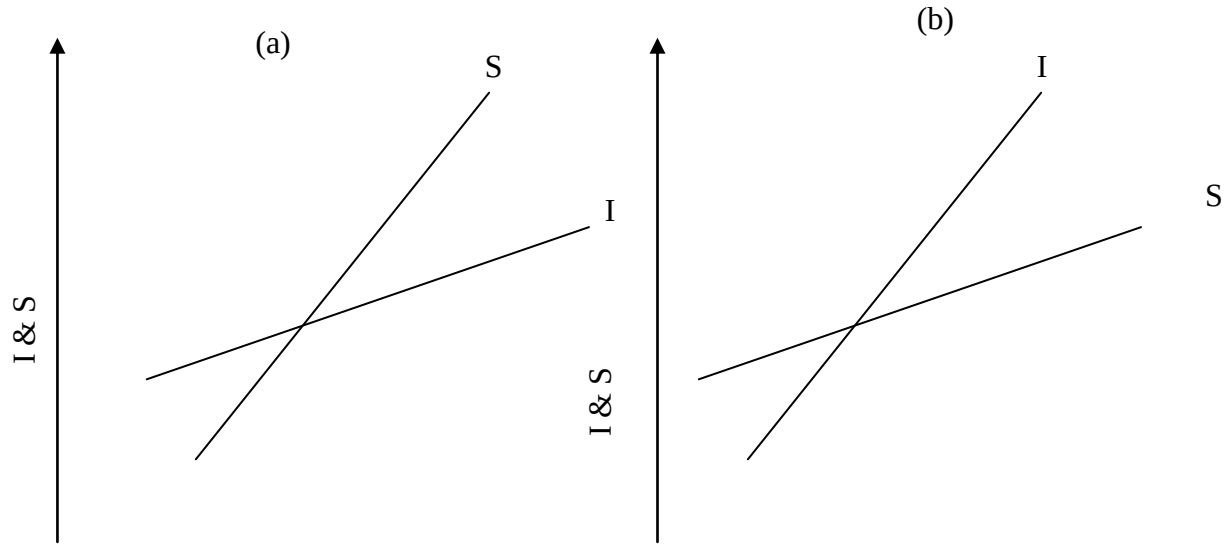


Fig. 12.1

So for as the investment function is concerned it is likely to be income inelastic at low levels of income. It is due to the existence of excess capacity. At very high

levels of income also it is likely to be inelastic at low levels of income. And this is due to high costs of construction and of borrowing. Keeping in view these possibilities, the investment function need be modified. The modified investment function is show in Figure 12.1 . This is nonlinear investment function.

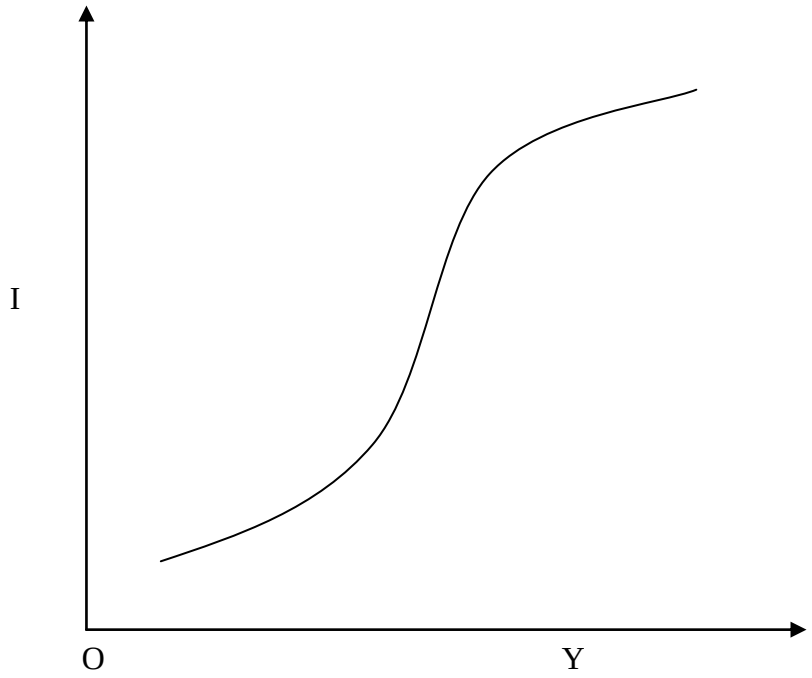


Fig.12.2

The savings function may also be nonlinear. Kaldo states that the marginal propensity to consume (mpc) for each unit of extra income will be high in case income is at normal levels (this means that the mps will be low in such a case). The mps will below which means that the mps will be high at very low and at very high levels of income. In fact this can be treated as an early version of the permanent (normal) income hypothesis. In a situation of very low income, people will do their bit to keep up former standards of living any further decrease in income will be accompanied almost the full amount of decrease in savings. In a situation of very high income any further addition to income will be coupled with a very large proportional increase in savings. It is because people do out expect these high levels of income to continue. Figure 12.2 depicts this type of savings function. If we combine the two types of curves (nonlinear I and S curves we get different points of equilibrium (multiple equilibria) Figure 12.2 shows that at points A and C mpI mps (i.e. the slope of I curve is smaller than that of Savings curve). Therefore, A and curve represent points of stable

equilibrium, in relation to low and high levels of gross national product (Y) the point B is one of unstable equilibrium the economy cannot for long stay at B.

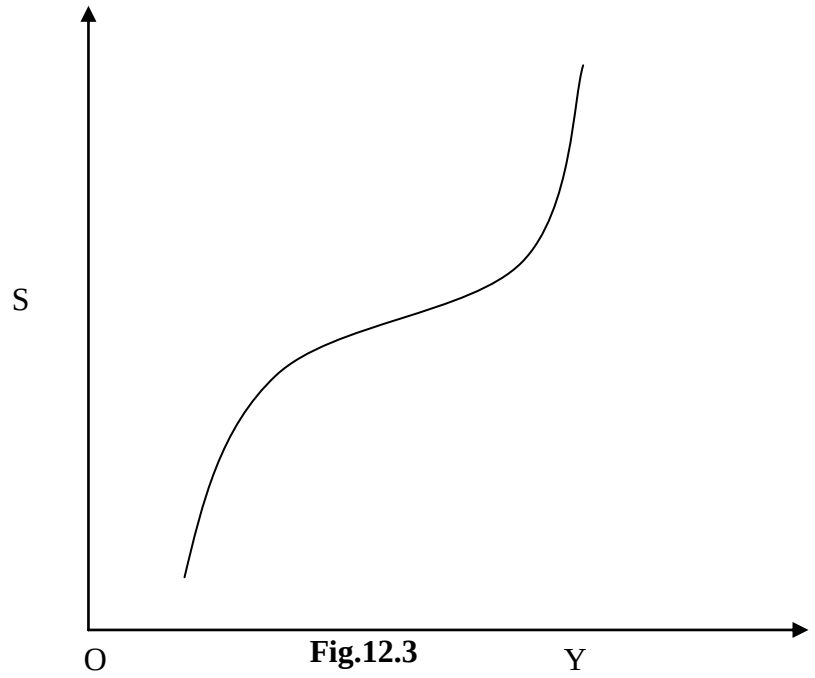


Fig.12.3

The curves I and S Curves-used here are short-run curves. These curves will however, shift overtime. Investment will increase at a factor pace at a high level of income. This means that the capital stock continues to grow, but after some time the increase in capital stock will shift the investment curve downward. This is just the stock adjustment principal. i.e. $I = ay - bk_1$. Triangle K =I Kaldor states that the savings curve will shift up at high levels of income over time. But this is the position taken by the under consumptions. It is not likely to be valid unless it applies to purchases of consumer durables. The more likely position is that the people will save a smaller proportion of income (at high levels of income). Thus the slope of the savings curve is likely to be reduced as people get accustomed to the high level of income. This does not however, affect the general nature of Kaldor's argument. The argument will be valid even if the I curve alone shifts-the S curve remaining stable.

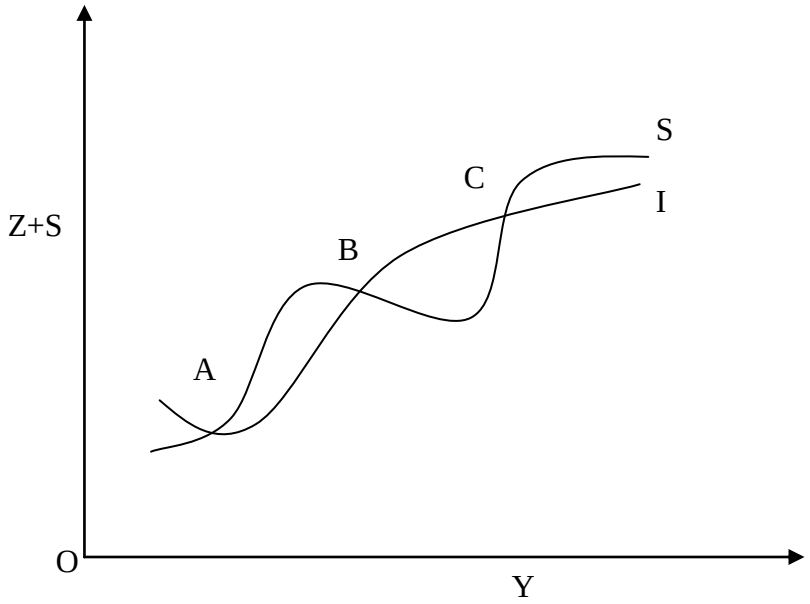


Fig. 12.4

Let us suppose that the economy is functioning at point C. In course of time a the I curve will shift downward and the S curve will either flatten out or shift up. The result is that point B will move closer to point C, and the two points-B and C will eventually coincide. But in such a case the economy will be in a position of unstable equilibrium. There are deflationary pressures at work. The economy will therefore move downward from the unstable equilibrium toward point A. There will be a new stable position at a much lower level of income. This is shown in Figure 12.5(C) so far as Figure 12.5(A) and 12.5(B) are concerned they just show that the economy is moving towards the position shown in Figure 12.5(C). At the low level of income at which the economy attains stable position i.e. point A in Figure 12.5(C) investment will be smaller than depreciation. The capital stock will thus decrease. This will tend to raise the investment curves. Since the stocks of durables are depreciated and there is greater demand for new purchases, the savings curve either falls or flattens out (at low levels of income). As a result of these shifts point B will move clause to point A until they coincide as shown in Figure 12.5(F). But the economy cannot stay at the point of coincidence between A and B slopes of the two curves at this point are equal which means mpl = mps. For equilibrium mpl must be less than mps. The economy must return to point curve as shown in Figure 12.5. Figures 12.5(D) and (E) just show t at the economy is moving towards the position brought out in Figure 12.5(F).

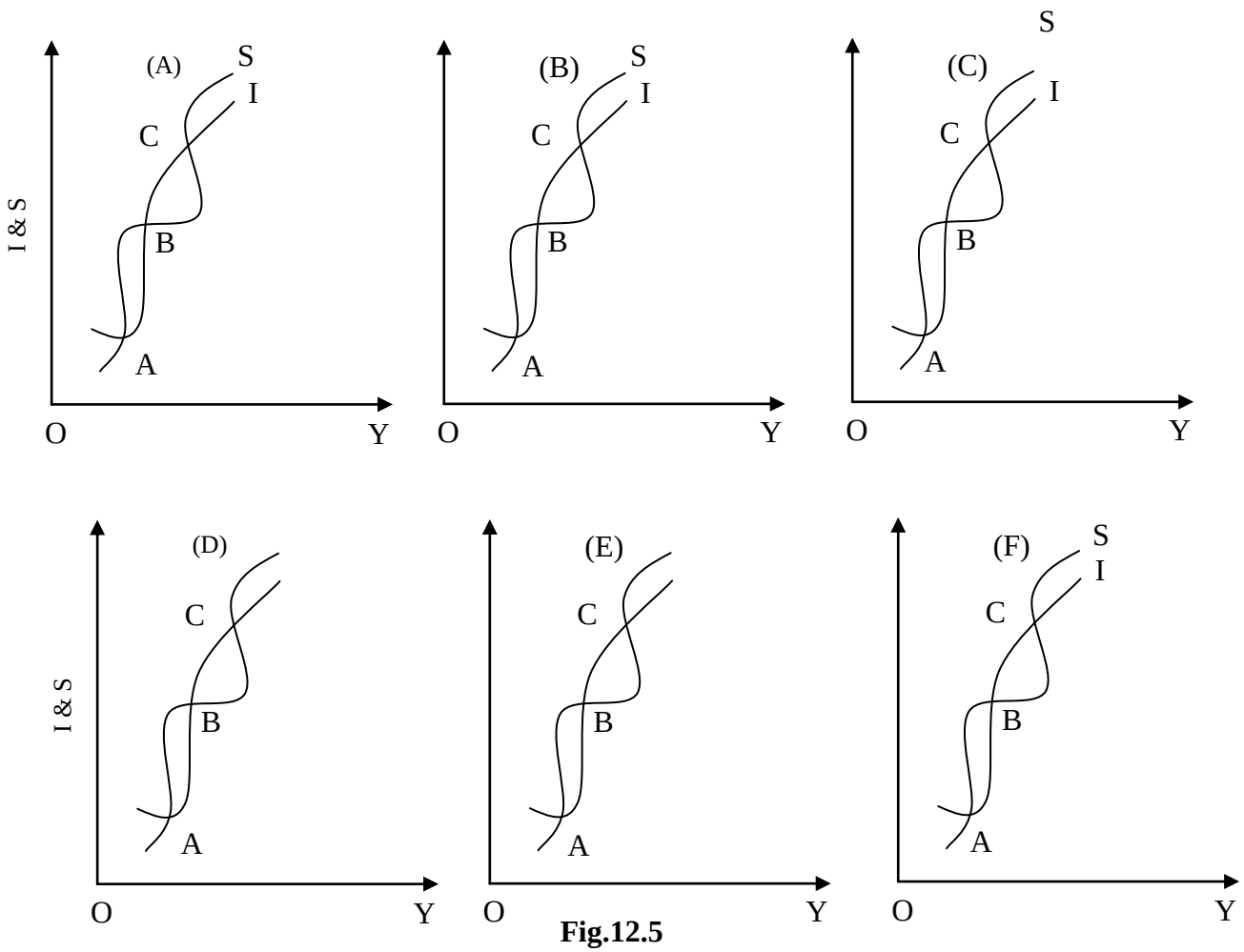


Fig.12.5

Fig.12.5 thus shows fluctuations in income and it diagrams a complete cycle. It brings out the stable and unstable positions of the economy and higher as well as over levels of stable income. The process of shifts in income can continue indefinitely. The cycles which come into existence because of this mechanism need not all be of the same length. It is also not essential that the expansion and contractions are symmetrical. Everything depends upon the exact slopes and the rate at which the investment and savings curves shift. There is also the possibility of no cycle being generated.

Kaldor's analysis of the cycle is simple enough. At the same time it is an ingenious or cleverly designed model. The nonlinearities of the investment function are of critical importance in explaining the cycle. These nonlinearities are due to

excess capacity and credit squeeze. A consumption function with different values of mpc at rising and falling levels of income is necessary to explain the differences between short-run and long-run effects of income on consumption and therefore savings). But there is need to quantity the model to get actual values of the functions in relations to different. Phases of the cycle. We can say that Kaldor's model is a definite advance in cycle theory; it provides the framework for further development of the business cycle theory. Kaldor's model however falls behind 'Hicks' and Smithies' models. Hicks combined the interaction of the nonlinear accelerator and the multiplier with the growth theory of the Harrod –Domer model. His model is an attempt to combine dynamic equilibrium (long term or trend) with cyclical fluctuations. Smithies and others have sought to correct the shortcomings of Hicks model. They have employed the concept of "ratchets" to explain both the cyclical and secular aspects of movements in GNP i.e. both the cycle and the trend.

12.3.4 Methods of Controlling Business Cycle

Economic stability is a precondition for growth and prosperity. Violent fluctuations in the business activity hamper the progress of the country affecting the interests of both the producing and consuming sections. Therefore to counter the business cycle is the chief responsibility of the government. The government policy aimed at economic stabilization is termed as the contracyclical policy. It is, at one time, resorted to combating the inflation. It is, at another time, resorted to combating the deflation or depression. A policy designed to fulfill the former objective is contractionary and conversely, a policy for the later purpose is expansionary.

The chief policy instruments that the government employs to counter the business cycle are monetary, fiscal and incomes. These policies are complementary policies, the success and failure of the one depends upon the success and failure of the other.

Monetary policies are aimed at varying the cost and availability of credit. The cost of credit is the rate of interest rates polices come up to the surface. Nevertheless, doubts are now cast on the effectiveness of it in influencing investment. It is ineffective at the top of the boom or at the bottom of the depression. But it must be

admitted that it plays a useful role between these two extremes in stabilizing the investment activities.

The availability of credit is largely concerned with selective controls. Thus the success of the monetary policy depends on the successful enforcement of selective credit controls. The main weakness of monetary policy is that it is only really effective when the economy is at full employment. In a depression it does little to revive spending.

Fiscal policy is essentially one of adjusting the relationship between government taxation and expenditure with a view to leveling off the ups and downs in the economic activity like monetary, policy, fiscal policy also has drawback in bringing the economy to normal conditions-conditions neither of boom nor or depression. It is ineffective in the classical range in the SLM model, where monetary expansion alone will produce the desired expansionary effect during unemployment.

Thus all the policy instruments or measures that are available have drawbacks in one way or another. So the economic stabilization is an onerous task.

12.4. Summary

Samuelson made a study of the multiplier and the accelerator. And he derived a model in which a series of equations express the way in which the two forces interact to cause changes in income, consumption and investment overtime. In Hick's trade cycle theory, multiplies, accelerator and warranted rate of growth of income –the rate of growth which maintains itself over time-play a crucial role. Kaldor's originality lies in his use of nonlinear consumption and investment functions, and this aspect has been pressed into use and further developed by later theorists.

12.5. In text questions

1. To examine business cycle theory.
2. To analyse Hicks's theory and Kaldor model of the business cycle
3. To examine Methods of Controlling Business C

12.6. Key Words

Samuelson's Theory- Hicks's Theory- Kaldor' Model of the Business Cycle- Methods of Controlling Business Cycle.

LESSON-13

DEMAND FOR MONEY- KEYNES' VIEW

13.1.Introduction

This chapter is concerned with the demand for money-Keynes' view.

13.2.Objectives

- To examine Keynes Theory of Demand for Money
- To analyse Demand for Money or Motives for Liquidity Preference
- To examine Critical Appraisal Of Keynes's Liquidity Theory

13.3.Content

13.3.1 Keynes Theory of Demand for Money

In his well-known book, Keynes propounded a theory of demand for money which occupies an important place in his monetary theory.

It is also with noting that for demand for money to hold Keynes used another term what he called liquidity preference. How much of his income or resources will a person 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 has "liquidity preference" Liquidity preference means the demand for money to hold or the desire of the public to hold cash.

13.3.2 Demand for Money or Motives for Liquidity Preference

Liquidity preference of a particular individual depends upon several considerations. 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 money or buying bonds? The desire for liquidity arises because of three motives: (i) the transactions motive, (ii) the precautionary motive and (iii) the speculative motive.

1. **The Transactions Motive for Money** : The transactions motive relates to the demand for money or the need for money balances for the current transactions of individual and business firms. Individuals hold cash in order "to bridge the interval between the receipt of income and its expenditure". In other words, people hold money or cash balances for transactions purposes because receipt of money and payments do not coincide. Most of the people receive their incomes weekly or monthly while in expenditure goes on day by day. A certain amount of ready money, therefore, is kept in hand to make current payments. This amount will depend upon the size of the individual's income, the interval at which the income is received and the methods of payments prevailing in the society.

The businessmen and the entrepreneurs also have to keep a proportion of their resources in money form in order to meet daily 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 incurred by any business firm. It is clear that the amount of money held under this business motive will depended to a very large extent on the turnover (i.e., the volume of trade of the firm in question). The larger the turnover, the larger, in general, will be the amount of money needed to cover current expenses. It is worth noting that money demand for transactions motive arises primarily because of the use of money as a medium of exchange (i.e. means of payment).

Since the transactions demand for money arises because individuals have to incur expenditure on goods and services during the receipt of income and its use of payment for goods and services, money held for this motive depends upon the level of income of an individual. A poor man will hold less money for transactions motive as he spends less because of his small income. On the other hand, a rich man will tend to

hold more money for transactions motive as his expenditure will be relatively greater. The demand for money is a demand for real cash balances because people hold money for the purpose of buying goods and services. The higher the price level, the more money balances a person has to hold in order to purchase a given quantity of goods. If the price level doubles, then the individual has to keep twice the amount of money balances in order to be able to buy the same quantity of goods. Thus the demand for money balances is demand for real rather than nominal balances.

According to Keynes, the transactions demand for money depends only on the real income and is not influenced by the rate of interest. However, in recent years, it has been observed empirically and also according to the theories of Tobin and Baumol transactions demand for money also depends on the rate of interest. This can be explained in terms of opportunity cost of money holdings. Holding one's asset in the form of money balances has an opportunity cost. The cost of holding money balance is the interest that is foregone by holding money balances rather than other assets. The higher the interest rate, the greater the opportunity cost of holding money rather than non-money assets. Individuals and business firms economise on their holding of money balances by carefully managing their money into bonds or short term income yielding non-money assets. Thus, at higher interest rates, individuals and business firms will keep less money holdings at each level of Income.

2. **Precautionary Motive for Money**: Precautionary motive for holding money refers to the desire of the people to hold cash balances for unemployment, sickness, accidents, and the other uncertain perils. The amount of money demanded for this motive will depend on the psychology of the individual and the conditions in which he lives.

3. **Speculative Motive for Money**: The speculative motive of the people relates to the desire to hold one's resources in liquid form in order to take advantage of market movements regarding the future changes in the rate of interest (or bond prices). The notion of holding money for speculative motive was a new and revolutionary Keynesian idea. Money held under the speculative motive serves as a store of value as money held under the precautionary motive does. But it is a store of money meant for a different purpose. The cash held under this

motive is used to make speculative gains by dealing in bonds whose prices fluctuate. If bond prices are expected to rise which, in other words, means that the rate of interest is expected to fall, businessmen will buy bonds to sell when their prices actually rise. If however, bond prices are expected to fall, businessmen will buy bonds to sell when their prices actually rise. If,

However, bond prices are expected to fall, i.e., the rate of interest is expected to rise, businessmen will sell bonds to avoid capital losses. Nothing being certain in the dynamic world, where guesses about the future course of events are made on precarious basis, businessmen keep cash to speculate on the probable future changes in bond prices (or the rate of interest) with a view to making profits.

Given the expectations about the changes in the rate of interest in future, less money will be held under the speculative motive at a higher current rate of interest and more money will be held under this motive at a lower current rate of interest. The reason for this inverse correlation between money held for speculative motive and the prevailing rate of interest is that at a lower rate of interest less is lost by not lending money or investing it, that is, by holding on to money, while at a higher current rate of interest holders of cash balances would lose more by not lending or investing.

Thus the demand for money under speculative motive is a function of the current rate of interest, increasing as the interest rate falls and decreasing as the rate of interest rises. Thus demand for money for this motive is a decreasing function of the rate of interest. This is shown in Fig. 13.1. Along X-axis is represented the speculative demand for money and along Y-axis current rate of interest. The liquidity preference curve LP is a downward sloping towards the right signifying that the higher the rate of interest, the lower the demand for money for speculative motive, and vice-versa. Thus at the higher current rate of interest Or a very small amount OM is held for speculative motive. This is because at a high current rate of interest much money would have been lent out or used for buying bonds and therefore less money would be kept as inactive balances. If the rate of interest falls to Or', then a greater amount OM' is held under speculative motive. With the further fall in the rate of interest to Or", money held under speculative motive increases to OM".

