Macroeconomics Theory and Analysis I

DEECO526

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LOVELY PROFESSIONAL UNIVERSITY

Macroeconomics Theory and Analysis - I

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CONTENTS

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Unit 01: Origin and Growth of Macroeconomics

CONTENTS

Objectives

After studying this chapter, you will be able to:

1. Define macroeconomics.
2. Understand the origin and growth of Macroeconomics.

Introduction

Economics is the study of how people choose to allocate their scarce resources to meet their unlimited wants and involves the application of certain principles like scarcity, choice, and rational self-interest, in a consistent manner. The study of economics is usually divided into two separate branches, namely Micro Economics and Macro Economics. The study of economics is usually divided into two separate branches, namely Micro Economics and Macro Economics. in microeconomics, economic problems are studied at individual level (as a – an individual family, an individual firm, an individual industry an individual market,) where as in macroeconomic economic problems are studied at the level of economy as a whole. The British economist Alfred Marshall defined economics as the "study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of well-being." In macroeconomics, we study this "ordinary business of life" in the aggregate. The key variables, studied include total output in the economy, the aggregate price level, employment and unemployment, interest rates, wage rates, and foreign exchange rates. The subject matter of macroeconomics includes factors that determine both the levels of these variables and how the variables change over time: the rate of growth of output, the inflation rate, changing unemployment in periods of expansion and recession, and appreciation or depreciation in foreign exchange rates. Macroeconomics is policy oriented. It asks, to what degree can government policies affect output and employment? To what degree is inflation the result of unfortunate government policies? What government policies are optimal in the sense of achieving the most desirable behavior of aggregate variables, such as the level of unemployment or the inflation rate? Should government policy attempt to achieve a target level for foreign exchange rates?

Task: Difference between micro economics and macroeconomics?

Macro-economics: Macroeconomics, as a separate branch of economics, emerged after the British Economist John Maynard Keynes published his celebrated book The General Theory of Employment, Interest and Money in 1936.Macroeconomics is the branch of economics which deals with economic aggregates. It makes a study of the economic system in general. Macro Economics perceives the overall dimensions of economic affairs of a country. It looks at the total size, shape and functioning of the economy as a whole, rather than working of articulation or dimension of the individual parts. To use Marshall's metaphorical language, Macro Economics views the forest as a whole, independently of the individual tress composing it.

Notes: In both micro and macroeconomics supply / demand are added. But in micro economics it is limited to aggregate of any one goods or one market(as a market of cricket balls), where as in macroeconomics it is added of all those goods and services' which is produced by an by an economy, whether it is cricket balls or hens or chicken.

This book examines the branch of economics called macroeconomics. The British economist Alfred Marshall defined economics as the "study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of well-being." In macroeconomics, we study this "ordinary business of life" in the aggregate. We look at the behaviour of the economy as a whole. The key variables we study include total output in the economy, the aggregate price level, employment and unemployment, interest rates, wage rates, and foreign exchange rates.

The subject matter of macroeconomics includes factors that determine both the levels of these variables and how the variables change over time: the rate of growth of output, the inflation rate, changing unemployment in periods of expansion and recession, and appreciation or depreciation in foreign exchange rates.

Macroeconomics is policy oriented. It asks, to what degree can government policies affect output and employment? To what degree is inflation the result of unfortunate government policies? What government policies are optimal in the sense of achieving the most desirable behaviour of aggregate variables, such as the level of unemployment or the inflation rate? Should government policy attempt to achieve a
target level for foreign exchange rates?

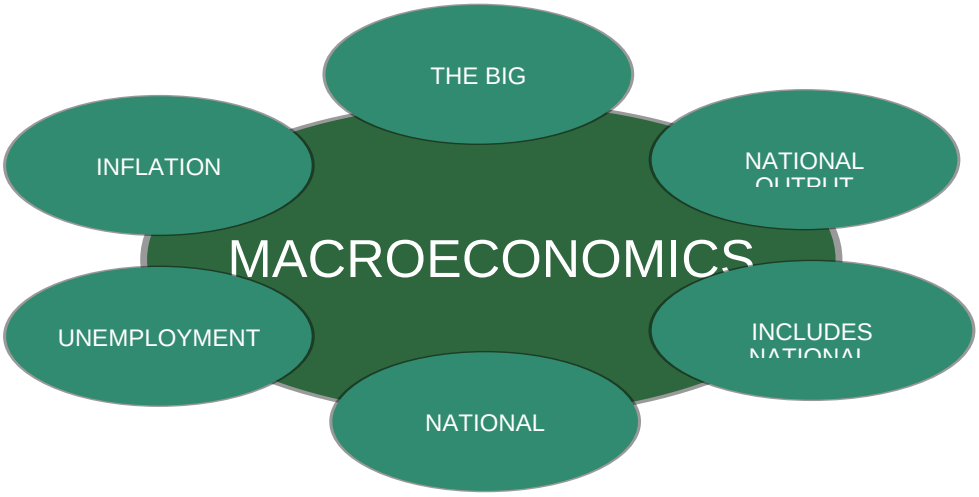
According to Shapiro – "Macroeconomics deals with the functioning of the economy as a whole.