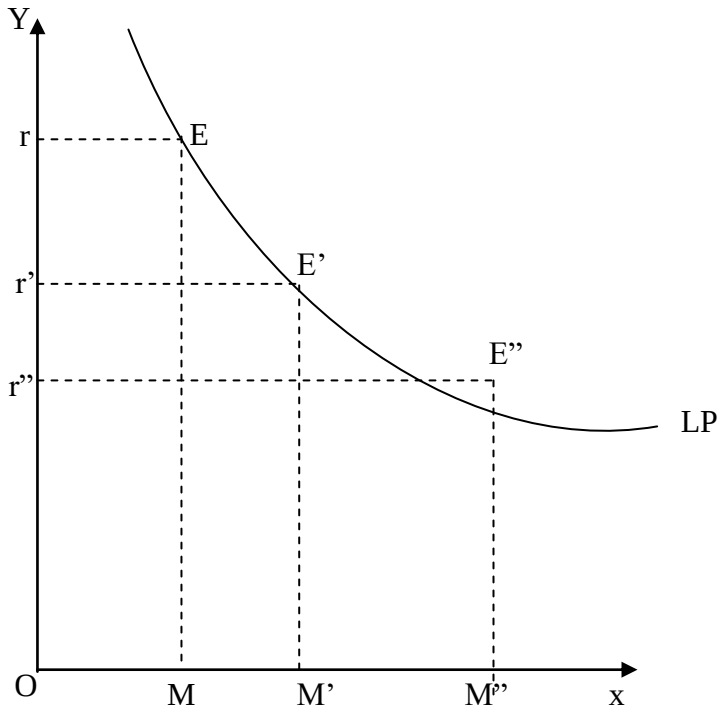


Figure 13.1 . Demand for Money (i.e. Liquidity Preference) for Speculative Motive.

Liquidity Trap: It will be seen from 13.1 that the liquidity preference curve LP becomes quite flat i.e., perfectly elastic at a very low rate of interest; it is horizontal line beyond point E" towards the right. This perfectly elastic portion of liquidity preference curve indicates the position of absolute liquidity preference of the people. That is, at a very low rate of interest people will hold with them as inactive balances any amount of money they come to have. This portion of liquidity preference curve with absolute liquidity preference is called liquidity trap by the economists because expansion in money supply gets trapped in the sphere of liquidity trap and therefore cannot affect rate of interest and therefore the level of investment. According to Keynes, it is because of the existence of liquidity trap that monetary policy becomes ineffective to tide over economic depression.

But the demand for money to satisfy the speculative motive does not depend so much upon what the current rate of interest is, as on expectations about changes in the rate of interest. If there is a change in the expectations regarding the future rate of

interest, the whole curve of demand for money or liquidity preference for speculative motive will change accordingly. Thus, if the public on balance except the rate of interest to be higher (i.e., bond prices to be lower) in the future than had been previously supposed, the speculative demand for money will increase and the whole liquidity preference curve for speculative motive will shift upward.

4. **Aggregate Demand for Money Keynes'View :** If the total demand for money is represented by M_d we may refer to that part of M held for transactions and speculative motive as M_1 and to that part held for speculative motive as M_2. Thus, $M_d = M_1+M_2$. According to Keynes , the money held under the transactions and precautionary motives, i.e., M_1, is completely interest – inelastic unless the interest rate is very high. The amount of money held as M_1, that is, for transactions together with the contingencies growing out of the conduct of personal and business affairs. We can write this in a functional form as follows:

$$M_1= L_1(Y) \ldots. (i)$$

where Y stands for income, L_1 for demand function and M_1 for money demanded or held under the transactions and precautionary motives. The above function implies that money had under the transactions and precautionary motive is a function of income.

On the other hand, according to Keynes, money demanded for speculative motive i.e. M_2 as explained above, is primarily a function of the rate of interest. This can be written as:

$$M_2=L_2(r)\ldots (ii)$$

Where r stands for the rate of interest, L_2 for demand function for speculative motive. Since total demand of money $M_d = M_1+M_2$, we get from (i) and (ii) above

$$M_d = L_1 (Y) + L_2(r)$$

Thus, according Keynes theory, total demand for money is an additive demand function with two separate components. The one component, L1(Y) represents the transactions demand for money arising out of transactions and precautionary motives and is an increasing function of the level of money income. The second component of

the demand for money that is, $L_2(r)$ represents the speculative demand for money, which depends upon rate of interest, is a decreasing of the rate of interest.

5. **Critique of Keyne's Theory**: By introducing speculative demand for money, Keynes made a significant departure form the classical theory of money demand which emphasized only the transactions demand for money. However, Keynes' theory of speculative demand for money has been challenged. The main drawback of Keynes speculative demand for money is that it visualizes that people hold their assets in either all money or all bonds. This seems quite unrealistic as individuals hold their financial wealth in some combination of both money and bonds. This gave rise to portfolio of wealth consist of money, interest-bearing bonds, shares, physical assets, etc. Further, while according to Keynes' theory, demand for money for transaction purposes is insensitive to interest rate, the modern theories of money demand put forward by Baumol and Tobin show that money held for transaction purpose is interest elastic. We will discuss the Post-Keynesian theories of demand for money put forward by Tobin, Baumol and Freidman in the next Chapter.

Further, Keynes additive from of demand for money function, namely $M_d = L_1(Y) + L_2(r)$ has now been rejected by the modern economists. It has been pointed out that money represents a single asset, and not the several over. There may be more than one motive to hold money but the same units of money can serve several motives. Therefore, the demand for money cannot be divided into two or more different department of each other.

In view of all these arguments, the Keynesian total demand for money functions is written in the following modified form

$$M_d = L\ (Y,r)$$

Where it is conceived that demand for money function (M3) is increasing function of the level of income, it is decreasing function of the rate of interest. The presentation of the demand for money function in the above revised and modified form, $M_d = L\ (Y,r)$ has been a highly significant development in monetary theory.

13.3.3 Keynes's Liquidity Preference theory of Rate of Interest

In his book "The General Theory of Employment, Interest and Money", J.M. Keynes gave a new view of Interest. According to him, the rate of interest is purely monetary phenomenon and is determined by demand for money and supply of money. According to him "interest is a reward for parting with liquidity for a specified period". Since people prefer liquidity or want to hold money to meet their various motives, they need to be paid some rewards for surrendering liquidity or money. And this reward is the rate of interest that must be paid to them in order to induce them to part with liquidity or money. Further, according to Keynes, rate of interest is determined by liquidity preference or demand for money to hold and the supply of money. Therefore, the Keynes, theory of interest is also known as Liquidity Preference Theory.

1. **The Demand for Money in a Two Asset Economy** : In order to explain the demand for money and interest rate determination, Keynes assumed a simplified economy where there are two assets which people can keep in their portfolio balance. These two assets are: (1) money in the form of currency and demand deposits in the banks which earn no interest, (2) long term bonds. It is important to note that rate of interest and bond prices are inversely related. When bond prices go up, rate of interest rises and vice versa. The demand for money by the people depends upon how they decide to balance their portfolios between money and bonds. This decision about the portfolio balances can be influenced by two factors.

First, the higher the level of nominal income in a two asset economy people would want to hold more money in their portfolio balance. This is because of transactions motive according to which at the higher level of nominal income, the purchases by the people of goods and services in their daily life will be relatively larger which require more money to be kept for transactions purposes.

Second, the higher the nominal rate of interest, the lower the demand for money for speculative motive. This is firstly because a higher nominal rate of interest implies a higher opportunity cost for holding money. At higher rate of interest holders of money can earn more incomes by holding bonds instead of money. Secondly, if the current rate of interest is higher than what is expected in the future, the people would

like to hold more bonds and less money in their portfolio. On the other hand, if the current rate of interest is low (in other words, if the bond prices are currently high), the people will be reluctant to hold larger quantity of bonds (and instead they would hold more money in their portfolio) for the fear and bond prices would all in the future causing capital losses to them.

2. **Money Demand Curve:** It follows from above that quantity of money demanded increases with the fall in the rate of interest or with the increase in level of nominal income. At a given level of nominal income, we can draw a money demand curve showing the quantity of money demanded at various rates of interest. As demand for money is inversely related to the rate of interest, the money demand curve at a given level of income say, Y_1 will be downward-sloping as is shown by the curve MD1 in Figure 13.2 when the level of money income increases, suppose from Y_1 to Y_2, the curve of demand for money shifts upward to the new position MD_2.

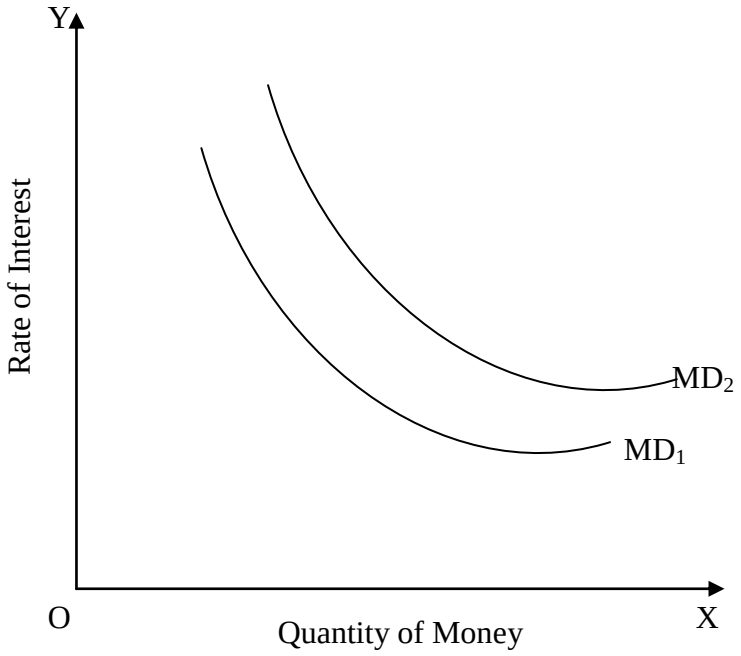


Figure 13.2

13.3.4 Equilibrium in the Money Market

The rate of interest, according to J.M. Keynes, is determined by demand for money (Liquidity Preference) and supply of money. The factors which determine demand for money has been explained above. The supply of money, at a given time, is

fixed by the monetary authority of the country. In Figure 13.3, MD is the demand curve for money at a given level of nominal income. MS is the money supply curve which is a vertical straight line showing that 200 crores of rupees is the money supply fixed by the monetary authority. It will be seen that quantity demanded of money equals the given money supply at 10 per cent rate of interest. So the money market is in equilibrium at 10 per cent rate of interest. There will be disequilibrium if rate of interest is either higher or lower than 10 percent.

Fig. 13.3

Suppose the rate of interest is 12 per cent. It will be seen from figure 13.3 that at 12 per cent rate of interest, supply of money exceeds the demand for money. The excess supply of money reflects the fact that people do not want to hold as much money in their portfolio as the monetary authority has made it available to them. The people holding assets in the present two-asset economy would react to this excess money supply with them by buying bonds and thus replace some of money in their portfolios with bonds. Since the total money supply at a given moment remains fixed, it cannot be reduced by buying bonds by individuals. What the bonds-buying spree would lead to is the rise in prices of bonds. The rise in bond prices mean the fall in the rate of interest. As will be seen from the Figure with the fall in the interest rate from 12 per cent of 10 per cent, quantity demand of money has increased to be once again equal to the given supply of money and the excess supply of money is entirely eliminated and money market is in equilibrium.

On the other hand, if the rate of interest is lower than the equilibrium rate of 10 per cent, say it is 8 per cent, then as will be seen from figure there will emerge excess demand for money. As a reaction to this excess demand for money, people would like to sell bonds in order to obtain a greater quantity of money for holding at lower rate of interest. The stock of money remaining fixed, the attempt by the people to hold more money balances at a rate of interest lower than the equilibrium level through sale of bonds will only cause the bond prices to fall. The fall in bond prices implies the rise in the rate of interest. Thus, the process started as a reaction to the excess demand for money at an interest rate below the equilibrium will end up with the rise in the interest rate to the equilibrium level.

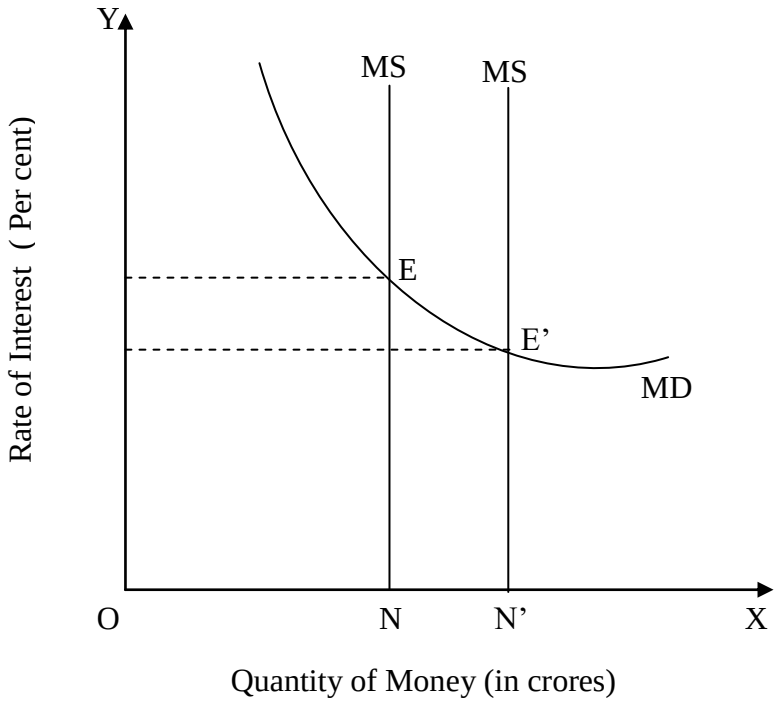


Fig.13.4

1. Effect of an increase in the Money Supply

Let us now examine the effect of increase in money supply on the rate of interest. In Figure 13.4, MD is the demand for money for satisfying various motives. To begin with, ON is the quantity of money available. Rate of interest will be determined where the demand for money is in balance or equal to the fixed supply of money on. It is clear from Figure 13.4 that demand for money is equal to ON quantity of money at Or rate of interest. Hence Or is the equilibrium rate of interest. Assuming

no change in expectations and nominal income, an increase in the quantity of money (through buying securities by the Central Bank of the country, from the open market), will lower the rate of interest. In Fig. 13.4 when the quantity of money increase from ON to ON, the rate of interest fall from Or to Or because the new quantity of money ON is in balance with the demand for money at Or rate of interest. In this case we move down the curve. Thus given the money demand curve to curve of liquidity preference, an increase in the quantity of money brings down the rate of interest.

Let us see how increase in money supply leads to the fall in the rate of interest. With initial equilibrium at Or, when the money supply is expanded from ON to ON', there emerges excess supply of money at the initial Or rate of interest. The people would react to this excess quantity of money supplied by buying bonds. As a result, the bond prices will go up which implies that the rate of interest will decline. This is how the increase in money supply leads to the fall in rate of interest.

2. Shifts in Money Demand (MD) Curve

The position of money demand curve depends upon two factors: (1) the level of nominal income, (2) the expectations about the changes in bond prices in the future which implies changes in rate of interest in future. As has been explained above, a money demand curve is drawn by assuming a certain level of nominal income. With the increase in nominal income, money demand for transactions and precautionary motives increase causing an upward shift in the money demand curve.

Shift in money demand curve (or what Keynes called liquidity preference curve) can also be caused by changes in the expectations of the people regarding changes in bond prices or movements in the rate of interest in the future. If some changes in events leads the people on balance to expect a higher rate of interest in the future than they had previously supposed, the money demand or liquidity preference for speculative motive will increase which will bring about an upward shift in the money demand curve or liquidity preference curve and this will raise the rate of interest.

In Figure 13.5, assuming that the quantity of money remains unchanged at ON, the rise in the money demand or liquidity preference curve from Md1 to Md2, the rate of interest rises from Or to Oh because at Oh, the new speculative demand for money is in equilibrium with the supply of money ON. It is worth noting that when the liquidity

preference curve rises from DM1 to DM2, the amount of money held does not increase; it remain ON as before. Only the rate of interest rises from Or to Oh to equilibrate the new liquidity preference or money demand with the available quantity of money ON.

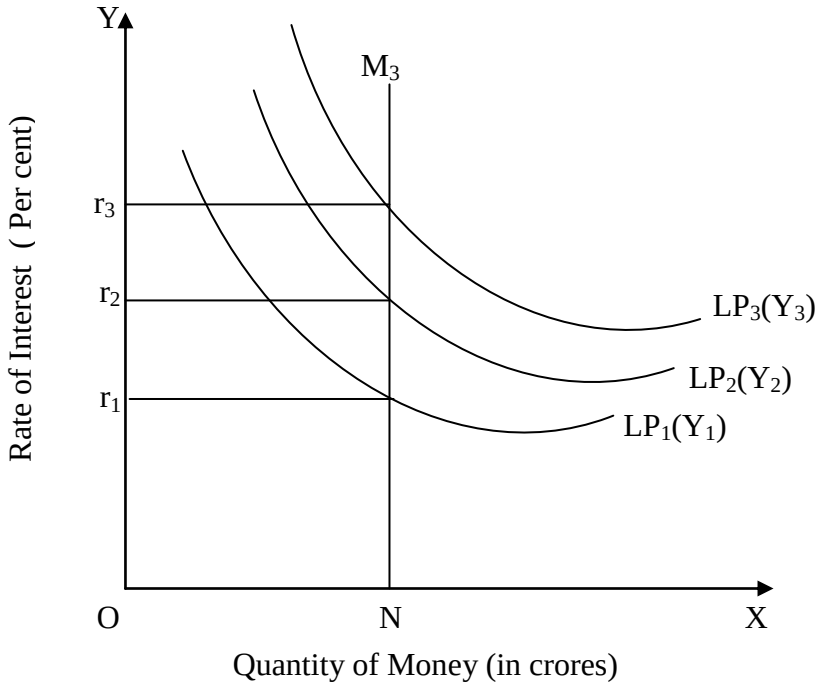


Fig.13.5

Thus we see that Keynes explained interest in terms of purely monetary forces and not in terms of real forces like productivity of capital and thrift which formed the foundation, stones of both classical and loanable fund theories. According to him, demand for money for speculative motive together with the supply of money determines the rate of interest. He agreed that the marginal revenue product of capital tends to become equal to the rate of interest but the rate of interest is not determined by marginal revenue productivity of capital. Moreover, according to him, interest is not a reward for saving or thriftiness or waiting but for parting with liquidity. Keynes asserted that is not the rate of interest which equalizes saving and investment. But this equality is brought about through changes in the level of income.

13.3.5 Critical Appraisal Of Keynes's Liquidity Theory

Preference Theory of Interest

1. Keynes ignored the role of real factors in the determination of interest. Firstly, it has been pointed out that rate of interest 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 rate of interest. Keynes makes the rate of interest independent of the demand for investment funds. In fact, it is not so independent. The cash-balances of the businessmen are largely influenced by their demand for capital investment. This demand for capital-investment depends upon the marginal revenue productivity of capital. Therefore, the rate of interest is not determined independently of the marginal revenue productivity of capital (marginal efficiency of capital) and investment demand. When investment demand increases due to greater profit prospects or, in other words, when marginal revenue productivity of capital rises, there will be greater demand for investment funds and the rate of interest will go up. But Keynesian theory does not account for this. Similarly, Keynes ignored the effect of the availability of savings on the rate of interest. 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 rate of interest.
2. Keynesian theory is also indeterminate. Now, exactly the same criticism applies to Keynesian theory itself on the basis of which Keynes rejected the classical and loanable funds theories. Keynes's theory of interest, like the classical and loanable funds theories is indeterminate.

According to Keynes, rate of interest is determined by liquidity preference (i.e demand for money) and supply of money. However, as we have seen, liquidity preference, especially demand for money for transactions motive depends on level of income. Now, when income increases, liquidity preference curve (that is, money demand curve will shift to the right and, given the supply of money, new equilibrium rate of interest will be obtained. Thus at different levels of income, Y_1, Y_2, Y_3, as

shown in Figure 13.6 (a) there will be different liquidity preference curve or money demand curve such as LP_1, LP_2, LP_3. As a result, at different levels of income, there will be different equilibrium rates of interest. Thus, we cannot know the rate of interest unless we know the level of income. However, we cannot know the level of income unless we first know the rate of interest. This is because rate of interest influences investment which in turn determines the level of income. Thus, Keynes's theory is indeterminate, that is, we are not able to arrive at a single determinate rate of interest; rate of interest varies as incomes varies. It will be seen from Figure 13.6(a) that at different levels of income Y_1,Y_2,Y_3 there are different liquidity preference curves LP_1, LP_2, LP_3 and therefore different equilibrium rates of interest r_1,r_2,r_3. In Figures 13.6(b) we have plotted these different rates of interest against different levels of income and get a curve known as LM curve. Thus, Keynes's analysis at the most help us to obtain LM curve showing what will be the rates of interest at different levels of income and not any unique or particular rate of interest. Thus, the Kynesian theory, like the classical theory, is indeterminate. "In the Keynesian case the supply and demand for money schedules cannot give the rate of interest unless we already know the income level; in the classical case the demand and supply schedules for saving offer no solution until the income is known. Precisely the same is true of loanable funds theory. Keynes' criticism of the classical and loanable funds theories applies equality to his own theory.

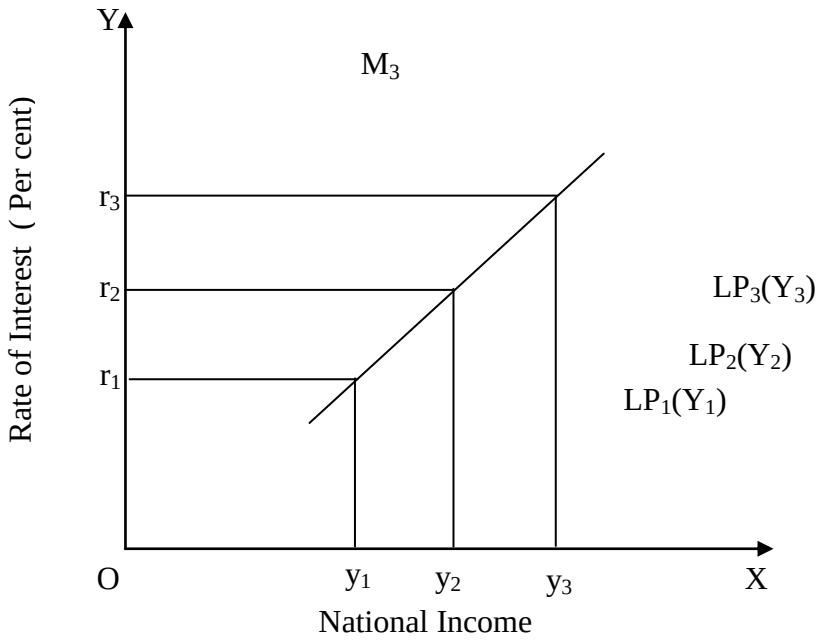


Figure 13.6(a)

No liquidity without savings: According to Keynes, interest is a reward for Parting with liquidity and in no way a compensation and inducement for saving or waiting. But without saving how can the funds be available to be kept as liquid and how can there be the question of surrendering liquidity if one has not already saved money. Jacob Viner rightly maintains, "Without Saving there can be no liquidity to surrender". Therefore, the rate of interest is vitally connected with saving which is neglected by Keynes in the determination of interest.

It follows from above that Keynesian theory of interest is also not without flaws. But importance Keynes gave to liquidity preference as a determinant of interest is correct. In fact, the exponents of loanable funds theory incorporated the liquidity preference in their theory by laying greater stress on hoarding and dishoarding. We are inclined to agree with Prof. D. Hamberg when he says, "Keynes did not forge nearly as new a theory as he and others at first thought. Rather, his great emphasis on the influence of hoarding on the rate of interest constituted an invaluable addition to the theory of interest as it had been developed by the loanble funds theorists who incorporated much of Keynes' ideas into their theory to make it more complete.

13.5 In text questions

1. Explain Keynes Theory of Demand for Money.

2. Discuss Equilibrium in the Money Market.

3. Critically examine Keynes's Liquidity Theory.

13.6. Key Words : Liquidity Preference

LESSON-14

INTEGRATION OF MONETARY THEORY AND VALUE THEORY BY KEYNES

14.1.Introduction

This chapter is concerned with the integration of monetary theory and value theory by Keynes.

14.2.Objectives

- To examine Friedman Vs Keynes
- To analyse Simple Quantity Theory
- To examine Modern Quantity Theory and Keynesian Theory

14.3.Content

14.3.1 Friedman Vs Keynes

Friedman's demand for money function differs from that of Keynes's in many ways which are discussed as under.

First, Friedman uses a broader definition of money than that of Keynes in order to explain his demand for money function. He treats money as an asset or capital good capable of serving as a temporary abode of purchasing power. It is held for the stream of income or consumable services which it renders. On the other hand, the Keynesian definition of money consists of demand deposits and non-interest bearing debt of the government.

Second, Friedman postulates a demand for money function quite different from that of Keynes. The demand for money on the part of wealth holders is a function of many variables. These are R_m, the yield on money; R_b, the yield on bonds; R_e, the yield on securities; g_p, the yield on physical assets; and u referring to other variables. In the Keynesian theory, the demand for money as an asset is confined to just bonds where interest rates are the relevant cost of holding money.

Third, there is also the difference between the monetary mechanisms of Keynes and Friedman as to how changes in the quantity of money affect economic activity. According to Keynes, monetary changes affect economic activity indirectly through bond prices and interest rates. The monetary authorities increase the money supply by purchasing bonds which raises their prices and reduces the yield on them. Lower yield on bonds induces people to put their money elsewhere, such as investment in new productive capital that will increase output and income. On the other hand, in Fiedman's theory monetary disturbances will directly affect prices and production of all types of goods since people will buy or sell any asset held by them. Friedman emphasizes that the market interest rates play only a small part of the total spectrum of rates that are relevant.

Fourth, there is the difference between the two approaches with regard to the motives for holding money balances. Keynes divides money balances into "active" and "idle" categories. The former consist of transaction and precautionary motives, and the latter consist of the speculative motive for holding money. On the other hand, Friedman makes no such division of money balances. According to him, money is held for a variety of different purposes which determine the total volume of assets held such as money, physical assets, total wealth, human wealth, and general preferences, tastes and anticipations.

Fifth, in his analysis, Firedman introduces permanent income and nominal income to explain his theory. Permanent income is the amount a wealth holder can consume while maintaining his wealth intact. Nominal income is measured in the prevailing units of currency. It depends on both prices and quantities of goods traded. Keynes, on the other hand, does not make such a distinction.

14.3.2 Simple Quantity Theory

We may look at the simple quantity theory of money as a theory of the price level or a theory of aggregate demand. If the money supply turns over at a constant rate in the purchase of goods increases in the money supply must mean proportionate increase, in total spending. If the economy is at its full employment level of output, increase in spending must mean proportionate rise in the price level. If the rise in the price level is persistent, then by our definition, we have inflation. Thus, under these

conditions, inflation proceeds as fast as the money supply is expansion. It ceases when the money supply stops expanding.

This type of the quantity theory is a part of the classical theory and theory of full employed economy.

According to the reasoning of the simple quantity theory, the inflationary process is halted when the money supply stops expanding. The monetary authority, through its control over the stock of money has control over aggregate spending and so over the price level and over inflation. Nonetheless, inflation, occurs because of one reason or another, the money supply is allowed to increase while the economy's output is unchanged for the time being. One reason for excessive increases in the money supply is the creation of new money by the central government to meet its obligation, especially in war time. And this practice is not unknown during peace-time.

14.3.3 Modern Quantity Theory and Keynesian Theory

The modern statement of theory is associated with the name of Milton Friedman of the University of Chicago. The modern quantity theory no longer assumes that full employment is the normal state of the economy or that the velocity of money is a stable as is assumed in the simple (earlier) quantity theory. The modern quantity theory is similar to Keynesian theory in that it refers to income level rather than to price level. However, the modern quantity theory continues to give a very important role to money, whereas Keynesian theory at least in its extreme form, argues that 'money does not matter'. Keynesian theory sees money as an essentially passive factor in economic change. Its active role is limited to its effect on interest rates, and through interest rates on investment. As investment depends more on factors other than interest rates, the quantity of money becomes a minor factor in explaining income. Thus the quantity theory argues that if multiplier is relatively stable, we can predict changes in income from changes in investment. And it does not agree with the quantity theorists that we can predict changes in income changes in the quantity of money because money has only an indirect and quite limited influence on investment.

In reply, Friedman and his followers maintain that changes in income can be more accurately predicated from changes in investment, because on the basis of empirical evidence, the believe that velocity of money exhibits a greater regularity of behaviour than does the investment multiplier. They argue that if the marginal

propensity to save sis unstable, the multiplier is correspondingly variable, and the stable relationship between investment changes and income changes postulated by the Keynesian model does not exist. On the other hand, if the velocity of money is more stable than the marginal propensity to save, a more stable relationship exists between changes in the quantity of money and changes in income than between changes in investment and changes in income. If this is the relationship, naturally, money become very important. For it means that we can better explain changes in income from hanges in quantity of money. Thus "Money alone matters" returns to the forefront, and the basic Keynesian system of autonomous expenditures and the multiplier is pushed to the background.

We should remember that although modern quantity theory assigns money a position of key importance in explaining income, it is different from the conclusions of the crude quantity theory that changes in income will not only be proportionate to changes in the price level but also in output. The modern quantity theory does not assume that the economy is normally at full employment or that the velocity of money is stable. Even in the modern theory, inflation is found to be result of the excessive expansion of the money supply, but there is a difference. As both velocity and output are recognized as variables, the relationship between prices and the quantity of money is not as simple as that assumed by earlier quantity theorists.

Although the modern quantity theory has attracted a growing number of supporters many economists regard the Keynesian theory as a better explanation of income changes. As we have already noted, in the place of the emphasis on money and its velocity, Keynesian theory places emphasis on autonomous expenditure and the multiplier. If autonomous expenditures rise steadily, there will be a steady rise in income, equal to a multiple of the rise in autonomous expenditures. Once the economy reaches the full employment output, inflation proceeds as long as and as fast as these expenditures expand.

Whether we seek to explain demand pull inflation along the line of the quantity theory or Keynesian theory, it is clear that once the economy is at the full employment level of output, further increases in demand are purely inflationary. Keynesian analysis to inflationary problems was found to be attractive mainly because, the saving-investment equilibrium condition provided a direct approach to the question of inflation

in terms of the demand for and supply of goods. It does go right to the aggregate demand for goods and what determines it.

14.4. In text question

1. Distinguish between modern quantity theory and Keynesian theory of value.

LESSON-15

INTEGRATION OF MONETARY THEORY AND VALUE THEORY BY PATINKIN

15.1 Introduction

This chapter is concerned with the integration of monetary theory and value theory by patinkin.

15.2 Objective

- To examine Difference Between the Pigou Effect and The Real Balance Effect

15.3 Content

15.3.1 Don Patinkin

Don Patinkin in his monumental work money. Interest and Prices criticizes the Cambridge economists for the homogeneity postulate and the dichotomization of goods and money markets and then reconciles the two markets through the real balance effect.

The homogeneity postulate states that the demand and supply of goods are affected only by relative prices. It means that a doubling of money prices will have no effect on the demand and supply of goods. Mathematically, the demand and supply function for goods are homogeneous of degree zero in prices alone. Thus this homogeneity postulate precludes the price level from affecting the goods market as well as the money market. Patinkin criticizes this postulate for its failure to have any determinate theory of money and prices.

Another closely related assumption which Patinkin criticizes is the dischotomisation of the goods and money markets in the neo-classical analysis. This dichotomization means that the relative price level is determined by the demand and supply of goods, and the absolute price level is determined by the demand and supply of money. Like the homogeneity postulate, this assumption also implies that the price level has absolutely no effect on the monetary sector of the economy, and the level of monetary prices, in turn, has no effect on the real sector of the economy.

After condemning the neo-classical assumptions outlined above, Patinking integrates the money market and the goods market of the economy which depend not only on relative prices but also on real balances. Real balances mean the real purchasing power of the stock of cash holdings of the people.

When the price level changes, it affects the purchasing power of people's cash holdings which, in turn, affects the demand and supply of goods. This is the real balance effect. Patinkin denies the existence of the homogeneity postulate and the dischotomisation assumption through this effect. For this, Patinkin introduces the stock of real balances (M/P) held by community as an influence on their demand for goods. Thus the demand for a commodity depends upon real balances as well as relative prices. Now if the price level rises, this will reduce the real balances (purchasing power) of the people who will spend less than before. This implies a fall in the demand for goods and the consequent fall in prices and wages. The price decline increases the value of money balances held by the people which, in turn, increase the demand for goods directly. The initial decrease in commodity demand creates a state of involuntary unemployment. But unemployment will not last indefinitely because as wages and prices fall, the real balance effect tends to increase commodity demand directly and indirectly through the interest rate. With sufficiently large fall in wages and prices, the full employment level of output and income will be restored. Finally, even if there is the "liquidity trap", the expansion of the money supply will increase money balances and full employment can be restored through the operation of the real balance effect. According to Patinkin, "This is the crucial point. The dynamic grouping of the absolute price-level towards its equilibrium value will-through the real balance effect-react on the commodity markets and hence on relative prices. " Thus absolute prices play a crucial role not only in the money market

but also in the real sector of the economy. Patinkin further points out that "once the real and monetary data of an economy with outside money are specified, the equilibrium values of relative prices, the rate of interest, and the absolute price level are simultaneously determined by all the markets of the economy." In this way, Patinkin also introduces the real balance effect in the general equilibrium analysis.

Besides removing the classical dichotomy and the homogeneity postulate and integrating the monetary and value theory through the real balance effect. Patinkin also validates the quantity theory conclusion. According to patinkin, the real balance effect implies that people do not suffer from 'money illusion'. They are interested only in the real value of their cash holdings. In other words, they hold money for 'what it will buy'. This means that a doubling of the quantity of money will lead to a doubling of the price level, but relative prices and the real balances will remain constant and the equilibrium of the economy will not be changed.

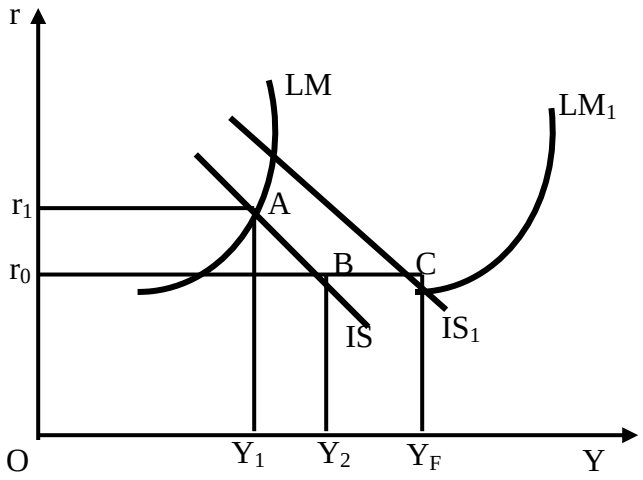


Fig.15.1

The real balance effect is illustrated diagrammatically in Figure 15.1 by using the IS and LM technique because the IS curve represents the goods market and the LM curve the money market. To begin with, we take a situation when the economy is in equilibrium at OY_1 level of income when the IS and LM curves intersect at point A where the interest rate is Or_1. Assuming OY_F as the full employment level, the pressure of unemployment is measured by Y_1-Y_F which causes wages and prices to fall simultaneously. This results is an increase in the real value of people's money holding

which shifts the LM curve to the right to LM_1. It intersects the IS curve at point B the income level OY_2 with the result that the interest rate falls to Or_0, which stimulates investment, discourages savings and increases consumption. Even when the interest rate falls to it minimum level Or_0, the level of demand in the commodity market as represented by the IS curve is not high enough to lead the economy to the full employment level OY_F. Rather, unemployment measured by Y_2-Y_F remains in the economy. This much unemployment leads to a further fall in wages and prices, and to the increase in demand for consumption goods which shifts the IS curve to the right to IS1 so that it intersects the LM1 curve at point C at the full employment level OY_F.

Thus under conditions of wage and price flexibility when the IS and LM curves shift rightwards, the real balance effect ultimately leads the economy to the full employment level, even in the liquidity trap situation as shown above when investment is interest inelastic.

Conclusion. Thus the real balance effect demonstrates three theoretical points: first, it eliminates the classical dichotomy between value and monetary theory; second, it validates the conclusions of the quantity theory that in equilibrium, money is neutral and the interest rate is independent of the quantity of money through the real balance effect; and third, the wage-price flexibility leads to full employment in the long-run and that the Keynesian underemployment equilibrium is a disequilibrium situation.

15.3.2 Its Criticisms

Patinkin's analysis of the real balance effect has been severely criticized by Johnson, Archibald and Lipsey, Lolyd and other economists.

1. Not Applicable in Equilibrium Situations. Johnson points out that there is no need for the real balance effect so long as the real analysis is confined to equilibrium situations. The real balance is needed only to ensure the stability of the price level and not to determine the real equilibrium of the system
2. Conceptually Inadequate. Archibald and Lipsey regard Patinkin's analysis of the real balance effect as conceptually inadequate. According to them, Patinkintraces the real balance analysis as a short-run phenomenon and does not work in out through the long-run.

3. Price Stability without Real Balance Effect. Cliff Lloyd has criticized Patinkin for holding the classical view that people do not suffer from 'money illusion', and that their behaviour is influenced by the real balance effect. He has shown that the stability of the price level can be had without taking the real balance effect. According to him, by assuming that money is available in fixed quantity and people want to hold it, will bring price stability. But 'money illusion' will not be absent.

4. Failure to Explain Increase in Monetary Wealth. Shaw has criticized Patinkin for his failure to analyse the manner in which the increase in monetary wealth comes about. According to him, Patinkin simply assumes a doubling of money balances and analyses only the resultant effects. In Practice, money stock does not change in this manner. "Nor, in most cases, do people experience the happy variations of helicopters carrying a surfeit of bank notes…"

Conclusion.

Despite these criticisms, "the introduction of the real balance effect disposes of the classical dichotomy, that is, it makes it impossible to talk about relative prices without introducing money; but it nevertheless preserves the classical proposition that the real equilibrium of the system will not be affected by the amount of money, all that will be affected will be the level of prices."

15.3.3 The Pigou Effect

The Pigou effect, also known as the wealth effect, was propounded by A.C. Pigou in 1943 to counter Keynes' argument that wage-price deflation cannot lead to automatic full employment.

Pigou fully recognized that interest-rate effect of Keynes that wage-price deflation raises investment and income through a reduction in the interest rate. But he did not agree that the real income cannot be raised to the level of full employment due to liquidity trap. According to Pigou, a wage-price deflation will generate automatic full employment via an increase in the level of consumption. He argued that when money wages are cut, prices fall and the value of money rises. The rise in the value of money means a rise in the real value of assets such as stocks, shares, bank deposits, governments

securities, bonds, etc. For example, if prices fall by 50 per cent, the real value of each rupee will be doubled because it will purchase twice as much as it did before. The increase in the real value of fixed asset will make their owners feel richer than before. They will, therefore, save less out of their current income and spend more on consumption. This will increase aggregate demand and output, and will generate automatic full employment in the economy. As a result of the Pigou effect, the consumption function will shift upward (or the saving function will shift downward). In terms of the IS function, it means a rightward shift of the IS curve.

The important point in Pigou effect is that it is based on the assumptions of flexible wage and price levels, and a constant stock of money. Therefore, it is only the IS curve that shifts to the right with the increase in consumption or reduction in saving when the real value of fixed assets increases. The LM curve is assumed to be given because of the assumption of a constant stock of money. This is because the analysis of Pigou effect runs strictly in terms of static anlysis.

Another important point is that this analysis is based upon the flexibility of absolute prices. Patinkin summarises the Pigou effect in the following theorem: " There always exists a sufficiently low price level such that, if expected to continue indefinitely, it will generate full employment". Algebraically, if the money supply which is assumed to be constant is M0 and the price level is P_1 then the saving function (or consumption function) will be $S=f(RY(M_0/P)]$. Thus saving depends upon the interest rate (R), income (Y) and the ratio of given money supply to absolute prices (M_0/P). When prices fall the real value of a given stock of money rises and people reduces their saving or increase consumption, thereby increasing aggregate demand. This proves will automatically lead the economy to the level of full employment when decline in wages and prices stops. In the Pigou effect, interest elasticities and positions of the saving and investment functions are irrelevant.

The Pigou effect is illustrated in Figure 14.A.2(A) and (B). To begin with Panel (A) of the figure, suppose the economy is at Y_1 level of income as determined by IS_1 and LM_0 functions at E_1. Now wage-price deflation starts which raises the consumption function such that the IS_1 function shifts rightwards to IS_3. Given the LM0 function, the

IS3 function intersects the LM_0 function at E_3 thereby raising the income level from OY_1 to OY_F, the full employment level. Panel (B) of the figure shows that as the prive level falls from p3 to P1 with reduction in money wages, income increases from OY1 to the full employment level OYF through the increase in aggregate demand via the Pigou effect. This is shown by the downwards sloping aggregate demand curve AD.

15.3.4 Its Criticisms

The Pigou effect led to a sort of warfare among the neo-classiclas and the neo-Keynesians. It appeared that the former had scored a victory over the latter by providing theoretically that if wage-price deflation is incorporated in the Keynesian model, it will automatically lead to full employment of the economy. But the neo-Keynesian resistance to the Pigou effect has been so strong that economists have pointed out a number of defects in Pigou's analysis of wage price deflation as a means to automatic full employment. The following arguments are advanced against the Pigou analysis.

1. Ignores Distributional Effects. The Pigou effect assumes that the depressing effect of a reduction in the price level is offset by its stimulating effect on creditors. Therefore, the private sector being a creditor to the government is stimulated by a reduction in the price level. But there are debtors other than the government. So a price decline will have different reactions on debtors and creditors. Creditors are encouraged to increase their expenditure while debtors are discouraged. But if the debtors are discouraged more than the creditors are encouraged, the price decline will not have encouraging effects on expenditures. Thus Pigou overlooked the possibility of microeconomic "distributional effects".
2. Neglects the Effect of Wage-Price Deflation on Firms. The Pigou effect consider only the effect of a change in real balances on consumption or saving of the household sector. It neglects the influence of real balances on firms. This is a serious defect in the Pigou analysis because the motivations of households and firms are different. Investment decisions of firms are favourably influenced when their real balances increase. But if firms are debtors and a price decline continues to persist, it will cause bankrupticies of firms. When debtors become bankrupt, creditors also lose. This will have a depressing effect on the economy. Thus a price

decline will not lead to increase in aggregate demand and to automatic full employment in the economy.

3. Effect on Savings Uncertain. Another defect of the Pigou analysis is that it assumes a definite knowledge about the effect on saving (or consumption) of an increase in the real balances. As a matter of fact, little is known about this. Moreover, only a small proportion of the lower income groups which form the majority of the population in a country, possess appreciable amount of assets. Thus very few people save and those who save do not increase their consumption expenditures with the increase in the real value of their assets, following a price decline. Rather, they like to save more as their assets increase.

4. Wage-price Deflation not Once-for-all. The Pigou analysis is based on the assumption of once-for-all wage-price decline. It, therefore, regards a price decline as a temporary phenomenon which is likely to be reversed when recovery starts. In practice, once-for-all price decline is not obtained. Even if it exists it is not reasonable to suppose that people will feel richer and increase their consumption expenditures at a single price decline.

5. Difficult to measure Quantitatively. The Pigou effect is difficult to weigh quantitatively, that is, how much consumer expenditure will increase for any given decline in the price level. "In the face of a certain amount of unemployment, it is one thing if a 10 per cent decline in the price level and accompanying increase in the real value of the stock of currency and government securities is sufficient to raise consumption spending by the amount needed to restore full employment; it is quite another if the Pigou effect is so weak that the same result can be achieved with an 80 per cent decline in the price level. If a major deflation is required, this in itself rules out reliance on the Pigou effect as a practical means of restoring an economy to full employment. According to Shapiro, " A hyperdeflation may satisfy the purely theoretical requirements of the Pigou effect, but in practice it might also produce economic distress leading to riots and even revolution".

6. Neglects price Expectations. Another weakness of the Pigou effect is that it neglects the role of price expectations. It is not that the price level declines only one in

practice. Rather, once there is a wage-price deflation, it creates expectuations of a further decline in prices. This is because of the generation of pessimism among businessmen and consumers who have a tendency to reduce their expenditures in the expectation of further decline in prices. Under the circumstances, the Pigou analysis is not likely to lead to automatic full employment.

7. Pigou Effect disappears in the Lower Turning Point of a Trade Cycle. Taking the Pigou analysis in relation to the trade cycle, a once-for-all wage-price reduction will not lead to complete recovery and to full employment. Suppose the wage-price deflation has been completed and the consequent rise in real balances and in the consumption function takes the economy to the level of recovery. But as recovery continues, prices will begin to rise and the real balances with the public will start declining. So the Pigou effect will disappear once the lower turning point of a trade cycle is reached. According to Hansen "it applies to a situation like that of 1936-40 in the United states, when prices had fallen and become established at a lower level."
8. Static in Nature. The Pigou effect is in terms of static analysis which assumes a constant stock of money. But the real world is dynamic where wage-price deflation with a constant stock of money will lead to full employment only after a long period, or it might even lead to a deflationary spiral with continuous unemployment.

Thus the Pigou analysis leading to automatic full employment is unrealistic and impracticable. As he himself wrote, "The puzzles we have been considering … are academic exercises, of some slight use perhaps for clarifying thought, but with very little chance of ever being posed on the chequer board of actual life".

15.3.5 Difference Between the Pigou Effect and The Real Balance Effect

Both the terms "Pigou effect" and "real balance effect" have been coined by Patinkin. But they are not the same. Rather, they are quire different. The Pigou effect is a static analysis which consists of the effect of a wage-price deflation on consumption, given the constant stock of money or what Gurley and Shaw call "outside money" which includes gold, government securities and fiat paper money. It shows that when consumption increases as a result of wage-price deflation, the IS curve shifts to the right

such that it intersects a given LM function and automatic full employment is attained in the economy.

The real balances effect is a modified version of the Pigou effect given by Patinkin. It is a dynamic analysis which comprises both the Pigou effect and the Keynes effect. The Keynes effect shows that as a result of wage-price deflation when the real value of money increases, smaller transactions balances are needed which create more demand for securities. Consequently the prices of securities rise and the rate of interest falls at each level of income so that the LM curve shifts to the right.

Thus the operation of the Keynes effect shifts only the LM function to the right and that of the Pigou effect only the IS function to the right. But in the real balance effect both the LM and Is functions are shifted to the right till they intersect at the level of full employment. In the real balance effect, elasticities of the IS and LM functions are irrelevant. The LM curve may be perfectly elastic i.e. in the Keynesian liquidity trap region, or the IS curve may be perfectly inelastic, the level of full employment is automatically attained.

15.3.6 Don Patinkin

Don Patinkin in his monumental work Money, Interest and Prices criticizes the Cambridge economists for the homogeneity postulate and the dichotomization of goods money markets andthen reconciles the two markets through the real balance effect.

The homogeneity postulate states that the demand and supply of goods are affected only by relative prices. It means that a doubling of money prices will have no effect on the demand and supply of goods. Mathematically, the demand and supply function for goods are homogeneous of degree zero in prices alone. Thus this homogeneity postulate precludes the price level from affecting the goods market as well as the money market. Patinkin criticizes this postulate for its failure to have any determinate theory of money and prices.