Ackley Gardner's words - "Macroeconomics concerns with such variables as the aggregate volume of the output of on economy, with the extent to which its resources are employed, with the size of national income and with the general prize level."

In words of M.H. Spence – "Macroeconomics is concerned with the economy as a whole or large segment of it. in macroeconomics attention is focussed on such problems as the level of unemployment, the rate of inflation, the nation's total output and other matters of economy wide significance."

1.1 Study of the ECONOMY as a WHOLE

Macroeconomics looks at the economy as an organic whole. Macroeconomics studies economic aggregates such as total output, total demand, aggregate income, total savings, total investment, total employment and rise & fall in general price level, interest rates



a. The Big Picture: Microeconomics and macro-economics' economics factors' degree of aggregation gets difference. Microeconomics studies those economic problems which are related to single economic unit as a single firm or small group of economic units as a single industry. Macroeconomics studies economic problems of firms of an economy. In microeconomics studies only a small part of economic factors where as in macroeconomics studies important aggregates of economic variables

b. National Output: The national output is the total amount of all goods and services produced in a country during a specific period. And when production units or organizations sell everything they produce, they generate an equal amount of income. By measuring GDP, economists can understand the market swings and changes. They can identify what measures to take to improve the GDP of the country.

c. Includes National, Regional & Global Economies: Macroeconomics is the study of economies on the national, regional or global scale. This key difference alters how the two approach economic situations. Microeconomics does consider how macroeconomic forces impact the world, but it focuses on how those forces impact individual firms and industries.

d. National Income: Gross domestic product is the total monetary value of the final goods and services produced within national boundaries of a country during an accounting year. GDP is a macroeconomic indicator of health of an economy. High GDP represents the increase in output and this will lead to economic growth. Generally, GDP is also known as measurement of national income. National income provides an idea of purchasing power of people of a country.

e. Unemployment: Another important component of macroeconomics is unemployment. Economists measure the unemployment rate in an economy by calculating the percentage of individuals without jobs. Unemployment categories include classic unemployment, frictional unemployment, and structural unemployment.

   Classical unemployment is when wages are too high for employers to consider hiring more workers. Frictional unemployment occurs when the time taken to search for an appropriate employee is too long. Structural unemployment occurs when there is a mismatch between a worker's skills and the actual skill required for a job. Another important category of unemployment is cyclical unemployment that occurs when an economy's growth is stagnant.

f. Inflation: The study of inflation and deflation is another important aspect of macroeconomics. The term inflation refers to an increase in the prices of goods and services across the country. And the term deflation refers to a decrease in the prices of goods and services. Economists measure inflation and deflation by studying price indexes. A price index is the weighted average of price for a class of products and services.

Inflation occurs when an economy grows too quickly. Deflation, on the other hand, occurs when an economy declines over a period of time. By studying the inflation and deflation trends, economists can help curb inflation rates by taking appropriate measures. Too much inflation can lead to negative consequences and continuous deflation can cause low economic output.

Did you Know?

That matter is right at individual levels perhaps that is not right for whole economy: For example(1) If a person saves major part of his income, then such may be beneficial for him, but if whole society will be saved more than before than its result will be, decrease in total consumption, decrease in total demand, decrease in total supply and decrease in national income. Similarly, more savings will be destructive for whole society. (2) If a person will draw all his deposit from bank, then it will no loss to bank; but if all depositors will draw all their deposit from bank, then bank will be failed. (3) If a labourer accepted to work on low wage, then he will get a job, but if all labourer decreases their wages rate then their income will be decreased also. Their total demand will be decreased therefore total production will decreased also. As a result of this level of employment will decreased rather than increased. Such a Paradox is expressed the different of microeconomics and macroeconomics.