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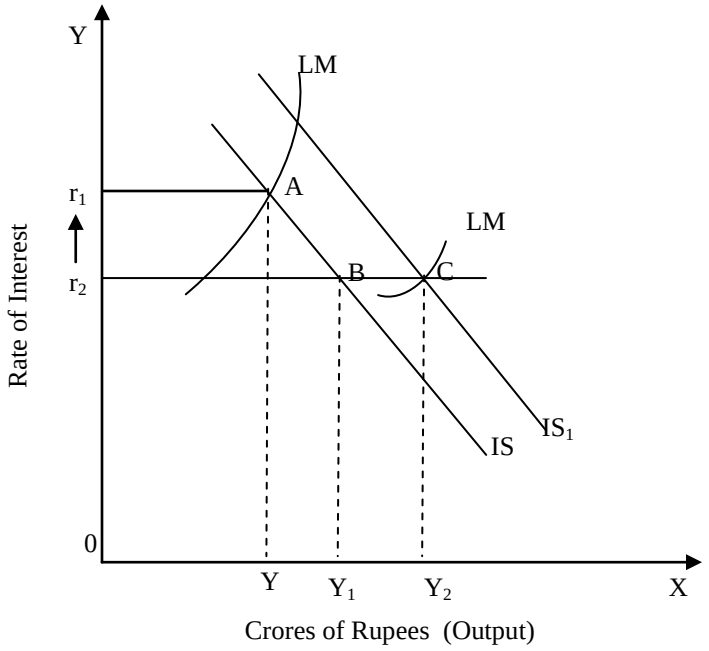


Fig. 15.2

The real balance effect is illustrated diagrammatically in Figure 15.2 by singing the IS and LM technique because the IS curve represents the goods market and the LM curve the money market. To being with, we take a situation when the economy is in equilibrium at OY, level of income when the IS and LM curves intersect at point A where the interest rate is Or_1. Assuming OY_1 as the full employment level, the pressure of unemployment is measured by Y_1-Y_2 which causes wages and prices to fall simultaneously. This results in an increases in the real value of people's money holdings which shifts the LM curve to the right to LM_1. It intersects the IS curve at point B the income level OY_2 with the result that the interest rate falls to Or0, which stimulates

investment, discourages savings and increases consumption. Even when the interest rate falls to its minimum level Or_0, the level of demand in the commodity market as represented by the IS curve is not high enough to lead the economy to the full employment level OY_1. Rather, unemployment measured by Y_2-Y_1 remains in the economy. This much unemployment leads to a further fall in wages and prices, and to the increase in demand for consumption goods which shifts the IS curve to the right to IS_1 so that it intersects the LM_1 curve at point C at the full employment level OY_1.

Thus under conditions of wage and price flexibility when the IS and LM curves shift rightwards, the real balance effect ultimately leads the economy to the full employment level even in the liquidity trap situation as shown above when investment is interest inelastic.

Thus, the real balance effect demonstrates three theoretical points: first, it eliminates the classical dichotomy between value and monetary theory; second, it validates the conclusions of the quantity theory that in equilibrium, money is neutral and the interest rate is independent of the quantity of money through the real balance effect, and third, the wage-price flexibility leads to full employment in the long-run and that the Keynesian underemployment equilibrium is a disequilibrium situation.

15.3.7 Its Criticisms

Patinkin's analysis of the real balance effect has been severely criticized by Johnson, Archibald and Lipsey, Lloyd and other economists.

1. **Not Applicable in Equilibrium Sitatuations:** Johnson points out that there is no need for the real balance effect so long as the real analysis is confined to equilibrium situations. The real balance is needed only to ensure the stability of the price level and not to determine the real equilibrium of the system.
2. **Conceptually Inadequate :** Archibald and Lipsey regard patinkin's analysis of the real balance effect as conceptually inadequate. According to them. Patinkin traces the real balance analysis as a short-run phenomenon and does not work it out through the long-run.
3. **Price stability Without Real Balance Effect** : Cliff Lloyd has criticized patinkin for holding the classical view that people do not suffer from 'money illusion', and

that their behaviour is influenced by the real balance effect. He has shown that the stability of the price level can be had without taking the real balance effect. According to him, by assuming that money is available in fixed quantity and people want to hold it, will bring price stability. But, money illusion will not be absent.

4. **Failure to Explain increase in Monetary Wealth:** Shaw has criticized Patinkin for his failure to analyse the manner in which the increase in monetary wealth comes about. According to him, Patinkin simply assumes a doubling of money balances and analyses only the resultant effects. In practice, money stock does not change in this manner. " Nor, in most cases do people experience the happy variations of helicopters carrying a surfeit of bank notes…"

Despite these criticisms, "the introduction of the real balance effect disposes of the classical dichotomy, that is, it makes it impossible to talk about relative prices without introducing money; but it nevertheless preserves the classical proposition that the real equilibrium of the system will not be affected by the amount of money, all that will be affected will be the level of prices".

15.4 In text question

1. Examine Difference Between the Pigou Effect and The Real Balance Effect

LESSON-16

GENERAL EQUILIBRIUM IS-LM MODEL- DYNAMIC SHIFTING OF IS AND LM FUNCTIONS

16.1.Introduction

This chapter analyse money, interest and income into a general equilibrium model of goods and money markets in the Hicks-Hansen diagrammatic framework, known as the IS-LM model. The term IS is the shorthand expression of the equality of investment and saving which represents the goods market equilibrium or real market equilibrium. On the other hand, the term LM is the shorthand expression of the equality of demand for money (L) and supply of money (M) and represents the money market equilibrium.

In order to analyse the general equilibrium of Goods and money markets, it is instructive to study the derivation of the IS and LM functions and their slopes for the understanding of the effectiveness of monetary and fiscal policies.

16.2.Objectives

- To examine Goods Market Equilibrium
- To analyse Equilibrium in Money Market

16.3.Content

16.3.1 General Equilibrium

In an economy general equilibrium have two parts viz. (i) goods market equilibrium and (2) money market equilibrium. J.M. Keynes advocated regarding goods market equilibrium in his theory of income determination. Similarly, he advocated regarding money market equilibrium in his theory of rate of interest. Keynes analyse the two markets separately. But really these two markets (Goods market and money market) depending upon the another.

In an economy Goods market refers to aggregate demand equals is aggregate supply i.e. (Y=C+I) goods market equilibrium also refers to savings equal to investment i.e (S=I).

In a money market equilibrium refers to supply of money equal to demand for money i.e (MD = MS).

In a goods market general equilibrium determined by total income. When savings equals to investment at that situation income in at equilibrium level.

When raising the investment leads to generating more income. Here, we assume no change in rate of interest. We consume, but rate of interest will be change (i.e) in equilibrium in a money market under this situation raising the investment causing generating more income, while, generating more income leads to raise demand for money, so, increase the transaction motive leads to increase the rate of interest. So, investment will be declines that will leads to not attain the expected level of income. It will effect changes in a goods market creates a change in a money market. For the same time, money supply increases in a money market leads to decline the rate of interest. While in goods market increases the investment generating more income. While, raising the income create more demand for money so, the rate interest will be like. Here, we know interlink between rate of interest and level of income.

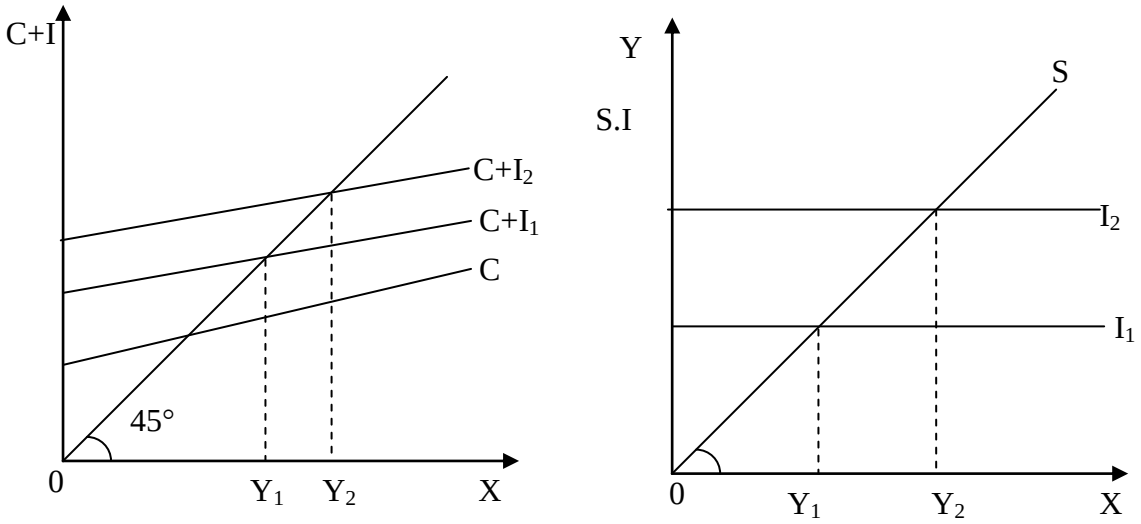


Fig. 16.1

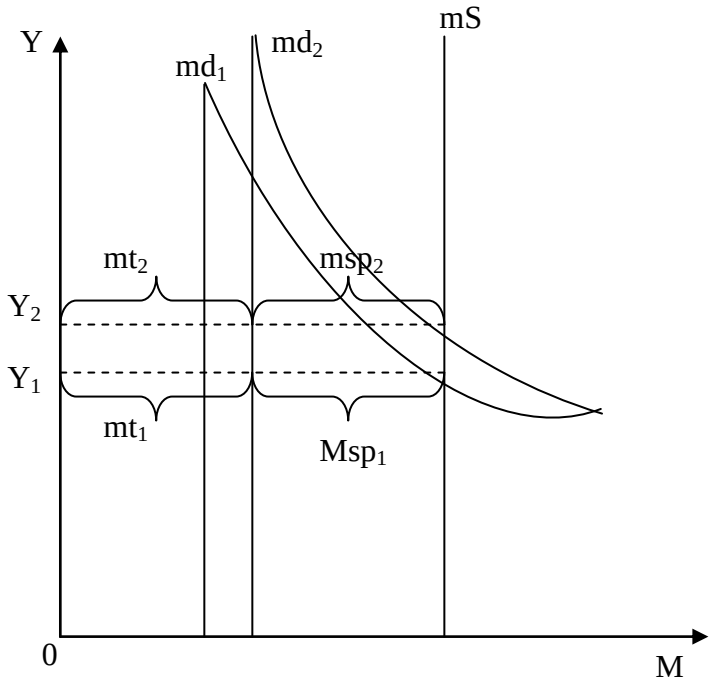


Fig. 16.2

16.3.2 The Goods Market Equilibrium

The Goods market is in equilibrium from this C + I approach in general terms, the following three equations to cover the goods market.

Consumption function : $C = C(Y)$

Investment function : $I = I(r)$

Equilibrium condition : $Y = C(Y) + I(r)$

The Goods market is in equilibrium when desired saving and investment are equal. Saving is a direct function of the level of income.

$$S = f(y) \qquad \ldots(1)$$

Investment is a decreasing function of the interest rate,

$$I = f(r) \qquad \ldots(2)$$

Therefore Equilibrium conditions : $S(Y) = I(r)$ …(3)

The IS schedule reflects the equilibrium of the product market. It shows the combinations of interest rate and income levels where saving-investment equality

takes place so that the product market of the economy is in equilibrium. It is also known as “real market” equilibrium.

16.3.3 GOODES MARKET EQUILIBRIUM

Derivation of IS curve

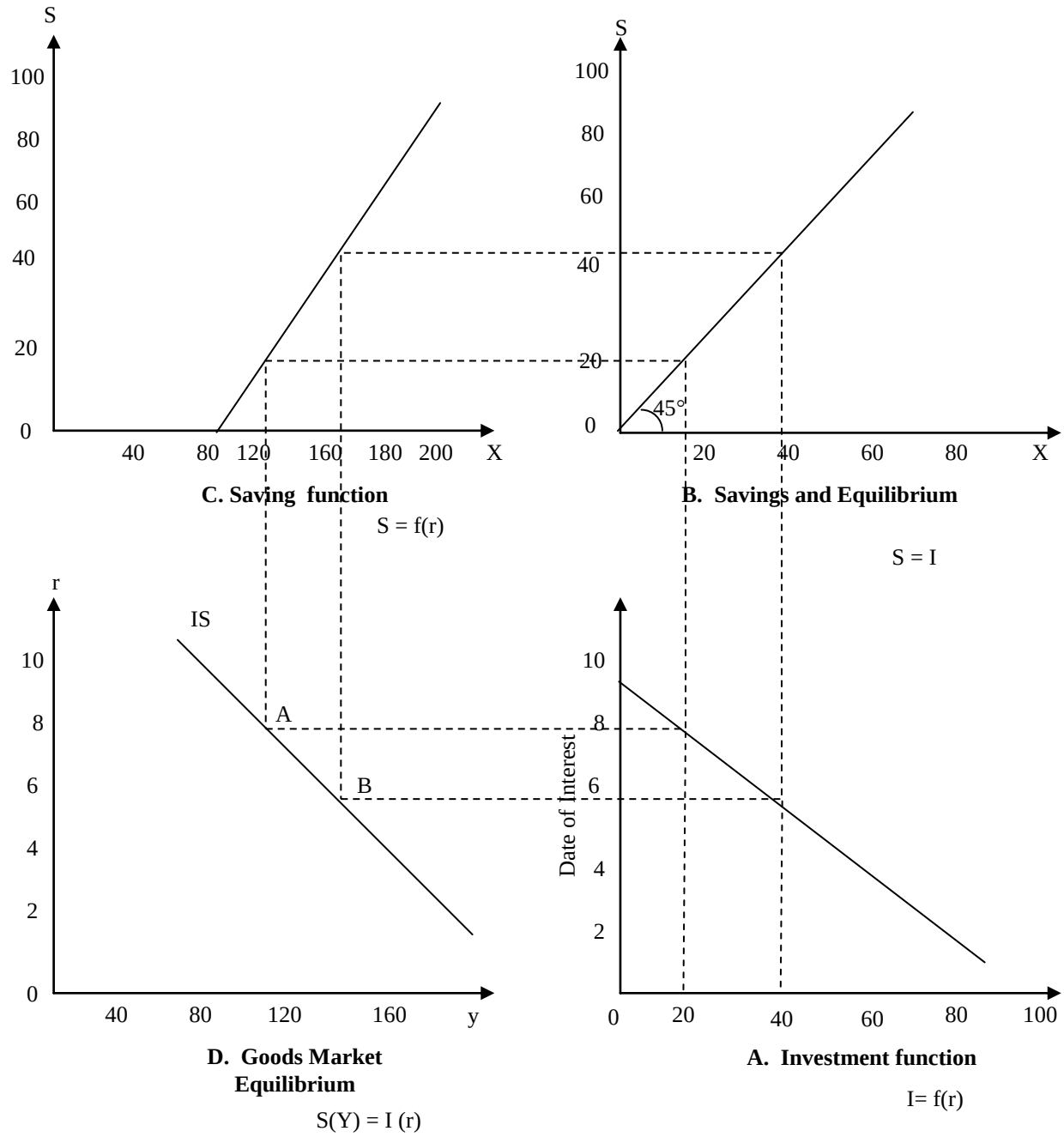


Fig.16.3

This system is depicted in the figure.16.3 Part A gives the Marginal Efficiency of investment demand schedule, showing the investment spending varies inversely with the interest rate. The straight line in Part B is drawn at a 45° angle from the origin. Whatever the amount of planned investment, measured along the horizontal axis of part B, equilibrium requires that planned saving measured along the vertical axis of part B be the same. Thus, all points along the 45° line in Part B indicate the equality of savings and investment. Part C brings in the savings function, showing that saving varies directly with income. The IS curve in Part D is derived from the other part of the figure. To illustrate, let us assume an interest of 6% in part A, indicating that investment is Rs. 20 lakhs per time period. In part B, to satisfy the equality between S and I, saving must also be Rs. 20 lakhs as shown on the vertical axis. In part C we find the saving will be Rs. 20 lakhs only at an income level of Rs. 120 lakhs. Finally, bringing together Y of Rs. 120 lakhs from part C and r of 6% from part A, we have one combination of Y and r at which S =I, or at which there is equilibrium in the goods market. (Y=C+i) If we assume the lower interest rate of 5% part A represent that investment will be Rs. 30 laksh, which gives us an income level of Rs. 140 lakhs in part C.

Therefore, Y of Rs. 140 lakhs r of 5% is another combination of 'Y' and 'r' at which S= I. Other combinations could be found in the same way by starting with other assumed interest rates and finding the income level at which saving is equal to the I indicated by that interest rate. Connecting these combination gives us the IS curve in part D.

We find that there is no longer a single level of income at which S = I but different levels for each different rate of interest. The lower the rate of interest, the higher is the level of income at which S = I. Viewed in one way, this follows from the fact that a high "r" means a low 'I' and a low 'I', through the multiplier means a low Y. Viewed in another say, this follows from the fact that a low Y means low S. Since equilibrium requires that S = I, a low S means a Low I, and a low I is the result of high 'r'. Although the IS function indicates that equilibrium in the goods market will be found at a lower level of income fro a high 'r', it alone does not tell us what particular combinations, of Y and r will be found in any specific time period. All combinations

on the IS function are equally possible equilibrium combinations of Y and r in the goods Market.

16.3.4 EQUILIBRIUM IN MONEY MARKET

Derivation of LM Curve

Equilibrium in the money market requires an equality between the supply of and the demand for money. The keynesain theory of the demand for money makes the transactions demand for money (which includes precautionary demand) a direct function of the income level alone and the speculative demand for money an inverse function of the interest rate alone. This gives us three equations to cover the money market.

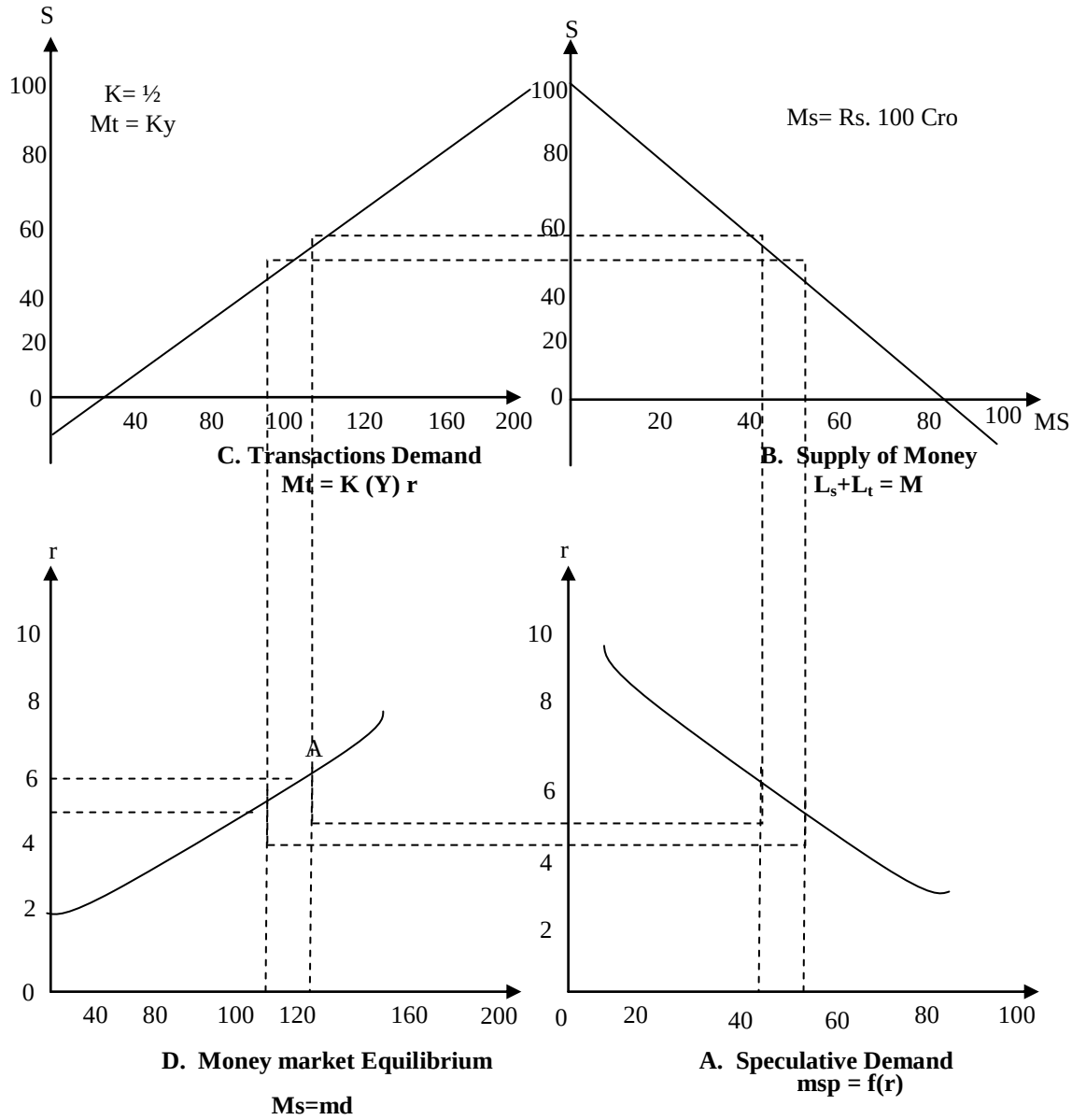


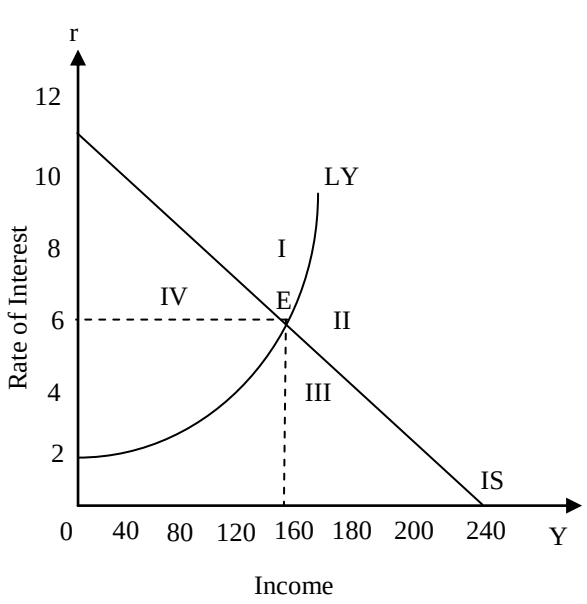
Fig.16.4

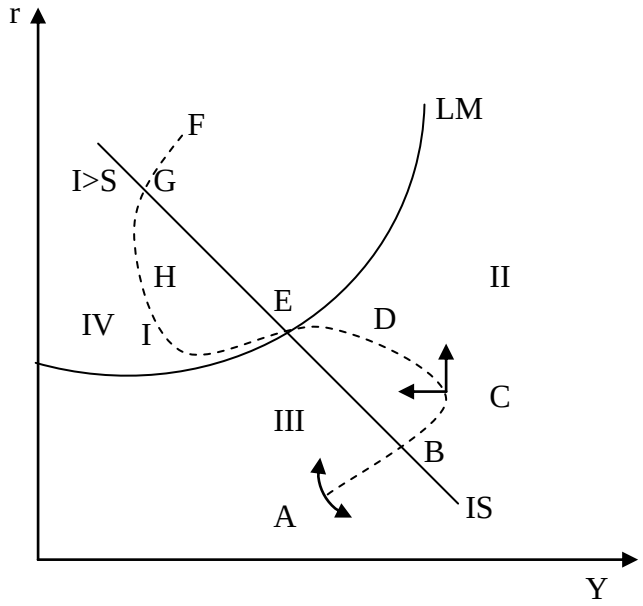
Transactions demand for money : $L_1 = ky$

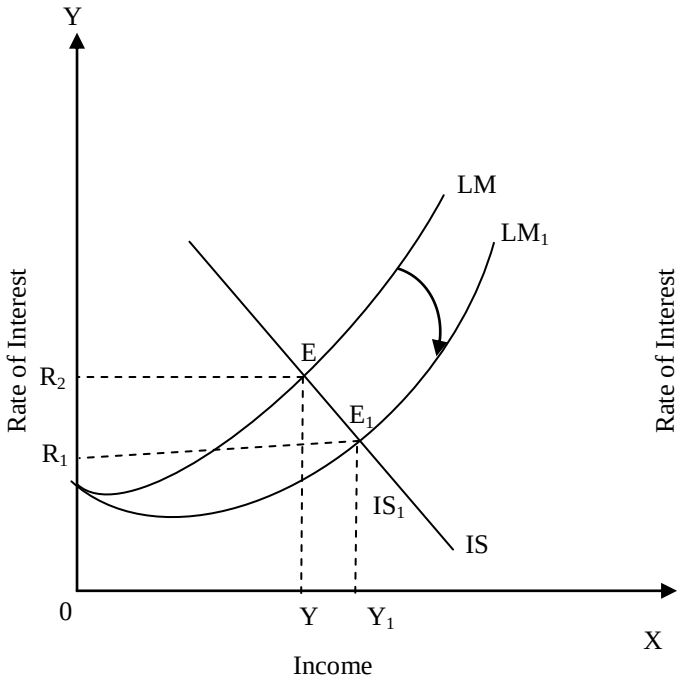
Speculative demand for money : $L_2 = 1 (r)$

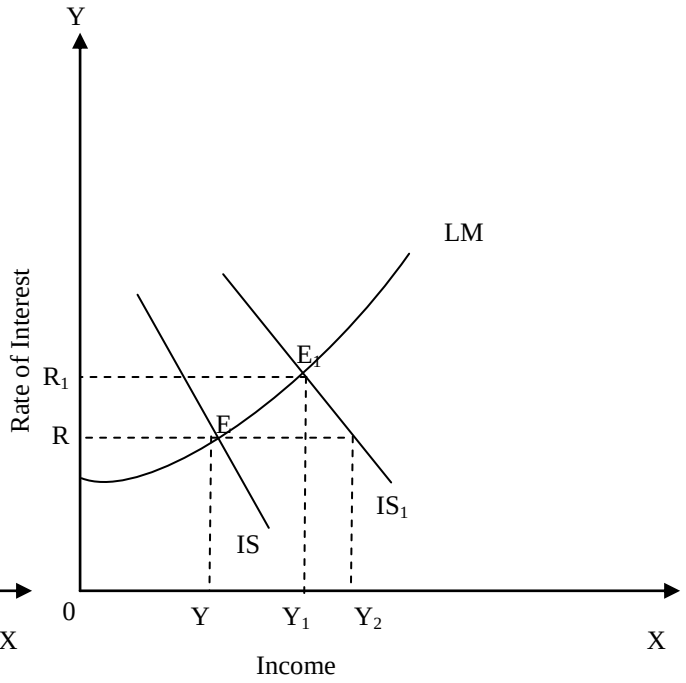
Equilibrium condition: $L_1+L_2 +L = M$

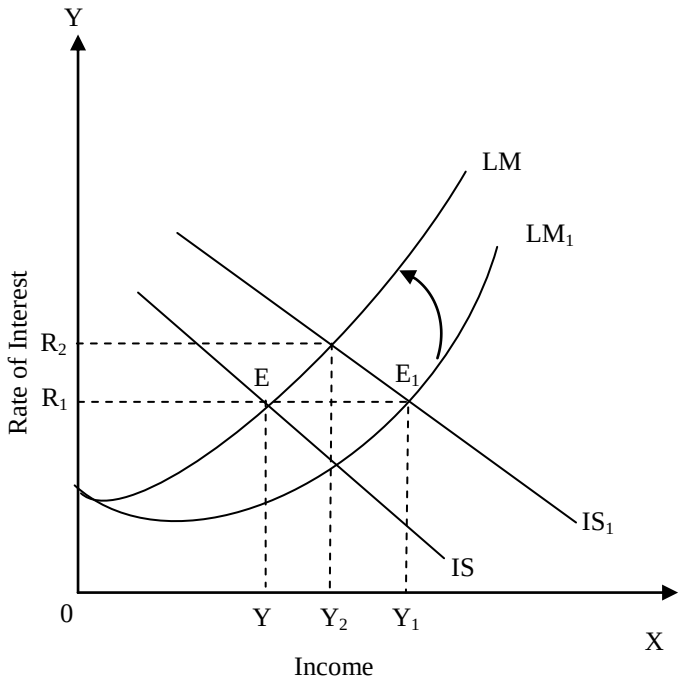
The money supply M, is determine independently by the monetary authority.











16.4. In text questions

1. Examine Goods Market Equilibrium.
2. Analyse Equilibrium in Money Market.

LESSON-17

ADAPTIVE AND RATIONAL EXPECTATIONS THEORY

17.1.Introduction

This chapter is concerned with the adaptive and rational expectations theory. From the late 1960s to the 1970s, a new phenomenon appeared in the form of both high unemployment and inflation, known as stagflation. This phenomenon of stagflation posed a serious challenge to economists and policy makers because the Keynesian theory was silent about it, out of stagflation this crisis emerged a new macroeconomic theory which is called the ***Rational Expectations Hypothesis*** (Ratex).

17.2.Objective

- To analyse need for expectations theory

17.3. Content

17.3.1 Adaptive Expectations

17.3.2 The adaptive expectations can be formally stated as follows:

17.3.3 Rational Expectations

17.3.4 Basic Propositions of the Rational Expectations Hypothesis

17.3.5 Expectations in Economic Theory

17.3.6 Need for Expectations Theory

17.3.7 Rational Expectations in Macro Economics

17.3.1 Adaptive Expectations

In recent years, economists have mostly used the adaptive expectations hypothesis in model building. The pioneering work was done by Cagan in 1956 and Nerlove in 1957. According to the adaptive expectations hypothesis, economic agents (i.e., consumers, producers, etc.) expect the future to be essentially a continuation of the past. They expect the future values of economic variables like prices, incomes, etc. to be an average of past values and to change very slowly. The economic agents make the

expected values of these variables equal to a weighted average of their present and past values.

For example according to the adaptive expectations hypothesis, economic agents form expectations of future inflation rates from a weighted average of experienced average past inflation rates and they periodically revise those expectations if actual inflation turns out to be different than expected. This implies irrational behaviour on the part of economic agents. Friedman's analysis of the long-run Phillips curve is based on the adaptive expectations hypothesis. Expectations are formed from direct forecast of the future as from mere projections of the past. Rational people will use all available information to forecast future inflation more accurately.

Under certain conditions, for example; hyper inflation, it is virtually meaningless to assume that individuals will not be influenced by past experience and in particular by the painful experience of how previous expectations have been proved false. The doctrine of adaptive expectations simply implies that economic agents will adapt their expectations in the light of past experience and that in particular they will learn from their mistakes.

17.3.2 The adaptive expectations can be formally stated as follows:

At the time t let p+1 be the price expected to prevail in the subsequent period. If P represents the actual price prevailing in the period denoted by the subscript then we have

$e = e + \alpha (p - e)$

$p = p_t \; p(0 < \alpha \text{ v } 1)$

$t = t_{t+1}$

That is to say, the price expected in the next period is equal to the price which had been expected for the current period plus some fraction of the extent that this expectations proved incorrect. The same formula, of course applies to all other periods. Thus

$$\begin{matrix} e & e \\ p & d \end{matrix} t-1+\alpha\begin{pmatrix} e & & \\ p & - & q \\ t-1 & & t-1 \end{pmatrix} \text{ and } p = d_{t-1} + \alpha(P_{t-1} - q_{t-1})$$

$P = q_{t-1} + \alpha (p_{t-2}-q_{t-2})$

It follows that one's expectation of the price to prevail in the subsequent period is influenced by the expectations held in all past periods. However, as long as it is assumed to lie between the values of zero and unity, the more distant the period the weaker will be the influence extended by the period upon the current price expectation, wages, geometrically with the passage of time.

The adaptive expectations thesis provides a simple means of incorporating expectations in economic theory by postulating a mode of behaviour on the part of economic agents which seems quite sensible. It is sensible to assume that people learn from experience. The assertion that more distant experience exerts a lesser effect than more recent experience would accord with common sense and would appear to be confirmed by observation in addition, the adaptive expectations thesis does generate certain results which are intuitively appealing. Thus for example, if a price level has prevailed over a reasonable period of time it will inevitably become the price level expected to prevail in the immediate future.

The adaptive expectations thesis will progressively generate this expectation. Again, if the price level is suddenly disturbed say by a once and for all tax change, and then settles down to its new level over a period of time, the adaptive expectations postulate suggests that economic agents' expectations will progressively approximate the new value. Moreover, this approximation to that new actual value will be generated in a relatively brief time.

However, there is one fundamental objection to the adaptive expectations hypothesis. It ignores the current situation. The impact of current exogenous shocks to the system is not taken into account at all. As a description of actual behaviour this aspect of the adaptive expectation thesis is far removed from reality, especially at a time of accelerating inflation.

17.3.3 Rational Expectations

The idea of rational expectations was first put forth by John Muth in 1961 who borrowed the concept from engineering literature. His model dealt mainly with modeling price movements in markets. By assuming the at economic agents optimize and use information efficiently when forming expectations, he was able to construct a theory of expectations in which consumers' and producers' responses to expected price changes depended on their responses to actual price changes. Muth pointed out that certain expectations are rational in the sense that expectations and events differ only by a random forecast error.

Muth's notion of rational expectations related to microeconomics. Robert Lucas, Thomas Sargent and Neil Wallace applied the idea to problems of macroeconomic policy.

17.3.4 Basic Propositions of the Rational Expectations Hypothesis

The Ratex hypothesis holds that economic agents form expectations of the future values of economic variables like prices, incomes, etc. by using all the economic information available to them. This information includes the relationships governing economic variables, particularly monetary and fiscal polices of the government. Thus the rational expectations assume that economic agents have full and accurate information about future economic events.

The Ratex hypothesis has been applied to economic (monetary, fiscal and income) Policies. According to the Ratex hypothesis, people form expectations about government monetary and fiscal policies and then refer to them in making economic decisions. As a result, by the time signs of government policies appear, the public has already acted upon them thereby offsetting their effects.

We shall introduce the concept of rational expectations with the help of an illustration. Imagine an economy with zero rate of inflation. Suppose in an economy the market for loan able funds is cleared at 5 percent rate of interest. Since the rate of inflation is zero, it follows that the nominal and real of interest rates are both equal to 5 percent. Now the Government decides to stimulate investment and growth by lowering the real rate of interest. With this end in view it announces an increase in money supply at 10 percent per annum. If this information and its implications are known to

creditors and investors and if they are determined to hold the real interest rate at 5 percent then the market clearing nominal interest rate will rise to 15%. The objective of the Government's policy is defeated. By anticipating the effects of the Government's policy and seeking to accommodate in the joint actions of creditors and debtors have effectively negated it. The real of interest remains unchanged at 5 percent per annum and since investment is a function of real interest rates there will be no positive change in investment spending and consequently no positive impact upon the rate of economic growth. All that the Government has achieved is a change in nominal values by transforming a zero inflation rate into a 10 per cent inflation rate will all the inconveniences and costs that implies. The policy measure to stimulate the economy has been rendered important.

The above illustration is highly simplified. There are many real world complications which have been ignored. Nevertheless it does serve to bring out some aspects of the rational expectations hypothesis. First of all, it is based upon the assumption that all economic agents formulate their expectations rationally. That is to say, they formulate their expectations not solely upon the basis of what they have observed in the past but also in the light of all current information and knowledge including policy statements of the government. Moreover, they utilize this information in the most efficient way possible. That is to say, incorporate this information into a model of the economy which they believe accurately describes the way in which the economy actually operates. In doing so they generate a prediction in fact a mathematical expectation of the future course of inflation. Using this estimation of the expected inflation rate they modify their behaviour in such a manner as to negate the intentions of the macro policy authorities should the economy respond as they believe it will. This simplified example illustrates the conclusion of the rational expectations hypothesis namely, that the government is unable to pursue effective macro economic stabilization policies. Its ability to influence real variables, such as output, employment, real wages and real interest rates, is seriously called into question. What is questioned is the ability of the authorities to exercise any influence whatsoever upon real magnitude strategies. In effect, we are back in a classical world postulating a dichotomy between the real and monetary sectors while the government is virtually powerless to influence the real side of the economy which determined by natural forces,

which would eventually seek its natural level. Moreover, it must be emphasized that this conclusion of the rational expectations hypothesis is not merely an assertion of the invariability of real values from their long term natural level; what is asserted is that no departure of real values is permitted from their natural levels even in the short term. In the conclusions of the rational expectations doctrine there is no question of any trade-off between short-term influences on real values offset by longer-term inflationary consequences; a trade-off which Keynesian oriented economists have been increasingly willing to concede in the face of monetarist critique. Indeed, one way to paraphrase the rational expectations hypothesis would be to say that it abolishes the distinction between the short run and long run. Values are maintained at their equilibrium level at the market clearing prices at all points of time, provided that there exists almost unlimited flexibility in the adjustment of nominal values.

These above conclusions are, of course, depended on the fulfillment of certain conditions. First they depend on the ability of economic agents, creditors and debtors in our example, correctly, to anticipate the intentions of the authorities. The conclusions could be thwarted if the authorities are able to mislead and befuddle economic agents as to their future intentions. In effect it implies that the more government economic policy actually seems sensible-that is, the more it is seen to be counter cyclical in character the more readily will it be anticipated by sensible maximum welfare seeking economic agents. In contrast, more absurd, capricious or even arbitrary government policy seems to be, the more effective will be its influence upon real magnitude. The Keynesian prescription of demand management through a system is hardly likely to be conductive to the attainment of targeted values of output and employment. The 'Keynesian' faith in the ability of policy maker to "tune" the economy is demolished by the rational expectations hypothesis.

Secondly our conclusion depends upon the absence of money illusion. It may be said with a reasonable amount of certainly that money illusion may be present in the short run, but in the long period it is bound to be dispelled. Hence, the degree to which the macro authorities might be able to influence the economy would not be symmetrical over the phase of the trade cycle and would tend to be greater in periods or relatively low inflation and vice versa.

Thirdly, the conclusions of the rational expectations hypothesis depend critically upon the degree of price flexibility prevailing in various market. These conclusion would not follow if price rigidity is introduced into the economic system by contractual arrangement holding prices constant in the short period. During such periods of price rigidity interventionist macro policy will influence real variables.

Several other important reservations could be made to modify the moral of our simple illustration. Creditors may have a different model of the economy from that of the debtors. Therefore their views as to how the economy would react to a given stimulus will differ. They may lack crucial information and date which would give them a better idea of the actual movements of the economy and this information may be difficult or expensive to obtain.

17.3.5 Expectations in Economic Theory

Virtually all economic decisions involve time. For example, decision to invest involves incurring outlays in the current period in order to generate a future income stream spread over the life of the asset. Clearly, in this case, the decision must involve making an estimation of future demand patterns, costs, prices and markets. Investments decisions are thus based upon a set of expectations concerning the future. Again the decision to save depends upon expectations regarding the future rate of inflation in relation to current interest rate yields, the future income stream and so on. Equally, expectations enter into decisions to purchase durable consumption goods whose existing prices may reflect heavy initial development costs. Likewise expectations of tax changes will often influence consumption patterns.

Similar considerations apply to short term portfolio investments, to dealings in commodity markets and especially to forward foreign exchange markets. The participant's behaviour is conditioned by the existence of uncertainty and by the expectations they must form in the light of this uncertainty, concerning future events and in particular, future prices. In order to be convincing, economic theory must contain some means of incorporating expectations as one of the major determinants of economic behaviour. However, till recently, expectations have not been able to deal in a manner commensurate with the importance (of economic behaviour). Most economic models either do not deal with expectations at all or they are in some way already

incorporated into parameter values. For example, in the elementary theory of the supply of labour as a function of real wage it is implicitly assumed that the reservation wage reflects the expectations of labour of finding employment at a given real wage rate. Non-fulfillment of these expectations over an extended period will result in a lowering of the reservation wage. Thus, in the sample theory of the supply of labour, the intercept with the Y-axis, or the position of the curve implicit reflects a state of expectation on the part of labour.

17.3.6 Need for Expectations Theory

More economic decisions involve a considerable degree of uncertainty and so require some estimate concerning future factor and product prices to permit a rational decision to be made. If economic theory is to formulate an explanation of how the economy does in fact, it must also attempt to explain how much estimates of future prices are to be formed. In short, economic theory must incorporate some statement as to expectations behaviour and of the factors that give rise to changes in such expectations. There is general agreement among economists over this conclusion. However, they differ over the questions of how expectations are to be formally treated. Let us consider briefly some of the more important approaches to the treatment of expectations in economic theory that were in vogue prior to the advent of rational expectations thesis.

Non-Rational Expectations

Among the more important forms of non-rational expectations are static expectations, adaptive expectations and Keynesian approach to expectations.

Static Expectations

The static expectations thesis assumes that conditions prevailing today will be maintained in all subsequent time periods. Expected future value then become idenitified with current value. These values may refer to levels or rate of change to the levels. In either case, static expectations hypothesis amounts to assuming that the economy has achieved a steady state equilibrium. Much of classical economic stability assumed the existence of static expectations. It was also assumed that these expectations are held with a responsible degree of certainty and not subject to sudden and violent fluctuation. Hence, it was easy for the classical economists to postulate

market clearing situations with the responsible presumption that the equilibrium so obtained would be maintained indefinitely.

The static expectations thesis is plausible because (1) it often happens that the facts of the current situations exercises a disproportionate influence upon one's expectations of the future, (2) in a world of uncertainty it may well be that the probability distribution concerning possible outcomes is symmetrical around the current value and therefore, it may well be that the mathematically expected mean valuation of the outcome is coincident with current, values; (3) a great deal of economic analysis is concerned not with absolute values as such but with comparative prices, ratios change only gradually; again many prices are controlled by government agency and are thus rendered inflexible often over significant periods; and (4) in the context of an inflationary setting, under normal conditions real values changes only relatively slowly because of indication.

Nonetheless, in a world nominal values are subject to fluctuations, often as a consequence of autonomous shock or disturbances. It may not be advisable to neglect such disturbances completely in the formation of one's expectations. Moreover while statis expectations might be a responsible postulate in marketing clearing conditions it is plainly inadequate in a world where "false" trading may be taking place. The overriding weakness of the hypothesis springs from the assumption that only under current prices condition, expectations of the prices prevail in the subsequent period. Experience of what actually happened one period or two periods ago is not permitted to enter as a determinant in the formation of current expectations.

17.3.7 Rational Expectations in Macro Economics

The theory of rational expectations has three important implications for macro economics. First, economic models are not very useful in evaluating alternative economic policies. We know that policy makers must have estimates of the change in the price level, output and employment which will occur due say, a given change in the fiscal programme of the government. Various econometric tools are used to obtain such estimates since many of these models are very detailed and their parameters have been estimated using sophisticated statistical techniques. It is widely held that the models are very helpful in assessing the impact of various policy alternatives.

Proponents of the rational expectations theory argue, however, that their usefulness is, at best, limited because the parameters of the model change when new policies are introduced. They claim that the actions of households and firms are based in part on the monetary and fiscal polices in effect during the period in question. Should new policies be implemented, households and firms will behave differently and as a result, the parameters of the model change. Since the estimates of the effects of the new policies are based on the original set of (estimate) parameters, the actual effects maybe quite different. Consequently, econometric models are not very helpful in selecting appropriate polices.

A second implication of rational expectations is that no trade off exists between inflation and unemployment. For years it was argued that lower unemployment rates could be obtained at the expense of higher inflation rates through more rapid increase in aggregate demand. This was the upshot of the Philips Curve analysis in the late 1960's. This view was criticized by several economists who argued that a trade-off existed in the short run, but not in the long run. Proponents of the rational expectations theory go even further; they argue that no trade-off exists even in the short run. Their argument is as follows; Suppose that the Central Bank implements a new monetary policy that calls for a more rapid increase in the money supply. Since workers and firms realize that an increase in the growth rate of money supply implies a higher rate of inflation. Wages and prices (assumed flexible in the rational expectations framework) will adjust immediately. Assuming full employment initially, money wages and prices increase proportionately, leaving the real wages, and hence the unemployment rate unchanged. Thus even though the inflation rate has increased, the unemployment rate remains the same. Hence no trade-off exists.

A third implication is that discretionary monetary and fiscal policy cannot be used to stabilize the economy. Suppose for example government purchases increases according to the rational expectations theory, households and firms anticipate the effects of the increase. Money wages and prices will increase, but output and employment will remain the same. The same cart of analysis is assumed to hold for other types of fiscal policy, as well as for monetary policy.

17.4. Summary

Inflation and unemployment is put forward by the Rational Expectation Theory which has recently developed in macro-economic theory, popularly called new classical macro-economics. People's anticipations of expectations of inflation and acting upon them in their decision making when expansionary monetary policy is adopted frustrate or nullify the intended effect of Government's monetary policy. According to the rational expectation theory, the intended effect of expansionary monetary policy on investment, real output and employment does not materailse.

17.5. Revision Points

Rational Expectations : It is another version of natural unemployment rate theory, there is no lag in the adjustment of nominal wages consequent to the rise in price level.

Adaptive Expectations : It is a simple means of incorporating expectations in economic theory.

17.6. In text questions

1. Explain rational expectation hypothesis with suitable illustration.

2. State three forms of non-rational expectations,

3. What are the implications of rational expectation in the macro-economics?

17.7. Key Words

Rational Expectations, Adaptive Expectations.

LESSON-18

MACRO ECONOMIC POLICIES: MONETARY POLICY

18.1.Introduction

This chapter is concerned with the monetary policy is one of macro economic policy. It analyse the aim and objectives of monetary policy and inflation. It also explain the evaluation of monetary policy in India.

18.2.Objectives

- To examine Objective of Monetary Policy
- To analyse monetary policy in developing countries
- To explain evaluation of monetary policy in India

18.3. Content

18.3.1 Macro Economic Policy

Every economy developed as well as developing, aspires to certain goals in India, as in other countries these include rapid economic growth, high employment and stable prices. To achieve this, appropriate macro economic policy must be pursued. In this lesson we will examine the essentials of macro economic policy.

Theory of Economic Policy

Policy economics is the realm of normative economics and should be differentiated from positive economics, positive economics deals with purely analytical matters of cause and effect. For example the question of how much the level of income will be raised by an increase in government purchases without at the same time inquiring if the change is desirable. Policy economics turns the question around

starting with some pre-determined target level of income and so on, the society judges to be essential, it asks how much as change in government expenditure would be required to attain this target. Thus, macro economic policy refers to the process of manipulating a number of policy instrument in such a way as to achieve desired changes in the size and composition of national income, employment level and price stability in the economy. And macro economic policies are framed within the limitations of the economic policy.

18.3.2 Development of Macro Economic Policy

The classical and neo-classical economists relied more on the market mechanism to correct economic disorders. But in recent years economics have brought in the short-run aggregate analysis as a better tool to understand and solve the problem of the whole economy. Advances in economic knowledge and the ability to apply that knowledge to matters of practical policy making have come from several complimentary sources. The first was the Keynesian's theoretical breakthrough of 1930s. The second and perhaps equality important, was the increase in fatal knowledge about the behavior of the economy. Before the close of the first quarter of the twentieth century no systematic records of Gross National Product GNP and its component were published. Sufficient data regarding labour force, employment, unemployment did not become available until after second world war. The third was the development of 'multisectoral, models of the economy with the help of computer technology. These models have improved forecasting and analysis to a degree unthinkable in the period before. World war II> Obviously the last forty years or so have witnessed the transition of economics from a field characterized by deductive speculation into a truly empirical policy science.

18.3.3 Aims of Macro Economic Policy

The aims of macro economic policy vary with the goals and objectives of governments. In the earlier days the tools of macro economic policy were used to suit the ends of the rulers. Dictators like Adolf Hitler used it for war finance. But in modern days macro economic policy aims at broadly speaking, "growth with stability". Generally, the aims of macro-economic policy can be stated as follows.

i) Achieving Full Employment

Since employment is the general factor determining consumption and investment and also the well being of the subject's governments pay more attention to the aims of achieving full employment. Unemployment is a serious problem all over the world. There are various types of unemployment, the goal of macro economic policy is to keep the level of unemployment at the minimum level, full employment is said to be reached when unemployment is kept at the minimum. Keynes and Post-Keynesians have highlighted it he importance of maintaining the level of full employment in an economy. In fact many a country has accepted full employment as one of the primary goals of macro economic policy. In a way it has become an essential responsibility of modern governments to aim at maintaining the level of full employment in order to avoid distortions in the economy.