1. Origin and Growth of Macroeconomics:

Economists had begun to study economic growth, inflation, and international payments during the 1750s. But Modern macroeconomics dates from the Great Depression, a decade (1929-1939) of high unemployment and stagnant production throughout the world economy. The Great Depression of the 1930s gave birth to a branch of economics that in 1933 Ragnar Frisch called Macro Economics.

Before the great depression, Classical economist were of the view that all the laborer's who are ready to work will find employment and all the factories will be working at their full capacity. This school of thought is known as the classical tradition. While during the Great Depression of 1929 and the subsequent years saw the output and employment levels in the countries of Europe and North America fall by huge amounts. Whereas Unemployment rate which was increasing due to so many problems. J.M Keynes has emphasized on the working of the economy in its entirely and examine the interdependence of the different sectors. This is how Macro Economics was born.

The branch of macroeconomics is credited to have evolved after Keynes' General Theory. Before that the world was dominated by classical thought of macroeconomics. The period of macroeconomics growth is divided into three categories:

(a) Classical era

(b) Keynesian era

(c) Post-Keynesian era.

1.2 The Classical Macroeconomic Model

The school of economic thought that dominated prior to the Keynesian thought was the classical model. The classical economists had not developed any coherent macroeconomic model or theory. Their economic postulates can be summarized below:

According to classical thoughts if market forces of supply and demand were allowed to operate freely, then

a) There would always be a full employment in long run and unemployment if any, would be a short run phenomenon.

b) There would be neither over-production not under-production

c) The economy always be in equilibrium in long run.

The classical school of thought begin to see detachments from economists after the great depression of 1930.That it had flaws and limitations became apparent when it failed to explain the complexity of the economic situation that prevailed during the period. For, instance, in USA unemployment increased from 3% to 25% and production declined by 30% and prices fell by 23%. All these issues were found to have no explanations or solutions in the classical economic thought. The world realized: the classical model was inadequate and no longer reliable. The need for a new theory that could explain these arising complexities of new economic order was sensed.

1.3 The Keynesian School of Thoughts

The Keynesian macroeconomic model was mainly associated with three things

(a) employment

(b) growth and

(c) stability.

The key points from the Keynesian's theory can be summarized as below:

a) the level of output and unemployment in an economy are determined by aggregate demand given the resources.

b) the unemployment in any country is caused by lack of aggregate demand and economic fluctuations are caused by demand deficiencies.

c)the problem of demand deficiencies can be removed by timely intervention of government through appropriate measures such as compensatory government spending's.

But given its uniqueness in terms of complexity and uncertainties, the economic order across the world never conforms to one theory or postulates. It goes through a continuous process of fluctuation and change making it unpredictable and rendering all the prevailing ideas theory and ideologies of the given time inadequate and redundant forcing economists to look for some other postulates or to find solution and explainable through new thoughts and ideas.

This happened with the Keynesian model too and the new period that followed saw more and more thoughts and models to explain the growing complexities and changing dynamics of the economic order.

1.4 Post Keynesian Developments

The post Keynesian developments saw following new school of thoughts:

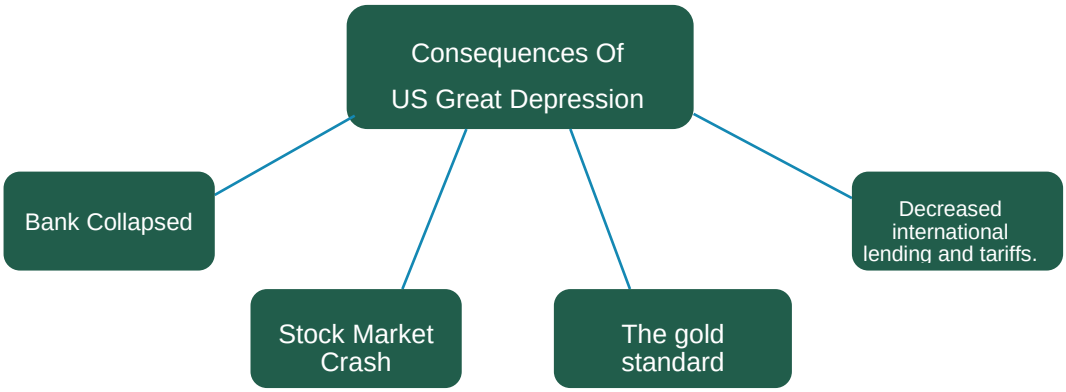
a) Monetarist school

b) Neo-classical macroeconomics model

c) Supply -side economics

d) Neo-Keynesianism

Consequences of US Great Depression:



a. ***Bank Collapsed:*** Between 1930 and 1932 the United States experienced four extended banking panics, during which large numbers of bank customers, fearful of their bank's solvency, simultaneously attempted to withdraw their deposits in cash.Ironically, the frequent effect of a banking panic is to bring about the very crisis that panicked customers aim to protect themselves against: even financially healthy banks can be ruined by a large panic.

b. **Stock Market Crash:** During the 1920s the U.S. stock market underwent a historic expansion. As stock prices rose to unprecedented levels, investing in the stock market came to be seen as an easy way to make money, and even people of ordinary means used much of their disposable income or even mortgaged their homes to buy stock. Once prices began their inevitable decline in October 1929, millions of overextended shareholders fell into a panic and rushed to liquidate their holdings, exacerbating the decline and engendering further panic. The result was a profound psychological shock and a loss of confidence in the economy among both consumers and businesses.

c. **The gold standard:** Whatever its effects on the money supply in the United States, the gold standard unquestionably played a role in the spread of the Great Depression from the United States to other countries. As the United States experienced declining output and deflation, it tended to run a trade surplus with other countries because Americans were buying fewer imported goods, while American exports were relatively cheap. Such imbalances gave rise to significant foreign gold outflows to the United States, which in turn threatened to devalue the currencies of the countries whose gold reserves had been depleted.

d. **Decreased international lending and tariffs:** In the late 1920s, while the U.S. economy was still expanding, lending by U.S. banks to foreign countries fell, partly because of relatively high U.S. interest rates. The drop-off contributed to contractionary effects in some borrower countries, particularly Germany, Argentina, and Brazil, whose economies entered a downturn even before the beginning of the Great Depression in the United States. Meanwhile, American agricultural interests, suffering because of overproduction and increased competition from European and other agricultural producers, lobbied Congress for passage of new tariffs on agricultural imports. Congress eventually adopted broad legislation, the Smoot-Hawley Tariff Act (1930), that imposed steep tariffs (averaging 20 percent) on a wide range of agricultural and industrial products. The legislation naturally provoked retaliatory measures by several other countries, the cumulative effect of which was declining output in several countries and a reduction in global trade.

Results:

a) Examine the working of the economy in its entirety and examine the interdependence of the different sectors
b) Macroeconomics, in short, aggregation begun

Note: John Maynard Keynes in the early 1930s: 'On the one side are those that believe that the existing economic system is, in the long run, a self-adjusting system, though with creaks and groans and jerks and interrupted by time lags, outside interference and mistakes… On the other side of the gulf are those that reject the idea that the existing economic system is, in any significant sense, self-adjusting.'

Stanley Fischer in the late 1980s: 'One view and school of thought, associated with Keynes, Keynesians and new Keynesians, is that the private economy is subject to co-ordination failure that can produce excessive levels of unemployment and excessive fluctuations in real activity. The other view, attributed to classical economists and espoused by monetarists and equilibrium business cycle theorists, is that the private economy reaches as good an equilibrium as is possible given government policy.'

Paul Krugman in 2009: 'Macroeconomics has divided into two great factions: "saltwater" economists (mainly in coastal US universities), who have a more or less Keynesian vision

of what recessions are all about; and "freshwater" economists (mainly at inland schools), who consider that vision nonsense. Freshwater economists are, essentially, neoclassical purists. They believe that all worthwhile economic analysis starts from the premise that people are rational and markets work.

1.5 Macroeconomic Policy

Objectives and Instruments

The macroeconomic policy objectives are the following:

(i) Full employment: Performance of any government is judged in terms of goals of achieving full employment and price stability. These two may be called the key indicators of health of an economy. In other words, modern governments aim at reducing both unemployment and inflation rates. Unemployment refers to involuntary idle-ness of mainly labour force and other produc-tive resources. Unemployment (of labour) is closely related to the economy's aggregate output. Higher the unemployment rate, greater the divergence between actual aggre-gate output (or GNP/CDP) and potential out-put. So, one of the objectives of macroeco-nomic policy is to ensure full employment. The objective of full employment became uppermost amongst the policymakers in the era of Great Depression when unemployment rate in all the countries except the then social-ist country, the USSR, rose to a great height. It may be noted here that a free enterprise capi-talist economy always exhibits full employ-ment.