Macro economic policy has to be designed in such a way as to deal with two major types of unemployment, viz, i) unemployment due to inadequate aggregate demand, and ii) due to structural changes. Both these cases can operate. Simultaneously and lead to the total volume of unemployment arising as a result of deficient demand can be removed by a suitable combination of monetary and fiscal policies. But it is rather difficult to combat structural unemployment. Economic polices, fiscal as well as monetary, assigned to achieve and maintain full employment operate through a complicated process of change in the variables and as a result such policy work under certain limitasilions.

ii) Achieving Price Stability

Another major goal of macro economic policy is maintaining the economy at the level of employment without fluctuations, i.e. maintaining stability of prices. A policy for prices stability must protect the economy from the dangers of both inflationary and deflationary pressures. The is achieved by controlling the aggregate demand through monetary as well as fiscal measures. Moreover government can seek to control price level through wage-price policies or income policies. Stability can also be maintained through another kind of price policy called exhortation i.e., the central authorities make appeals for moderation in fixing prices and wages. This policy has the support of the proponents of the cost-push theory of inflations, wage-price stabilization

policies face another problem caused by wage drift it is easy to control the negotiated wage rates than the earnings of workers. When labour is scarce and the wage rate is controlled. Labour has to be provided certain incentives in the form of bonus, overtime allowance etc. In such a situation there is an increase in average earning of labour although wage rates remain stable. This tendency for earnings to follow aggregate demand, although wage rates do not change is called wage drift such a situation will affect the working of wage-price stabilization policy. Consequently at present, the control of inflation has become the main element of macro economic policy.

iii) Maintaining the Balance of Payments

Macro economic policy also aims at avoiding fluctuations in exchange rate. Huge import surplus or a large export surplus is considered undesirable for the smooth functioning of an economy. The balance of payment problems are caused by changes within as well as outside the economy. The central authorities can do little to control exchanges outside the country. The internal causes are (i) domestic inflation and (ii) the changes in consumption patterns taking place in the course of economic growth. Domestic inflation also affects balance of payments. When a country's price level is rising faster than the price level is rising faster than the price levels of competitor countries. Exports will tend to fall and imports well tends to rise thereby creating balance of payment problems. The changes in consumption patterns occur as a result of technological innovations and differing income elasticities of demand for imports and exports.

The balance of payments problem can be talked with two types of macro economic policies. The first type of policy called expenditure-dampering policy, attempts to reduce national income by raising taxes or reducing government expenditure. The reduction in income will in turn, reduce the expenditure of households on goods. However, the effect of this policy depends upon the proportion of income spent on imports. The second type of policy, namely, the expenditure switching policy attempts tax imports and subsidise exports or devalue the exchange rate. Such a policy changes the prices of foreign goods relating to the exchange rate domestic goods.

However the policies for maintaining the balance of payments problems have to be applied with great caution. Both these types of macro economic policies can

produce certain incidental effects. Nevertheless, the expenditure dampening policies will be preferred during times of overfull employment, whereas the expenditure-switching policies will be preferred during periods of full employment.

iv) Raising Rates of Economic Growth

At present, achieving rapid economic growth has become the major objective in all economics, particularly in the developing onces. Faster rate of economic growth is the surest way to achieve higher standards of living for the people of a country. Growth is a complex macro economic policy variable. It is rather difficult to identify the causes, of growth or on growth and therefore difficult to identify the causes of growth or on growth and therefore difficult to influence these causes. Several theories have been put forth by economic about the causes of rapid economic growth. Most of them advocate the policy of raising the rate of new investment as a stimulant to growth.

Various views have been expressed about the process of growth some others believe that periods of excess capacity without inflationary pressuers are beneficial to growth. It is also held that a drastic cut in demand and recession will have a short term dampening effect on growth.

v) Achieving economic justice

Another objective of macro economic policy is achieving distributive justice: Many believe that growth without distributive justice will lead to a dangerous trend in the economy. Economic justice is an clusive concept. Generally speaking, it means that the national income is distributed to all sections of population inanequitable manner. In the process of economic development, unless adequate measures are taken the fruits of development. Will go to the rich which will lead to the continuous exploitation of the masses. Gros inequalities in income and wealth will lead to class hatred between the haves and have-nots.

Economic justice cannot be ensured by promoting more economic growth. It requires deliberate and bold actions poverty has to be eradicated and employment potential augmented in order to meet the demand for jobs for the increasing population. Adequate care must be made to avoid concentration of wealth and income. Therefore, distributive justice could be ensured only through concerted efforts.

vi) Conflicting Macro Economic Goals and Policies

We have seen certain important macro economic goals to be pursued framing economic policies and implementing them. But in actual practice, it may so happen that the different, goals or objectives pursued may be conflecting. It is possible that in implementing a policy to achieve a particular goal, it may be incompartible with another goal. Simply speaking, what is done or attempted to be done by one set of policies may be undone by another set of policies having different goals there are many occasions in which we meet with.

Ordinarily, the sphere where conflicting policies will be met with are:

(a) Conflict between growth and unemployment
(b) Conflict between prices and unemployment
(c) Conflict between prices and balance of payments
(d) Conflict between saving and investment.
(e) Conflict between political ideology and practice.

Thus, the governments will face conflicting goals and policies in different spheres when conflict arises in macro-economic goals, the government should have to clearly specify the priorities and evolve a compromise so that it will create least distortion in the economy.

vii) Tools of macro Economic Policy

Just as economists refer in the broadest categories the above mentioned macro economic goals, they similarly refer in equally broad categories to monetary policy and fiscal policy as the two basic types of policy that are employed in working towards the achievement of specific goals.

Monetary policy aims at reorganizing the monetary sector and controlling the economy by monetary curbs like credit control or credit creation, lowering or raising interest rates, and so on. Prior of Keynes monetary policy was considered as the only policy measure to control the economy.

Keynes advocated strong fiscal measures to overcome the great depression. It was realized during the depression that monetary measures were alone not sufficient. Fiscal policy was therefore incorporated in the kit of macro economic policy. Fiscal policy consists of tax measures, relief measures, deficit or surplus budgeting, etc.,

However, these two policies have to be applied as mutually complementary policies. Although there is often significant overlapping between monetary policy and fiscal policy, it is rather impossible to envisage any major monetary or fiscal measure which does not influence the other. Nevertheless it is necessary to make meaningful distinction between monetary policy on the one hand and fiscal policy on the other in order to limit the scope of these policies.

Monetary policy is perhaps the oldest macro economic policy. In the Pre Keynesian days, monetary policy was the single established instrument of macro economic policy with price stability as its establishment objective. Two evens in the 1930s drastically changed the role of monetary policy and the sphere of its objectives. Firstly the Great Depression which produced mass unemployment caused a major shift in the objective of national economic policy in favour of full-employment. Secondly, the Keynesian Revolution following the publication of Keynes' General Theory in 1936 brought to the fore another economic policy instrument namely, fiscal policy and a second objective, namely the maintenance of full employment, now more commonly described economic stability.

The concept of monetary policy eludes precise definition, Paul Elnzig defines monetary policy as 'All monetary decisions and measures irrespective of whether their aims are monetary; or non-monetary system". Harry Johnson describes monetary policy as a sel decisions of the Central Bank's control over the supply and cost of money as an instrument for achieving the objectives of economic policy. With respect to the objectives before us the overall effectiveness of monetary policy thus, depends on what contribution it can make to the attainment of full employment, price stability and rapid economic growth.

18.3.4 Objective of Monetary Policy

The scope and objectives of monetary policy have widened after the Keynesian Revolution of 1930s. Before the Keynesian breakthrough the sole objective of monetary policy was to secure price stability. However the publication of Keynes, book general Theory and the Great Depression of 1929 had radically altered the nature and scope of monetary Policy. The maintenance of full employment or economic stability became the leading objective of monetary policy in the post-war years. The

problems of economic growth and balance of payments have also come under the purview of monetary policy.

The various objectives of monetary policy are:

(a) to attain full employment

(b) to maintain price stability

(c) to achieve rapid economic growth and

(d) to maintain the balance of payments equilibrium hence there is often the problem of giving the priority among these objectives. These objectives are also often conflicting with each other. It may not be possible to achieve all these objectives simultaneously. Therefore the central banks are inclined to choose a set of objectives which will primarily serve the interest of national economic welfare.

Instruments of Monetary Policy

In order to implement the different objectives of the monetary policy it has some instruments and tools which can be classified in to the general or quantitative instruments and the selective or quantitative instruments. The general instruments employed by the central bank to carryout its monetary policy are open market operations, change in the minimum legal reserves requirements and changes in the bank or discount rate. The central bank can influence increase or decrease commercial bank's cash reserves through its open market operations. The instruments of open market operations are the most effective instruments which are available to the central bank to carryout its monetary policy. Being flexible, it enables the central bank to change the direction of its open market operation according to circumstances from a policy of increasing the reserves and vice versa. Open market operations are either defensive or dynamic. Defensive operations are those which are taken to offset other factors that change the volume of bank's reserves.

The instrument of variable minimum legal reserve ratio requirements affects not the total amount of commercial banks cash reserves but the amount of their excess cash reserves which in turn affects their total ability to lend. Thus, the central, bank can carryout its expansionary monetary policy by providing the commercial banks with additional lending or credit-creating power either by increasing their total cash reserves through the open market. Purchases of securities or, their total cash reserves remaining

unchanged by decreasing the minimum legal reserves ratio requirement. As a result of decreasing the minimum legal reserves requirement, a part of existing required reserves is reclassified as excess reserves and consequently becomes available for credit creation by the banks. In terms of the lending power f commercial banks reserves so released are in effect similar to an addition to banks, excess reserves produced through open market operations conducted by the central bank.

Change in the bank rate do not in themselves affect the cash reserves of the commercial banks. Such change affect the cost at which the financial accommodation in the form of borrowings can be made available to the banks from the central bank. From the point of view of controlling the lending or credit creating capacity of the banks, the instrument of bank rate is the least important of the three general instruments of credit control which are at the disposal of central bank because banks generally borrow from the central bank not to expand their earning assets but no meet the shortfall in their cash reserves.

As the central bank indulges in open market sales of government securities to restrain the lending or deposit creating power of the banks the move simultaneously exerts an upward pressure on the whole structure of interest rates because the mass-scale of securities and it has to be on a mass scale if the credit-creating power of the banks has to be curtailed is possible only at falling prices for the government securities marketed by the central bank. A fall in the prices of securities raises the yields on these securities and tends to raise yields on their securities. To the extent the demand for loans i.e. interest elastic, the rise in the interest rates cuts back the aggregate demand for bank credit. The same result follows by increasing the minimum legal reserves ratio requirement for the banks. As a result of their action, the excess, reserves on which the bank, can rise the pyramid of credit are reduce. This force them to raise the entire structure of their lending rates in order to discourage borrowers from borrowing in excess of their reduced lending capacity. Generally the central bank reinforces the action of one instrument by applying others monetary policy instruments also.

Certain vital effects of changes in the central bank's bank rate are psychological. Such effects are particularly important when observes feel that the bank rate is being used by the central bank to signal a shift in the direction of policy in such cases, the financial markets react in the ally sentiments even in advance to central

bank's actions when the more is anticipated if the bank rate is raised interest rates-particularly those on short-term securities generally rise and credit markets tighten, conversely, a cut in the bank, rate which clearly signals an easing of central bank's monetary policy is ordinary followed by easier conditions in the money and capital markets.

There are various selective or qualitative credit control instruments which are empowered by the central bank from time to time unlike the general instruments which a fect the total volume of credit directly, the selective instrument of monetary policy affect the types of credit extended by the banks-these instruments affect the composition rather than the size of the loan portfolios of the commercial banks. The immediate object of imposing selective credit controls is to regulate both the amount and terms on which credit is extended by the banks for selected purposes.

18.3.5 Monetary Policy and Recession

The monetary policy proved to be quite ineffective the great depression of 1930's Keyness book General Theory confirmed the view that monetary policy will be an ineffective weapon to promote recovery during a period of depression. Since the fifties, the monetary policy has been gradually given an important role in fighting deflation. In recent years the economists opine that monetary policy is more effective in controlling deflation rather inflation. However there is no change in the conclusion that monetary policy will be ineffective a period of acute depression.

We can explain how monetary policy is in effective a period of severe depression. The expansionary monetary policy during depression will lead to the flow or more and more funds into the commercial banks. The lending capacity commercial banks is increased through the instruments of monetary policy like cash reserve requirement. Discount rate and open market operations. But the mere availability of credit at attractive rates does not ensure economic recovery. The entrepreneurs and consumers must have the necessary motivation to decide upon additional spending.

During depression the entrepreneurs are not sure of earning profits from new investments. The marginal efficiency of capital declines during this period. The entrepreneurs will be willing to borrow short term funds to build up inventories. They will not also like to borrow long-term funds to finance new plants and machinery. Similarly the consumers are unwilling to borrow from banks and increase their

spending. During depression the consumers are restricted by the growing unemployment and reduncomes. However the benefit of an expansionary monetary policy during a severe depression cannot be denied. The merit of expansionary monetary policy during depression is that it prevents the economic conditions becoming worse and chaotic.

18.3.6 Monetary Policy and Inflation

This monetary policy is often used by the central bank to fight inflation. The restrictive monetary policy during a period of demandful inflation facts certain limitations. During this period prices due to a rapid expansion of aggregate demand the central bank through its respective monetary policy would try to keep the money supply constant or reduce it. But still the monetary policy may not be effective because the aggregate demand ma to increase. This is due to the fact that velocity of money in the hands of the public is increasing during this period.

The central bank can employ the general weapons of monetary control and restrict the expansion of money supply. The restrictive monetary policy in time of inflation is rendered ineffective under certain conditions sometimes the commercial banks might finance the expanding business activity through portfolio adjustment securities. This is done by commercial banks selling the government securities and lending the sale proceeds to the borrowers. This practice of the commercial banks will not increase the total amount of credit and during a period of inflation it reduced the efficacy of restrictive monetary policy.

Another limitation to restrictive monetary policy is due to the existence of financial intermediaries like insurance companies. The ending operations of these institutions in times of inflation reduces the effectiveness of restrictive monetary policy. They practice of business houses accepting public deposits also imposes another limitation on the working of monetary policy. Since these business houses are able to secure public deposits at higher interest rates, the effectiveness or restrictive monetary policy is weaken.

18.3.7 Monetary Policy in Developing Countries

In the case of developing countries the primary objectives is to achieve rapid economic growth. These countries face many problems like inflationary pressure, continuous deficits in balance of payments, merge domestic savings and slow rate of

capital formation. The rising prices are checked by price controls. These are not administered properly and the result is that there is only suppressed inflations. To tackle the unfavourable balance of payments, import controls, and exchange controls are introduced in the less developed countries. To earn foreign exchange export promotion policies are introduced.

These problems create uncertainty regarding the pattern of economic growth. The unstable price level upsets the economic decision making. The patterns of investment in these countries is also adversely affected by the uncertain economic conditions.

The role of monetary policy in the less developed countries must be considered only in this background. The monetary policy has to be applied in the midst of these barriers to growth the success of monetary policy in stimulating economic growth, achieving price stability and promoting cannot formation will depend upon favourable conditions. The foremost problem in the application of monetary policy for the developing economics is absence of co-ordination between macro economic policies. Another problem is the limited and sectoral impact of monetary policies in these countries. Another problem is the choice of suitable instruments of monetary policy and the proper time for their application.

The success of monetary policy in promoting economic growth will depend largely upon the competence and expert knowledge and proper judgment on the part of monetary authorities. To facilitate the proper use of monetary policy the developing nations must first improve their currency and credit systems. To control effectively the supply and use of money, the art of central banking must be acquired.

More use can also be made of selective credit controls in order to influence the pattern of investment and production. By differentiating between the cost and availability of credit to different sectors, selective credit can influence the allocation of credit and there by the pattern of development.

The potential effectiveness of monetary policy should not be however over estimated. As a means of promoting capital formation, monetary policy is of secondary importance compared to fiscal policy. An easy money policy can increase the availability of credit. But it will not be utilized unless profit expectations are reasonably high. Such a polity will promote inflation. The experience of many a

country shows that mere expansion of bank credit does not necessarily promote investment of inflation ensures. The success of monetary policy as a means to economic growth in developing economics will depend upon the fundamental stimulus which should come from eneterprise and entrepreneurship.

18.3.8 Monetary Policy In India

The commencement of the process of planned economic development in 1950-51 meant that the Indian economy had to achieve certain pre-determined targets in terms of the rate of growth of national income. In turn, this required stepping up the savings, effective mobilization of savings and investing them in an appropriate manner in the various sectors of the economy. As the structure of financial institutions which existed them was not adequate from the point of view of mobilizing saving and changing them in the desired manner to the various sectors. One of the major tasks before the country was to develop this structure. This required in strengthening the structure through various measures and ii) the establishment of new institutions either to work in social filed or to affords some measure of protection to the existing units in the structure.

Along with the problem of developing the structure of financial institutions there was also an equally argents problem of monetary policy to facilitate achievement of the targets. As the planning proves gathered momentum the environment in which banking institutions had to work underwent significant changes. The sector of large and medium scale industry experienced sustained upsurge. Its demands for credit not only increased in volume but it needed different types of credit. The needs of the public sector for bank credit also increased considerably especially when with the adoption of the objectives of creating a socialistic pattern of society, the public sector entered the field of industry in a big way.

While the industrial sector of the economy was undergoing a rapid development and incomes were being generated as a result of the programmes of investment in industry and infrastructure, agriculture continued to lag behind for a variety of reasons giving rise to shortages of basic wage goods either directly as in the case of food grains or indirectly because of shortages of raw materials like raw cotton. Raw jute, oil seeds, etc. based on agriculture which were required for manufacturing articles of essential

consumption or for exports. The resultant inflationary pressures stepped up further the demand for bank credit.

This necessitated an increasingly active monetary policy. It was expected from the monetary authorities that they will ensure an adequate supply of credit to meet the increasing developmental needs of agriculture, industry and other sectors of the economy, specially the priority sectors. At the same time it was also realized that a large expansion in bank credit without matching supplies of real goods would lead to inflationary pressures in the economy. Inflation, it must be recalled, if not consistent with planned programmes of development. Therefore, it was further expected from the monetary authorities that they are to so regular the monetary economy that an undue expansion of bank credit to the different sectors of the economy was not allowed. The policy that was formulated and adopted by the Reserve Bank of India, came to be known as that of controlled monetary expansion.

18.3.9 Objectives of Monetary Policy in India

In a developing economy like India the keynote of monetary policy is what may be called controlled monetary expansion, Controlled monetary expansion implies two things:

a) Expansion in the supply of money, and
b) Restraint on the secondary expansion of credit.

a) Expansion in the supply of money, and

In a developing economy money supply has to be expanded sufficiently to match the growth of real national income. Although it is difficult to say what relation the rate of increase in money supply should bear to the rate of growth in national income, more generally the rate of increase in money supply has to be somewhat higher than the projected rate of growth of real national income for two reasons.

First, as income grow the demand for money as one of the components of savings tends to increase.

Secondly, an increase in money supply is also necessitated by the gradual reduction of the non-monetarised sector of the economy.

In India the rate of increase in money supply has been far in excess of the rate of growth in real national income. It has resulted to a large extent in the creation of consistent inflationary pressures in the economy.

b) Restraint on the secondary expansion of credit.

Government budgetary deficits for financing a part investment outlays constitute an important aspect. Major aim of monetary policy is to restrain the secondary expansion of credit. This indeed possesses difficult problems. Since the general tendency in such a situation is not a marked expansion of credit for the private sector also, while exercising restraint care is taken that the legitimate requirements of production and trade are not affected adversely. The Reserve Bank has also a positive responsibility for channeling credit into desired sectors.

The fulfillment of the above twin goals requires,

a) a correct choice of instruments of monetary policy designed to regulate the flow of credit and

b) an effective credit planning

18.3.10 Evaluation of Monetary Policy in India

The Reserve Bank of India is empowered under the statue to use the usual instruments of monetary policy such as the bank rate, open market operations, variable reserve ratios, selective credit controls and so on. The choice of instruments of the monetary controls that can be used in limited however by the structural characteristics of the money market.

The monetary policy of the Reserve Bank of India has been marked by flexibility to suit the changing condition of the economy. The Reserve Bank of India has employed general as well as selective instruments of credit control of combat inflationary pressures in the economy. The policy of selective credit control which generally dominated the some has not however been rigidly applied. Nevertheless in the midst of restriction of monetary policy the Bank often resorted of effect credit liberalisation. The financing of the priority sectors of a significant scale would not have been possible without the liberal re-finance facilities provided by the Bank.

A review of the operation of selective credit control measures implemented by the Reserve bank of India shows that these measures to a larger, extent succeeded in achieving their objective. However these created at the same time certain limitations. Especially in setting of over-all monetary expansion making it possible for the borrower to take resource to non-banking sources for finance. This underlined the need

for maintaining harmony between the monetary and fiscal policies. Thus the Reserve Bank's monetary policy, in its long term perspective continued basically to be attuned to the requirements of planned economic development with preferential treatment to priority sectors such as small scales industries co-operatives defence supplies and exports Nevertheless in the short-term, adjustments in the availability and cost of credit have been made from time to time to suit the needs on the particular situation.

The monetary policy of the? Reserve Bank of India has been described as one of the controlled expansion of credit. The object has been to restrain prices while answering at the same time the legitimate credit requirements so as to avoid adverse effect on production, an articulate and flexible monetary policy has been pursued by the Reserve Bank of India which aimed at reconciling the needs of an increasing volume of money supply to finance expansion of output while restraining the use of credit for unproductive and non-essential purposes. In short monetary policy has been operated within the overall framework of mixed economy wedded to development planning.

The major failure of the monetary policy lies on the price front. The monetary authorities in India has been in a position to curb inflationary rises, in prices, which has often taken violent jumps at intervals. However, in evaluating the success or failure of Reserve Bank's monetary policy it should be borne in mind that the Bank can at the best, provided the fiscal operations of the Government do not run counter to the goals of monetary policy pursued by the Bank, control only those forces which create pressure on the price level form the side of money supply. The Reserve Bank has nothing within its power to control the non-monetary pressure in the economy which tends to push up prices.

In the face of given limitations the monetary policy in India has been operated with a fair amount of success. The Reserve Bank has played the useful role of a careful watch dog over the affairs of commercial banking system in the economy, making the system play a positive role in the planned economic development of the country.

18.4. Summary

The text summarized macro economic policy like, monetary policy, and its aims, objectives, importance all discussed. Further it discussed about monetary policy in developing countries as well as Indian experiences.

18.5. In text questions

1. Examine Objective of Monetary Policy
2. Analyse monetary policy in developing countries
3. Explain evaluation of monetary policy in India

18.6. Key Words : Monetary policy

LESSON-19

MACRO ECONOMIC FISCAL POLICY

19.1 Introduction

This chapter is concerned with the macro economic fiscal policy. The use of fiscal policy to attain and maintain full employment and a stable price level is largely a development of the past fifty-five years or so. This use of fiscal policy began during the 1930s largely as a result of three developments: (1) the apparent ineffectiveness of monetary policy as a means of solving the sever unemployment of the Great Depression. (2) the "new economics" advanced by Keynes with it s emphasis on aggregate demand, and (3) the growing importance of government spending and taxation in relation to the economy's total income and output. From a relatively, modest beginning, fiscal policy has grown to become the major means by which public policy attempts to achieve full employment and to prevent inflation. For example, in the U.S.A, the Executive was charged with the responsibility for stabilization policy under the Employment Act of 1946, which called upon the President to "promote maximum employment production and purchasing power" and a s added by the amendment of 1953, to promote "a dollar of stable value".

19.2 Objective

- To analyse macro economic policy and economic growth

19.3.Content

19.3.1 Fiscal Programme

19.3.2 Full Employment Budget Surplus

19.3.3 Fiscal Drag

19.3.4 Flexibility of Fiscal Policy

19.3.5 Built-in Flexibility

19.3.6 Formula Flexibility

19.3.7 Variations in government purchases, transfer payments and taxes

19.3.8 Deficits and burden of the national debt

19.3.9 Economic growth and debt burden

19.3.10 Macro economic policy and economic growth

19.3.1 Fiscal Programme

In dealing with the problem of instability, whether in the form of recession or inflation, fiscal policy is carried out essentially through changes in government purchase transfers and tax collections. Such actions raise or lower the level of aggregate demand. In recession, the expansion of aggregate demand brought about by appropriate fiscal measures may lead to a rise in output and employment with little or no upward pressure on prices. During a period of inflation, the contraction of aggregate demand brought about by appropriate fiscal measures may lead to a control of inflation with little or no adverse effect on output and employment. These all, of course, deal with results and have rarely been achieved in practice. The problem of the real world complicates the planning and execution of fiscal polices.

The main problem is that of evaluating the impact of any overall fiscal program on the level of economic activity. This then is the question. Does a particular program of government expenditure sand taxes have, on the whole, a stimulating or restraining influence, and what is the magnitude of that influence? To measure in a meaningful way the stimulating or restraining influence of any actual federal fiscal programme or the federal budget as a whole for any time period requires resource to full – employment budget which gives us a measure of the restraint or stimulus exerted by particular fiscal program. Let us suppose that our objective is to provide more or less stimulus or more or less restraint than that indicated by a given fiscal programme. The practical problem then faced is whether the fiscal programme can be altered fairly promptly in a way that will yield the desired result in terms of stimulus or restraint. This is essentially the problem of flexibility in fiscal policy. Any adjustment in the fiscal programme to vary the restraint or stimulus exerted by that programme calls for changes in the level and perhaps the composition of government purchase, transfer payments, and taxes or changes in the various combustions of these. The next problem concerns the practical difficulties involved in varying expenditures and taxes in the way that may be required if fiscal policy is to contribute to the stabilization of the economy. Lastly, a fiscal policy of this kind during periods of recession is one that

involves deficits, and deficits means a grown national debt. So, we have to look at the problem of a growing national debt.

19.3.2 Full Employment Budget Surplus

It is an elementary but basic proposition that a rise in government purchase or transfer payments not matched by an equal rise in tax receipts will have an expansionary effect on the income level. Similarly, opposite combinations will have a concretionary effects on the income level. In other words, fiscal changes that involve a surplus are concretionary. So it would seem that all one need to do is to determine whether the impact of the government budget is expansionary or concretionary in any period and note whether it shows a deficit or surplus for that period. But we may note that in spite of the convenience of this rule that so easily answers the question whether the budget is expansionary or concretionary, there are a number of qualifications to this rule to permit it to be used as such. One such qualification follows from the unit multiplier theorem.

A dramatic implication for the fiscal policy seems to follow from the unit multiplier theorem. If the level of the economy's output is below full employment, it would seem that the government can raise the level of full employment by an appropriate expansion in the size of its budget, covering every dollar of additional taxes. The desired rise in income and output may thus be achieved by means of a fiscal policy that does not resort to deficit financing. But this crude mechanical model is subject to a number of qualifications that complicate the solution. The road to full employment is certainly not so simple as is suggested by the crude unit multiplier theorem. To analyse the expansionary effects of a balanced budget properly involves more than the unit-multiplier theorem, but the mechanical model of that theorem dispels the notion that a balanced budget is fiscally neutral as was once thought to be the case.

In practice, a given change in the actual deficit or surplus from period to period may be the result of changes in both the budget programme and the level of economic activity. Furthermore, a change in level of economic activity may itself be the result of a change in the budget programme, that is, a change in government demand that is not offset by an opposite change in private demand.

The change in the size of the deficit or surplus is not always an eligible guide to the change in the impact of the budget. One way to a more reliable guide is to remove the influence of changing level of economic activity on the deficit or surplus consistent with any given budget programme. It is in doing we drive the full employment budget surplus or deficit; a measure of the surplus or deficit that reflects only changes in the budget programme and therefore a measure that indicates changes in the contractionary or expansionary impact of the budget programme itself. This particular measure of budget surplus and deficit was introduced by the Council of Economic Advisers (U.S.A.) in 1962. We may note that the concept was originally developed in the mid-forties, but it received emphasis by the council starting in 1962.

The full employment surplus may be define as the federal budget surplus, on a national income accounts basis, that would be generated by a given budget programme if the economy were operating at full employment with stable price throughout the year. In other words, it is the difference between federal receipts and expenditures calculated fro expenditure programme and tax rate but with expenditures for unemployment compensation adjusted to what they would be at full employment.

As suggested by the second definition, to estimate the size of the full employment budget surplus, we need a series of other estimates. First, we must have an estimate of what the G.N.P. would be at full employment. The method used by the Council of Economic Advisers in arriving at the estimate is the growth rate extrapolation method. This is a simplification of Okun's Law (we may note that Okun's Law relates total output to labour force utilization and productivity). This method assumes that full employment G.N.P. in real terms grows at a fairly constant rate over extended periods of time. Once the rate is determined and a base year in which there was full employment is selected, the real full employment G.N.P. for other years can be calculated. This real series is then converted into current dollar series by multiplying by the G.N.P. by implicit price deflator. The next step is to estimate the amount of revenue that would be generated at the full employment G.N.P. under the existing tax structure and tax rates. This requires, among other things, estimates of such variables as proportions of full employment G.N.P going to corporate profits and then the application of an appropriate tax rate to each income component. Lastly, we have to make the estimation of government expenditure at full employment.

We may say as a general rule that full employment budget surplus or deficit is, in and of itself, an indicator of a budget programme that is restrictive or simulative of the degree of restraint or stimulus. Of course, it does not follow from this that the goal of fiscal policy should be neither a full employment budget surplus nor deficit but a budget programme, that is neutral. The very idea of employing fiscal policy for the purpose of attaining and maintaining full employment and preventing inflation calls at times for a budget programme that is simulative and other times for a budget programme that is restrictive. For example, let us suppose that a given budget programme that produce some specific full employment budget surplus. It follows that planned private saving by the amount of this surplus to planned private investment expenditures must exceed for full employment to be realized. In the opposite case, suppose that the fiscal programme is such to produce some specific full employment budget deficit. It then follows that planned private investment must be less than planned private saving at full employment by the amount of this deficit, if demand pull inflationary pressures are not to come into play.

The full employment budget surplus may be used as a tool on analysis for planning appropriate fiscal action designed to offset all excess of deficiency of planned private investment relative to planned private saving at a full employment level. Such fiscal actions will help the economy reach the full employment level. If full employment is already there, these fiscal sections will prevent inflation. Of course, there are some serious problems in using this tool full employment budget surplus. First of all, the calculation of the full employment budget surplus is itself fairly crude. The second problem found in an economy below full employment relates to the difficulty of estimating what private saving and private investment would be at full employment in order to know what the appropriate full employment budget surplus or deficit should be. The other difficulty is that of securing the necessary discretionary flexibility in expenditures and or taxes.

19.3.3 Fiscal Drag

The concept of fiscal drag is closely related to that of full employment budget surplus. The idea behind the notion is the fact that federal revenue rises more than proportionately with increase in GNP, especially for short run increase in GNP mainly

due to the progressive nature of the personal income tax and the high responsiveness of corporate profits to change in GNP. If federal expenditures increase at the same rate as GNP, the result is a budget programme whose revenue side increase more than its expenditure side and a budget that exerts a drag on the growth of GNP. If the economy is already in full employment, a budget programme like this will show a smaller deficit or larger surplus each year. As there is no reason to expect that this will be just offset by an equal change in the difference between private saving and private investment, this shrinking deficit or expanding surplus will force the economy below full employment. An expansion of GNP push forward the full employment level which would automatically increase tax receipts by more than the increase in expenditures. This envisages a full employment budget surplus. This surplus itself would prevent the attainment of full employment. It is in this sense a "drag" on the expansion of output and employment.

The main point here is that the federal tax structure is that the economy at full employment cannot continue to enjoy full employment unless the federal government either continuously expends its expenditures as a fraction on the GNP or cuts tax rates. If none of this is done, it will result in a fiscal drag which at some point will mean recession and unemployment.

19.3.4 Flexibility of Fiscal Policy

Intended private saving may exceed private investment at full employment so that full employment budget deficit is required if full employment is to be attained. If the actual situation happens to be one of full employment budget surplus and that the actual level on income is one below full employment, there is need for discretionary changes in government expenditure and or on tax rate of the order required to produce the full employment level income. Here we have to took into the problem of whether we can secure the required degree of flexibility in government expenditures and/or tax rates to produce now a deficit and then a surplus as may be required to meet the needs of the situation.

We may note here that monetary policy enjoys the advantages of greater flexibility than fiscal policy. This is due partly to the inherent flexibility of certain tools of monetary policy like the open market operations and partly to the fact that the

decision making authority lies in an independent agency whose aims are limited to the preservation of the customary role and whose power is concentrated in the hands of the few persons. In contrast, the decision making process in the area of fiscal policy, in a sense, involves the whole of the executive and legislative branches of the federal government. The recommendations made by one or two American Presidents in the past (President Kennedy and President Johnson) that the chief executive (i.e. the President) be granted limited discretionary power to vary tax rate (say, 5 per cent, in either direction) were not accepted by the Congress.

In America Congress has closely guarded its power over the tax structure, tax rates and expenditure programmes. So long as Congress retains almost complete power to make major changes, discretionary fiscal policy will remain anything but flexible, for it will continue to depend upon legislative action and legislative action will continue to the preceded by time consuming debates in Congress.

At present, the little flexibility that we have in fiscal policy s that provided by the built in or automatic stabilizes. Beyond automatic flexibility, we have formula flexibility, it is the President with the amount of power he would acquire with a type of flexibility that would not require Congress to give even limited discretionary authority.

19.3.5 Built-in Flexibility

When change in tax collection and government spending vary automatically promptly and in the right direction to produce a stabilizing effect on aggregate demand, built in flexibility is achieved. As Shapiro puts it, "Automatically means that no specific action need be taken; promptness means that there is little lag between changes in aggregate demand and changes in government spending and tax collections in right direction means that decreases in aggregate demand call forth additional government spending and tax collections while increases in aggregate demand and call forth the opposite. In general when aggregate demand and income are rising, automatic and prompt increases in tax receipts and decrease in transfer payments tend to dampen the expansion, when aggregate demand and income are falling, automatic and prompt decreases in tax receipts and increases in transfer payments tend to dampen the contraction".

We may note that the dampening of income movements is not an unmixed blessing. Whereas the resistance that the built-in stabilizers provide to a downward movement is desirable in an under employed economy, the resistance they provide to an upward movement in the same economy is undesirable. This is what is called fiscal drag and calls appropriate offsetting actions in the end of discretionary changes in government expenditures or tax rates. In an economy which is at full employment, the built in stabilizers would tend to have a stabilizing effect in both directions.

Economists generally favour the greatest use and strengthening of built- in stabilizers wherever possible. If we can ignore other public policy objectives, we can suggest a number of change that would strengthen existing stabilizers. For example, a more progressive tax structure might strengthen the stabilizers. In the case of indirect taxes, an advalorem tax would make the stabilizers more effective, since the revenue yield would vary more over the cycle under advalorem than under specific taxes. In the case of government transfer payments, unemployment compensation payments, could be made a more effective stabilizer by enlarging the weekly benefits and by increasing the number of workers covered. Although a number of charges like these would be made for improving the efficacy of built-in-stabilizer, many such changes are ruled out because they conflict with the other aims of public policy.

Today many economists generally favour an active role of fiscal policy in which taxes and government spending (purchases of goods and services as well as transfer payment) are made to vary according to formula or executive discretionary action. The argument for a more active role of fiscal policy is strengthened when we take into account the limitation of the most complete system of built-in-stabilizers namely that the stabilizer in themselves cannot prevent a downtown from occurring because they do not come into effect until there is already some down turn in spending and income. It is true that they can help to prevent a down turn from growing worse, but they cannot in themselves reverse a downturn and initiate an expansion, we may note that formula flexibility is also lie the built-in-stabilizers in the sense that it is essentially automatic however, it may be designed to allow a greater scope for stabilizing action than is provided by the built-in-stabilizers. Not only that, unlike the built-in-stabilizers, they may be able to reverse a down turn once begun.

19.3.6 Formula Flexibility

Formula flexibility depends on changes in selected indexes like the unemployment rate or the consumer price index as indicators of need for specific changes in income tax rates, transfer payments or even public works expenditures. As in the case of built- in- stabilizers, action takes place in response to realized changes in the business situation and in this sense it is automatic rather than discretionary. For example, the formula would require a specified reduction in personal income tax rates when the percentage of unemployment equaled or exceeded 5 percent for two consecutive months. Similarly, in response to increases in the unemployment rate a formula could call for liberalizing unemployment compensation and other kinds of government transfer payments. A number of scale public works projects could be postponed until there were specific changes in the unemployment rate or in other indexes of business conditions.

In essence, the present role of fiscal policy in limiting short run fluctuations in economic activity is restricted essentially to the automatic or built – in –stabilizers. There are some economists who believe that in countries like America, unless greater flexibility is provided through formula approach with limited discretion or through an outright of some discretion to the present, fiscal policy will remain far less effective as a means of achieving short-run stabilization than it might be.

19.3.7 Variations in Government Purchases, Transfer Payments and Taxes

We have to consider the question whether federal expenditure and tax receipts, even with discretionary action, can in practice, be varied by the large amounts that may at times be necessary for successful stabilization policy. There are some fiscal models which tell us that variations in government purchases, transfer payments and tax receipts could be used in various combinations to produce the desired expansionary or contractionary effects on aggregate demand and the level of income, we shall now look at some of the practical limitations on the use of such variations as tools of fiscal policy.

1. Purchase of goods and services

We can reduce inflationary pressures by reducing the level of government purchases, they by reducing government demand for goods and service releasing

resources to meet private demand. However, in practice, the federal government has comparatively little freedom of action. In America around 80 percent of current purchases are currently for defence purposes and it is rather difficult to vary them for establisation purposes. So under present conditions variation is essentially limited to 20 percent of federal purchase that are of a non-defence nature. But here also there are problems. For example, sharp cutbacks in expenditures are not administratively feasible in the short run. Some kinds of non-defence spending are meant for dealing with the urgent problems like poverty and urban plight. In time of inflation, these cuts can be effected only at a very high social cost. Inflation has to be attacked primarily through increases in tax rates.

One way of fighting a recession is to increase the level of government purchases, thereby increasing government demands back for goods and services and absorbing idle resources in their production. The Government can increase its level of purchases for public works such as dams, roads, public buildings and the like. This brings us to the problem of limited flexibility works projects. Even with planning in advance, some lag is unavoidable between the decision to undertake a project and the actual initiation of expenditures on it. The lack of flexibility of course, is not a serious problem in the face of a severe depression as the one during the thirties. But public works programmes are of limited value in coping with short cyclical downturns of the type that many western economics have suffered in the postwar period.

2. Transfer payments

There are some problems with regard to transfer payment too. It is rather difficult to achieve a substantial regulation in transfer payments as a part of an anti-infalation any programme. For that would mean cutting benefit provisions under old age, unemployment, insurance, retirement, programme and the like. They account for the bulk of federal government transfer payments apart from Medicare and Mediclaim. Some of these payments are contractual obligations of government and cannot be touched. And it is very difficult to reduce old age benefits. Thus, we find that sizable cutbacks in transfer payments as a means of reducing aggregate demand are not possible in practice. (Of course we refer here only to discretionary reductions. Aggregate unemployment benefits will be reduced automatically as unemployment

falls during expansionary phase of the business cycle. This result from the operations of the unemployment insurance programme as a built-in-stabilizer).

On the other hand, expansion of transfer payments as a mean of stimulating the economy are not subject to such limitations. Not only that, as large part of funds are received by low income groups most of the funds will be used to increase consumption spending. But there is a snag, any increase in transfer payments are likely to be permanent, presenting a problem if restrictive action is subsequently indicated. This problem limits the usefulness of transfer payment for short-run stabilization purposes.

3. Tax Receipts

We can make use of fiscal policy to attack the problem of excessive or deficient aggregate demand, from the tax side as well as from the side of government purchases and transfer payments. For instance, an overheated economy be cooled by an appropriate rise in tax rates with no changes in government spending. But the limitation to the use of rates is that government may be unwilling to impose higher rates, except in cased of extreme emergency, such as war time. But, even of this reluctance to raise taxes is overcome, there is the difficult problem of deciding which rates are to be raised and the amount by which each is to be raised, just as on overly restrictive monetary policy may not only bring an inflationary expansion to an end but precipitate a decline, so an overly restrictive monetary policy may have the same effect. In short, it may not only cool an overheated economy but may "freeze" it.

If excessive aggregate demand can be attributed to developments in particular sectors of the economy, to that extent, it may be possible to direct the tax policy towards such sectors without putting the brakes on the system as a whole. For instance, if a boom in investment spending is under way, a rise in corporate income tax rates may be in order. In such a case, the dampening. On the other hand, if the excess is primarily the result of an increase is consumer spending a rise personal income tax would be in order. When an economy is faced with the problem of deficiency in aggregate demand, then the appropriate fiscal policy would be to cut tax rates. The government can make a choice between, or a combination of tax rate designed directly to stimulate consumption spending or investment spending. As cyclical fluctuation in investment spending, are relatively greater than those in consumption spending, of the

two, investment spending will be more depressed during a period of recession. For this reason, some economists argue that tax cuts should be aimed a encouraging investment. But others argue that there is no better stimulus to investment spending that that provided by increased consumption spending, so they advocate tax cuts to stimulate consumption spending.

Whether an expansionary tax policy is to be aimed primarily at consumption or investment spending, a number of techniques can be employed for the purpose. Consumption spending can be stimulated by mainly relying on cuts in personal income tax. Cuts in excise rates may also help, investment spending may also be stimulated through a number of techniques like reductions in corporate income tax rates; tax credits on purchase of capital goods and liberalization of depreciation regulations. Today it is generally accepted that changes in tax rates can and should be employed to promote greater economic stability. We may, however, note that the question of reform of the tax structure should be approached as a problem apart from short-term tax decisions based on stabilization considerations.

19.3.8 Deficits and burden of the National Debt

We shall now turn to the problem of increase in national debt that results from the budget deficits incurred through counter fiscal policy in periods of recession. According to the traditional view, national debt is not essentially different from private debt. The government can pay off the maturing debt by selling new debt. In an extreme case, it can always meet its obligations by printing paper money. In short, the government borrowing cannot be shifted to the future; it is actually measured by the resources that are shifted away from privates to public use today. It is true that national debt incurred by but not repaid by the present generation will be passed on to the next generation. But the financial claims that comprise the national debt are then owned by and owned to the very same generation. In other words, although they inherit the obligation to pay interest on the bonds, they also inherits the bonds themselves.

A related argument is that debt services on a national debt that is internally held may involve some redistribution of income. Though there may be some slight redistribution of income from lower to upper income groups, the redistribution involved will be too mild to have a significant deflationary effect. Moreover, according to the

modern view, the possible inflation and effect of debt creation cannot be an objection to an expanding debt. Fiscal policy relies on debt financing as a means of producing an expansion of output and employment and such a policy is undertaken only when the economy is operating at a less than full employment level. Under such circumstances, we need not be concerned about inflation.

19.3.9 Economic Growth and Debt Burden

A growing national debt need not necessarily mean greater burden in the future generation. Growth in the national debt may be matched, or more than matched, by the growth of the economy. The traditional view of public debt does not emphasize this point.

19.3.10 Macro Economic Policy and Economic Growth

Rapid economic growth is one of the major goals of macro-economic At present, whatever contribution monetary policy makes to the goal is made essentially through its contribution to the goods of full employment and price stability. But fiscal policy appears more appropriate than monetary policy to influence the way the resources are allocated between the production of capital goods and other goods in an economy operating at full employment. This can be done in a number of ways. For example, the government may raise tax rates to generate a budget surplus. This surplus means that there will be some increase in the total saving of the economy (assuming no decrease in private saving) at the then existing full employment level of income. The government can then direct the surplus to investment either thorough appropriate public of expenditures, public lending to private investors or repayment of public debt.

We may note that though, monetary and fiscal policies are the "giants of the industry", there are other policies such as labour, agricultural and anti-trust polices. They are all relevant in one way or another to achieve the macro –economic goals.

19.4 Summary

We have studied the concept of high employment or full employment budget surplus. The fiscal drag and fiscal dividend examine the full employment budget surplus. The flexibility of fiscal policy explains under the three heads of built-in-flexibility, formula flexibility and flexibility through discretionary actions. Adjustments are necessary to take the form of changes in government purchase of

goods and services, transfer payment and taxes. In the end of this lesson, we studied the limitations on the ability of the government to effect variations in each of those tools of fiscal policy.

19.5. Revision Points

Built –in-flexibility : it is achieved when changes in tax collections and government spending vary automatically.

Formula flexibility : It is the action taking place automatically in response to realized changes in the business situation.

19.6 Intext question

1. Analyse macro economic policy and economic growth

19.7 Keywords

Built –in-flexibility, Formula flexibility .

LESSON-20

MONETARY VS FISCAL POLICY USING IS-LM MODEL

20.1 Introduction

This chapter is concerned with the effect of fiscal policy and impact of monetary policy by using IS-LM model.

20.2 Objectives

- To examine Effect of Fiscal policy
- To analyse Impact of Monetary Policy

20.3 Content

Economic Policies –Uses of IS-LM Curves

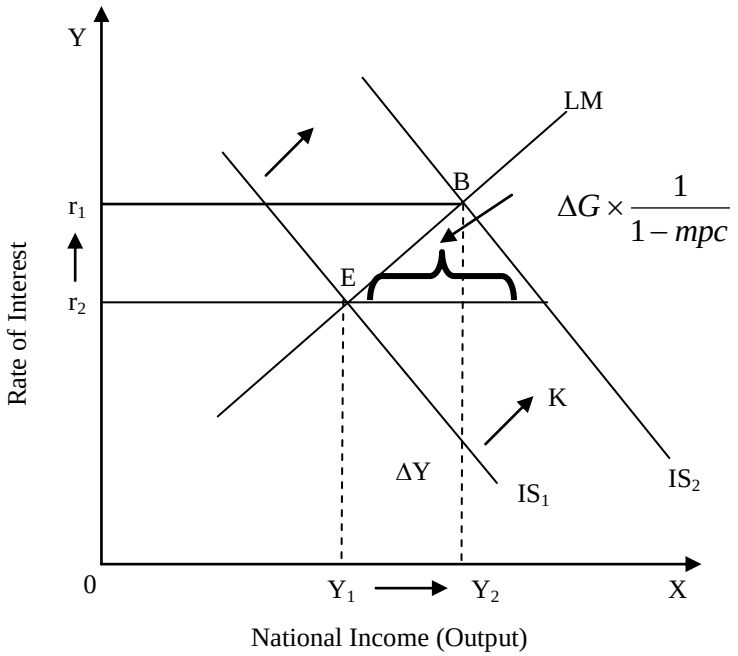


Fig.20.1

With the help of IS-LM curve model we can explain how the intervention by the Government with proper fiscal and monetary policies can influence the level of economic activity, that is income and employment level. We explain below the impact of changes in fiscal and monetary policy on the economy in the IS-LM model.

1. Effect of Fiscal policy

Let us first explain how IS-LM model shows the effect of increase in Government expenditure on level of income. This is illustrated in Figure 20.1. As explained above, increase in Government expenditure which is of autonomous nature raises aggregate demand for goods and services and thereby causes an outward shift in IS curve, as is shown in Figure 20.1 where increase in Government expenditure leads to the shift in IS curve from IS_1 to IS_2. Note that the horizontal distance between the two IS curve is equal to $\Delta Gx\frac{1}{1-MPC}$ which shows the increase in income that occurs in Keynes's multiplier model. It will be seen from Figure 20.1 that with the LM curve remaining unchanged, the new IS, curve intersects LM curve at point B. Thus, in IS-LM model with the increase in Government expenditure (ΔG), the equilibrium moves from point E to B and with this the rate of interest rises from r_1, to r_2 and income level from Y_1 to Y_2. Thus, IS-LM model shows that expansionary fiscal policy of increase in Government expenditure raises both the level of income and rate of interest.

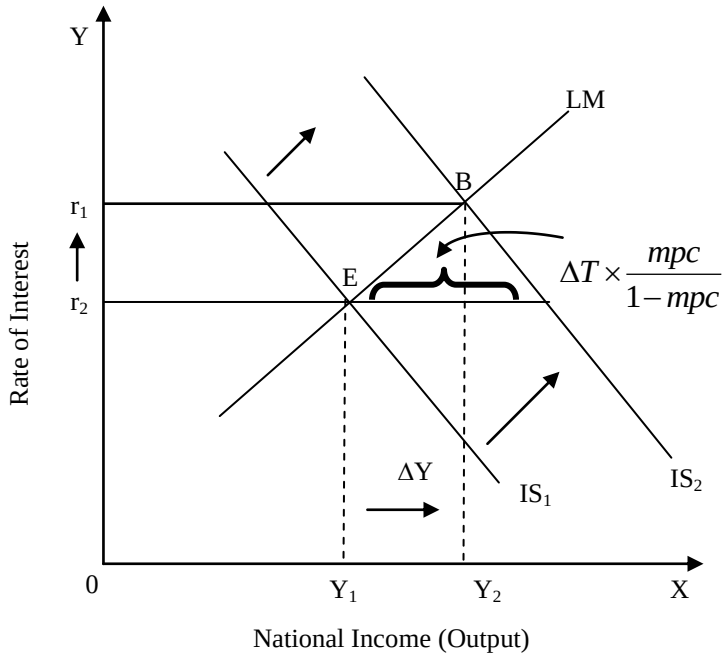


Fig.20.2

It is worth noting that in the IS-LM model increase in national income by Y_1 Y_2 in Fig. 20.2 is less than EK which would occur in Keynes's model. This is because Keynes in his simple multiplier model (popularly called Keynesian cross model) assumes that investment is fixed and autonomous, whereas IS-LM model takes into

account the fall in private investment due to the rise in interest rate that takes place with the increase in Government expenditure. That is, increases in Government expenditure crows out some private investment.