But, Keynes said that the goal of full employment may be a desirable one but im-possible to achieve. Full employment, thus, does not mean that nobody is unemployed. Even if 4 or 5 p.c. of the total population re-main unemployed, the country is said to be fully employed. Full employment, though theoretically conceivable, is difficult to attain in a market-driven economy. In view of this, full employment objective is often translated into 'high employment' objective. This goal is desirable indeed, but 'how high' should it be? One author has given an answer in the fol-lowing way; "The goal for high employment should therefore be not to seek an unemploy-ment level of zero, but rather a level of above zero consistent with full employment at which the demand for labour equals the supply of labour. This level is called the natural rate of unemployment.

(ii) Price stability: No longer the attain-ment of full employment is considered as a macroeconomic goal. The emphasis has shifted to price stability. By price stability we must not mean an unchanging price level over time. Not necessarily, price increase is unwel-come, particularly if it is restricted within a reasonable limit. In other words, price fluc-tuations of a larger degree are always unwel-come. How-ever, it is difficult again to define the permissible or reasonable rate of inflation. But sustained increase in price level as well as a falling price level produce destabilizing ef-fects on the economy. Therefore, one of the objectives of macroeconomic policy is to en-sure (relative) price level stability. This goal prevents not only economic fluctuations but also helps in the attainment of a steady growth of an economy.

(iii) Economic growth: Economic growth in a market economy is never steady. These economies experience ups and downs in their performance. This objective became uppermost in the period following the World War II (1939-45). Economists call such ups and downs in the economic performance as trade cycle/business cycle. In the short run such fluctuations may exhibit depressions or prosperity (boom).

One of the important benchmarks to measure the performance of an economy is the rate of increase in output over a period of time. There are three major' sources of economic growth, viz. (i) the growth of the labour force, (ii) capital formation, and (iii) technological progress. A country seeks to achieve higher economic growth over a long period so that the standards of living or the quality of life of people, on an average, improve. It may be noted here that while talking about higher economic growth, we take into account general, social and

environmental factors so that the needs of people of both present generations and future generations can be met.

However, promotion of higher economic growth is often hampered by short run fluctuations in aggregate output. In other words, one finds a conflict between the objectives of economic growth and economic stability (in prices). In view of this conflict, it is said that macroeconomic policy should promote economic growth with reasonable price stability.

(iv) Balance of payments equilibrium and exchange rate stability: From a macro- economic point of view, one can show that an international transaction differs from domestic transaction in terms of (foreign) currency exchange. Over a period of time, all countries aim at balanced flow of goods, services and assets into and out of the country. Whenever this happens, total international monetary reserves are viewed as stable.

If a country's exports exceed imports, it then experiences a balance of payments surplus or accumulation of reserves, like gold and foreign currency. When the country loses reserves, it experiences balance of payments deficit (or imports exceed exports). However, depletion of reserves reflects the unhealthy performance of an economy and thus creates various problems. That is why every country aims at building substantial volume of foreign exchange reserves.

Anyway, the accumulation of foreign exchange reserves is largely conditioned by the exchange rate the rate at which one currency is exchanged for another currency to carry out international transactions. The foreign exchange rate should be stable as far as possible. This is what one may call it external stability in price.

External instability in prices hampers the smooth flow of goods and services between nations. It also erodes the confidence of currency. However, maintenance of external stability is no longer considered as the macroeconomic policy objective as well as macroeconomic policy instrument.

It is, however, because of growing inter- connectedness and interdependence between different nations in the globalised world, the task of fulfilling this macroeconomic policy objective has become more problematic.

(v) Social objectives: Macroeconomic policy is also used to attain some social ends or social welfare. This means that income distribution needs to be fairer and more equitable. In a capitalist market-based society some people get more than others. In order to ensure social justice, policymakers use macroeconomic policy instruments.

We can add another social objective in our list. This is the goal of economic freedom. This is characterised by the right of taking economic decisions by any individual (rich or poor, high caste or low caste).