Likewise, it can be illustrated that the reduction in Government expenditure will cause a leftward shift in the IS curve, and give the LM curve unchanged, will lead to the fall in both rate of interest and level of income. It should be noted that Government often cuts expenditure to control inflation in the economy.

2. Reduction in Taxes

An alternative measure of expansionary fiscal policy which may be adopted is the reduction in taxes which through increase in disposable income of the people raises consumption demand of the people. As a result, cut in taxes causes a shift in the IS curve to the right as is shown in Figure 20.1 from IS_1 to IS_2. It may however noted that in the Keynesian multiplier model, the horizontal shift in the IS curve is determined by the value of tax multiplier which is equal to $\Delta T \times \frac{MPC}{1-MPC}$ and causes level of income to increase by EH. However, in the IS-LM model, with the shift of the IS curve from IS_1 to IS_2 following the reduction in taxes, the economy moves from equilibrium point E to D and as is evident from Figure 20.2 rate of interest rises from r_1 to r_2 and level of income increases from Y1 to Y2.

On the other hand, if the Government intervenes in the economy to reduce inflationary pressures, it will raises the rates of personal taxes to reduce disposable income of the people. Rise in personal taxes will lead to the decrease in aggregate demand. Decrease in aggregate demand will help in controlling inflation. This case can also be shown by IS-LM curve model.

3. Impact of Monetary Policy

Through Making appropriate changes in monetary policy the Government can influence the level of economic activity. Monetary policy may also be expansionary or concretionary depending on the prevailing economic situation. IS-LM model can be used to show the effect of expansionary and tight monetary policies. As has been explained above, a change in money supply causes a shift in the LM curve, expansion in money supply shifts it to the right and decrease in money supply shifts it to the left.

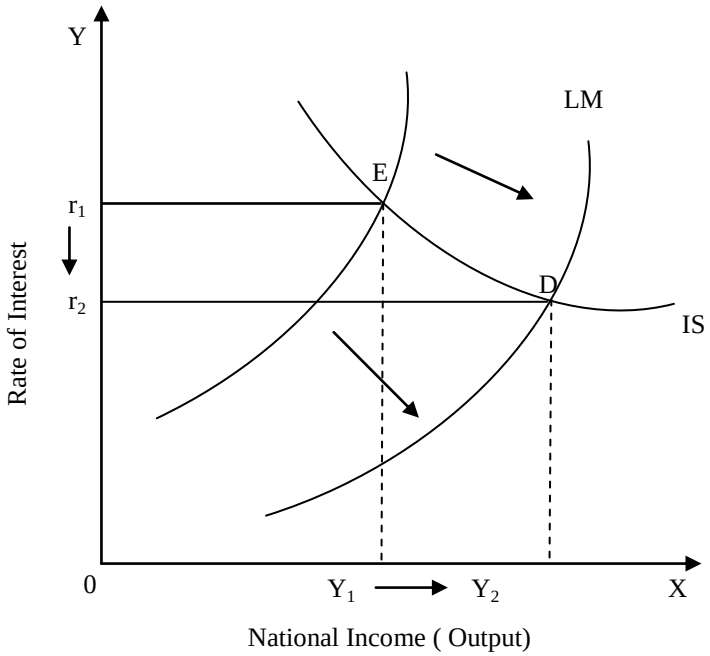


Fig.20.3

Suppose the economy is in grip of recession, the Government (through its Central Bank) adopts the expansionary monetary policy to lift the economy out of recession. Thus, it takes measures to increase the money supply in the economy. The increase in money supply, state of liquidity preference or demand for money remaining unchanged, will lead to the fall in rate of interest. At a lower interest there will be more investment by businessmen. More investment will cause aggregate demand and income to rise. This implies that with expansion in money supply. LM curve will shift to the right as is shown in Figure 20.3. As a result, the economy will move from equilibrium point E to D and with this the rate of interest will fall from r_1 to r_2 and national income will increase from Y_1 to Y_2. Thus IS-LM model shows the expansion in money supply lowers interest rate and raises income. We have also indicated what is called monetary transmission mechanism, that is, how IS-LM curve model shows the expansion in money supply leads to the increase in aggregate demand for goods and services. We have thus seen that increase in money supply lowers the rate of interest which then stimulates more investment demand. Investment demand through multiplier process leads to a greater increase in aggregate demand and national income.

If the economy suffers from inflation, the Government will like to check it. Then its Central Bank should adopt tight or concretionary monetary policy. That is, it

should reduce the money supply. IS-LM model can be used to show, as we have seen above in case of expansionary monetary policy, that reduction in money supply will causes a leftward shift in LM curve and will lead to the rise in interest rate and fall in the level of income.

20.4. Summary

The above text clearly summarized. The effect of Fiscal policy by using IS-LM model it shows that expansionary fiscal policy of increase in Government expenditure raises both the level of income and rate of interest. Monetary policy may also be expansionary or concretionary depending on the prevailing economic situation. IS-LM model can be used to show the effect of expansionary and tight monetary policies.

20.5. In text question

1. Explain the Monetary Vs Fiscal Policy Using IS-LM Model.

LESSON -21

THEORY OF PORTFOLIO CHOICE

21.1 Introduction

After reading this lesson you will be able to understand Keynesian version of transaction of money, know about the Hicks analysis of portfolio approach and examine Tobin model of portfolio choice.

21.2 Objectives

- Understand Keynesian version of transaction of money
- Know about the Hicks analysis of portfolio approach
- Examine Tobin model of portfolio choice

21.3 Contents

21.3.1 Keynes and Hicks analysis of portfolio approach

21.3.2 Tobin' Theory or Portfolio Choice

21.3.1 Keynes and Hicks analysis of portfolio approach

Keynes' chief contribution to money demand analysis is the introduction of a variable representing the cost of holding money balances (the rate of interest) into the money demand function. This innovation permitted examination of the substitution effect on money demand of changes in relative return. In giving explicit consideration to the yields on assets that complete with money, Keynes became one of the founder of the portfolio balance approach to monetary analaysis i.e., the approach that interprets money demand as part of the choice of an optimum (utility maximizing) portfolio of assets.

At least equal recognition for originating the portfolio approach however, should be given to J.R. Hicks, who in 1935 first suggested that money demand be treated as a problem of balance sheet equilibrium or asset choice to be analysed along the line of orthodox commodity demand theory.

Hicks pointed out that if money were to be analysed as a capital asset and not just as a mechanical medium of exchange, the money demand function would have to include, as explanatory, variables like total wealth and executed rates of return on other

assets. The wealth variable would represents the constraint on money holdings cine individuals could choose to hold their entire wealth portfolios in the form of money. The yield variables would represent both the opportunity costs of holding money and the portfolio substitution effects of changes in relative rates of return. Individual who optimizes portfolio would compare these yields with the imputed convenience and security yield from holding money balances in deciding whether to substitute other assets for money in their balance sheets.

Hicks specification of wealth as the constant variables was a significant departure from the Cambridge and Keynesian formulations, both of which used income in the money demand equation. This shift from income to wealth as the constraint variable under-stored the shift from the transactions approach to the capital assets or portfolio, approach, by Hicks, income is a magnitude that has the time dimension of a flow. Wealth, on the other hand, has the time dimension of a stock. The rationale for the income constraint in the Cambridge and Keynesian formulations was that money is used to finance a flow of transactions or spending that is closely related to the flow of income. Hicks use of the wealth constraint, by contrast, called attention to the stock of money as a store of wealth i.e., service of utility yielding alternative to other asset stocks.

Hicks also took the initial step in excluding the theory of choice or optimizing behaviour to explain the demand for transactions (as distinct from speculative or asset) balances. Prior to Hicks, no one had attempted this. Even Keynes had limited his application of rational choice analysis to the asset component of money demand. Moreover, no one previously had provided a convincing explanation of why individuals would be willing to hold transactions balance when risks, interest bearing assets of virtually instaneous redeemability (e.g. time deposits) were available. Hicks argued that transactors would sacrifice voluntarily the option of holding interest-yielding, speedily convertible assets for the option of holding money because the latter option maybe less costly; inshort; the existence of transactions balances could be explained as the outcome of nation, cost-minimising behaviour. More specifically, the reason for holding transactions balance is that of conversion costs (brokerage fees of transferring money into earning assets and vice versa). Hicks pointed out that it would not pay to get out of money into earning assets for short periods of time if the two way conversion

costs exceeded the interest income foregone by holding money balances. Hicks' observation that the demand for transactions balances stems from cost minimizing behaviour, together with his proposal that money holding be analysed as component of a portfolio of assets (or wealth), severed to eliminate much of the remaining disparity between money demand theory and conventional asset demand theory. The final steps, however were taken beginning in the 1950's by analysts working along the lines opened by Hicks and Keynes.

In fact, the portfolio balance analysis of money demand took tow avenues of development. One avenue is the extension and reformulation of Keynes' motives approach to money demand theory. The principal contribution of J. Tobin's reformulation of liquidity preference theory as portfolio balance behaviour towards risk and W.J. Baumol and refinement of transactions money demand theory. The other avenue of development utilities by Hicks is a more general capital asset approach to money demand theory. The principal contributions are M. Friedman's restatement of the quantity of money, and k. Burnne and .H. Melfzer's wealth adjustment approach.

We have already discussed the refinement of transactions money demand and the restatement of the quantity theory of money in terms of a capital asset approach in the last lesson. In this lesson we shall study Topin's reformulation of liquidity preference theory as portfolio choice theory. The theory is contained in Tobin's paper entilised "Liquidity Preference as Behaviour Towards Risk" published in the "Review of Economic Studies" in February 1958.

21.3.2 Tobin' Theory or Portfolio Choice

Tobin's Portfolio balance analysis refines Keynes liquidity preference theory. In Keynes' analysis an individual holds either all bonds or all money in an asset portfolio depending on expected changes in the market interest rate. If the market rate is expected to rise because the normal rate exceeds the current rate only money will be held, and if it is expected to, and if the current rate exceeds the normal rate, only bonds will be held. The assumption of certainty of expectation and the conclusion that either money or bonds, but not both are held in individual asset portfolios are unrealistic. Individuals have expectations, but they are generally held with uncertainty. Moreover, asset portfolios are generally diversified, including both money and bonds.

The key to the analysis is a relatively simple proposition about people's tastes; they treat wealth as a good but they treat risk as a "bad" something that reduces the satisfaction derived from wealth. For example people will prefer Rs. 100 offered with certainty to a 50-50 chance of getting either Rs. 50 or Rs. 150 in both cases the "expected" gain Rs. 100, in the first case because the sum is guaranteed and in the second because, if the offer was accepted many times, on half the occasions Rs.50 would be forthcoming and on the other half Rs. 150, making Rs. 100 on average. However in the second case there is a risk attached to the outcome and this is thought of as reducing the desirability of this alternative. Were the risks larger said the possible sums were Rs. 75 and Rs. 125 the alternative would be even less desirable.

The simple notion may be applied to the problem of the speculative demand for money. Consider an individual who receives his income once per period, and who saves. He must-have some form of holding his savings between periods. Let the assets available to him be money and bonds. If the price level is constant there is no question of money either earning a return or imposing any risk on the person who holds it. However, since bonds pay interest and are subject to fluctuations in their price, they do yield income although an uncertain one. This income has two components to it the interest payments accruing to the bone holder, whose amount we may take as certain, and capital gains and losses which must be predicted.

For the sake of simplicity in the analysis Tobin assumes that the individual, where he assesses the probabilities of making capital gains and losses on bonds, does so in such a way as to make the expected value of such a way as to losses zero, so that the expected value of they yield of holding bonds becomes just equal to the market rate of interest. However there is a risk attached to the return to be had from holding bonds, which may be measured by the standard deviation of the probability distribution in terms of which the individual describes expectations about the future price of bonds.

Now the problem confronting the individual at the end of some period is to allocate his savings between bonds and money so as to maximize the utility that he expects to get out of them. Holding more bonds increases the expected interest to be earned on his savings and since this increases his utility. However, it also increases the dispersion of the possible values that his wealth will take in the next period. The more

bonds in his portfolio whose price can fluctuate, the greater the possible fluctuation in the value of the portfolio. Since risk reduces the individual's utility, the introduction of extra bonds into the portfolio involves trading off extra expected wealth in the next period against extra risk. The following figure will make this clear.

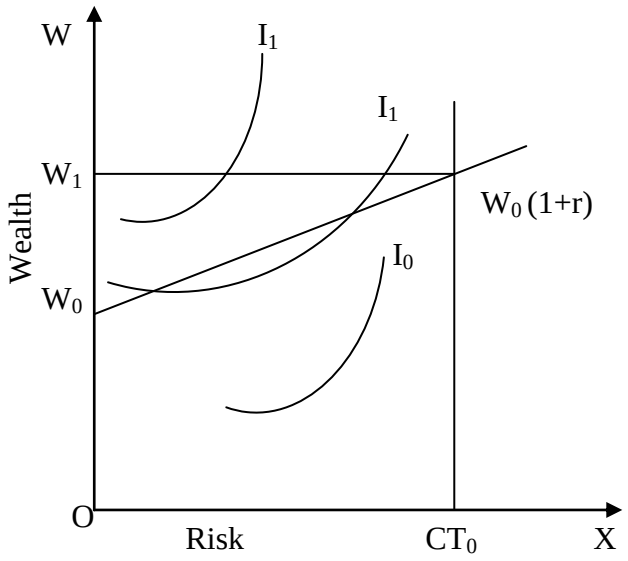


Fig. 21.1

In figure 21.1 expected wealth in the next period (W) is measured on the vertical axis and risk (t) on the horizontal. The curves I_0, I_1…. Etc. are indifferences curves. Each curve represents a locus of combinations of expected wealth and risk between which the individual is indifferent. Each curve slope upward to the right as a result of the assumption that expected wealth is a good and risk is a bad. It follows from this assumption that if his wealth is increased, the individual will be better off unless risk is also increased to hold him at the same level of satisfaction as before. For the same reason, the indifferences curve are to be interpreted as reflecting higher levels of utility as one moves upward and to the left. More wealth will have no extra risk attached, or less risk with no compensating decrease in wealth makes the individual better off. The curves are convex downwards, because it shows that the more wealth owned, the less does some extra wealth mean to the individual and hence the smaller the increase in risk he is willing to bear to increase his expected wealth further.

The line W_0-W_0(1+r), is the line which shows the combinations of risk and expected wealth individual may actually choose from in arranging his portfolio. If the

chooses to hold all his wealth in the form of money, he will earn no return on it, nor will he face any risk. Hence, the budget constraint passes through the point W_0, which measure the amount of wealth he initially begins with and the amount he will end up with if he holds it all in the form of money. Similarly, if he chooses to hold all his wealth in bonds, his expected wealth in this circumstance is equal to W_0 (1+r) where r is the rate of interest, while W_0 is maximum risk that the wealth holder can bear which is assumed to be the same in terms of the interest, the wealth holder, he can mix money and bonds in his portfolio, and the more of the latter he holds proportionately, more return he expects to earn while the risk he is taking also increases in proportion to the bond content of his portfolio.

Now the wealth holder's problems is to get the maximum amount of utility out of his portfolio, given the rate of interest, and given the riskness attached to holding bond. His aim is reach the highest indifference curve available to him, and this is clearly at the point E where the budget constraint is just tangent to indifference curve 1. At this point he will be holding a portfolio consisting partly of money and partly of bonds. This analysis then succeeds in explaining asset diversification in portfolios, but its use extends beyond this, for one can use it to drive a relationship between the market rate of interest and the demand for money. Consider Figure 21.2 which is essentially the same as 21.2.

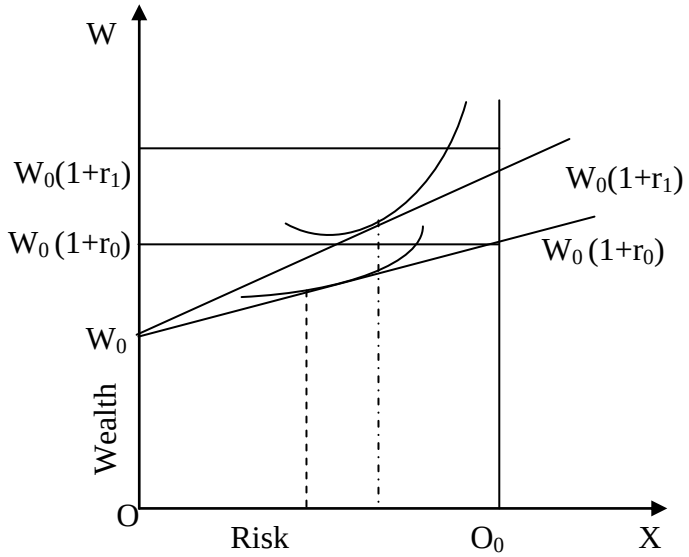


Fig. 21.2

If the market rate of interest is r_1 rather the r_0, and the riskness of bond is the same then the scope of the budget constraint obviously becomes steeper. Instead of

being in equilibrium at E_0 the wealth holder will settle at E_1 which in this figure is to the right of and above E_0. Thus he is earning more return and bearing more risk. However, though the rate of interest is different in the two situations, the riskness of bonds is not, so the conclusion that more risk is being borne implies at once that more bonds are being held at a higher rate of interest. That is to say, the higher the rate of interest the smaller the demand for money. From this analysis it is possible to derive for the individual a speculate demand curve for money that is continuous and downward sloping unlike the Keynesian approach, which yields a smooth relationship only in the aggregate.

However, the relationship does not have to be downward sloping, for its nature depends upon the indifference curves from which it is derived. It is quite possible to draw these so that at a higher rate of interest less risk is taken, i.e., more money is held, or just the same amount of money is held. (The reader may tray to draw the diagrams indicating these possibilities and write down the suitable explanations. Thus the nature of the demand for money function derived from this analysis upon the nature of the indifference map posited as underling it.).

This is no more than a case of the substitution effect and the income effect (wealth effect) potentially working in opposite directions. Consider Figure 21.2 which reproduce.

The movement from E to E_1 may be regarded as partly being a movement around an indifference curve and partly as a movement to a higher one. The substitution effect clearly leads to less money being held at a higher rate of interest as is indicated by the movement from E_0 to E_2. But the wealth effect from E_1 to E_2 could go either way. So long however, as an increase in wealth would lead people to desire to hold more bonds, the wealth effect of a higher rate of interest will reinforce. The substitution effect will lead to more bonds, and hence less money being held.

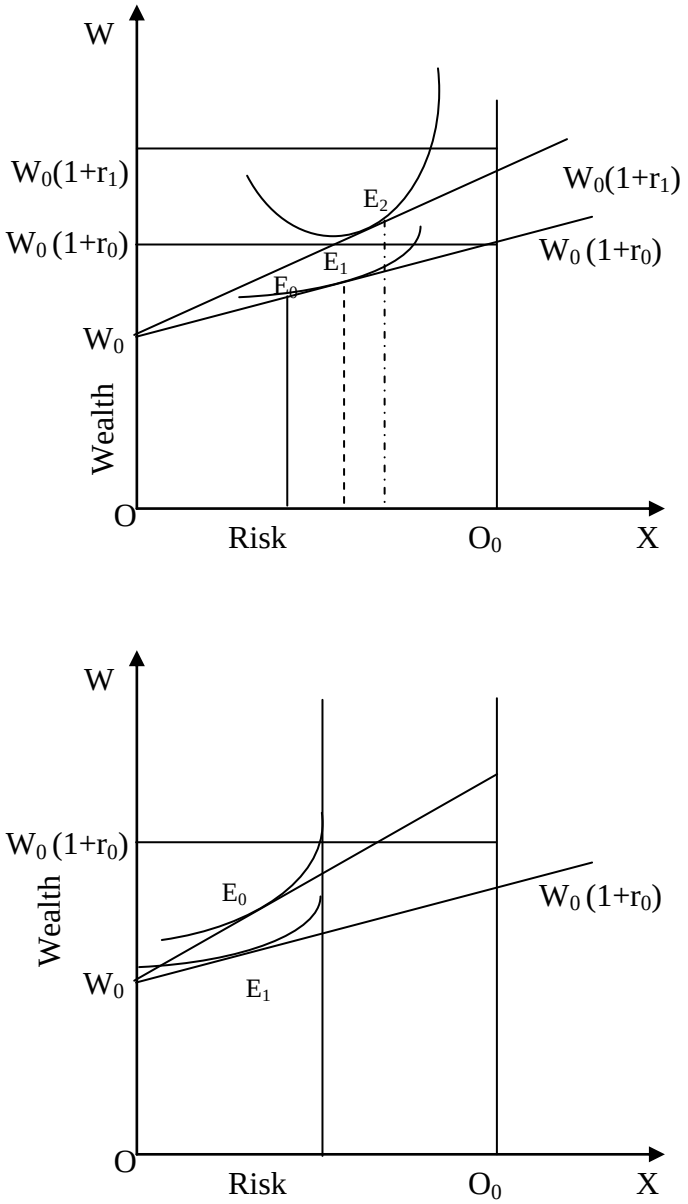


Fig. 21.3

We may now turn to the effect of changes in the riskness of bonds on the demand for money. In terms of our diagram, an increase in the riskness of bonds involves a shift to the right of E_0 so that the budget constraint becomes more shallow at a given rate of interest. This is shown in Figure * and the reader will be able to see quite clearly that greater riskness of bonds has an effect that is in every way equivalent to a lower interest rate, increasing the quantity of money demanded. Similarly a decrease in the riskness of bonds will cause the demand for money to decrease.

These results are quite plausible. It is interest that makes bonds attractive to hold, and riskness that detracts from their desirability. A rise in the interest rate, and a

decrease in risk are alternative ways of making bonds attractive to hold. Now this is a theory of individual behaviour, and of only part of the total demand for money function, so that it is not wise to claim that it tells us too much about the nature of the aggregate demand for money function. However, in as much as, it is, theory the explains the holding of diversified portfolios by individual, there can be little doubt that, it speculative motives are important in the aggregate, they are probably better analysed in terms of a model such as this than in terms of Keynes' approach. The latter does not allow for portfolio diversification.

Tobin generalised his two asset analysis (i.e. money and bonds) to a range of assets which he believed should include money, real business capital, bonds and other non-money financial assets. His definition of wealth includes only non-human assets and is called the narrow definition of wealth. Keynes set forth the principle that cost factors enter into the decision to hold speculative or asset balances, and he used the two asset case of bonds and money to illustrate his point. Tobin extended the analysis not only by introducing uncertainty of expectations into the analysis, but by explaining liquidity preference as the result of a broader decision making process, namely, the national decision to hold asset money balances as a proportion of asset portfolio where more than one money substitute is available.

21.4 Summary

In this lesson we studied Tobin's reformation of liquidity preference theory as portfolio choice theory. Tobin gives us a theory of the speculative demand for money of an individual which suggests that it should depend upon the individual's wealth, the rate of interest, which stands in his theory for the expected yield on holding bonds over some period and the standard deviation of the probability distribution that the individual attributes to possible rates of capital gain and loss on bonds, the risk attached to holding them though nothing is explicitly said about the price level here. It should be clear that since the utility function underlying this analysis makes utility a function of real wealth, it is again a function in which other things being equal, the demand for money measured in nominal terms should be proportional to the price level.

21.5 Model Questions

1. Explain Keynes contribution of Portfolio approach.

2. Evaluate Hicks analysis of transactions of money.
3. Differentiate Portfolio choice of Hicks and Tobin.
4. Explain Tobin's model of portfolio choice.

21.6 Key Words

Portfolio Choice : Preference to hold money or bonds.

Lesson Writer:

Dr.R.Annadurai. M.A., M.Phil., Ph.D.,
Assistant Professor
Department of Economics
Thiru.Vi-Ka-Government Arts College
Thiruvarur-614 001