1.6 Macroeconomic Policy Instruments

As our macroeconomic goals are not typically confined to "full employment", "price stability", "rapid growth", "BOP equilibrium and stability in foreign exchange rate", so our macroeconomic policy instruments include monetary policy, fiscal policy, income policy in a narrow sense. But, in a broder sense, these instruments should include policies relating to labour, tariff, agriculture, anti-monopoly and other relevant ones that influence the macroeconomic goals of a country. Confining our attention in a restricted way we intend to consider two types of policy instruments the two "giants of the industry" monetary (credit) policy and fiscal (budgetary) policy. These two policies are employed toward altering aggregate demand so as to bring about a change in aggregate output (GNP/GDP) and prices, wages and interest rates, etc., throughout the economy.

Monetary policy attempts to stabilise aggregate demand in the economy by influencing the availability or price of money, i.e., the rate of interest, in an economy. Monetary policy may be defined as a policy employing the central bank's control of the supply of money as an instrument for achieving the macroeconomic goals.

Fiscal policy, on the other hand, aims at influencing aggregate demand by altering tax-expenditure-debt programme of the government. The credit for using this kind of fiscal policy in the 1930s goes to J.M. Keynes who discredited the monetary policy as a means of attaining some of the macro- economic goals—such as the goal of full employment. As fiscal policy has come into scrutiny in terms of its effectiveness in achieving the desired macroeconomic objectives, the same is true about the monetary policy. One can see several rounds of ups and downs in the effectiveness of both these policy instruments consequent upon criticisms and counter- criticisms in their theoretical foundations.

It may be pointed out here that as there are conflicts among different macroeconomic goals, policymakers are in a dilemma in the sense that neither of the policies can achieve desired goals. Hence the need for additional policy measures like income policy, price control, etc. Further, while the objectives represent economic, social and political value judgements they do not normally enter the mainstream economic analysis. Ultimately, policymakers and bureaucrats are blamed as trouble-shooters.

1.7 Macro-Economic Issues

1. **Employment and Unemployment:** Un-employment refers to involuntary idleness of resour-ces including manpower. If this problem exists, society's actual output (or GNP) will be less than its potential output. So, one of the objectives of Govern-ment policy is to ensure full employment which implies absence of involuntary unemployment of any type.
2. **Inflation:** It refers to a situation of constant-ly rising prices of commodities and factors of produc-tion. The opposite situation is known as deflation. During inflation some people gain, and most people lose. So, there is a change in the pattern of income distribution. Therefore, one of the objectives of government policy is to ensure price level stability which implies the absence of inflation and deflation.
3. **The Trade Cycle:** It refers to periodic fluc-tuations in the levels of economic or business ac-tivities, i.e., the tendency for output (GNP) and employment to fluctuate over time in a recurring sequence of ups and downs. The periods of good trade alternate with periods of bad trade, or boom periods of high output and high employment alternate with slump periods of low output and low employment.

   In boom periods, employment is low, but the rate of inflation is high. In periods of depression (or reces-sion) unemployment is high and the rate of inflation is moderate. In macroeconomics we study the causes of business cycles and suggest remedial measures.

   4. **Stagflation**: Most modern mixed econo-mics suffer from the disease of stagflation which im-plies the co-existence of inflation and unemployment in a stagnant economy. The trade-off between infla-tion and unemployment is perhaps the most complex macroeconomic issue of the day. Every country in the world is now struggling hard to fight the disease of stagflation.

   5. **Economic Growth**: In spite of short-term fluctuations of output that are associated with the trade cycle, the long-term trend of total output has been upward in most industrially advanced country. The trend in the nation's total output over the long period is known as economic growth.

   It refers to an expansion of society's production capacity such as bringing new land under cultivation or setting up new factories. Growth is measured by the annual rate of increase of per capita income and is illustrated by a rightward shift of the production possibility curve.
6. **The Exchange Rate and the Balance of Pay-ments**: The balance of payments is a systematic record of all economic transactions between the mem-bers of the home country and the rest of the world in an accounting year. These transactions are largely, if not entirely, influenced by the exchange rate. It is the rate at which a country's economy is exchanged for another currency (or gold). The trend in the value of the rupee in terms of

two major currencies of the world, viz., the U.S. dollar and British pound, has been downward in the last two decades. Economists are always eager to discover the cause and consequences of such changes.

Summary

- Macro-Economics is the study of the economy in the aggregate with specific focus on unemployment, inflation, business cycles and growth".
- Macro-Economic policy debates have centered on a struggle between two groups: Keynesian economists and classical economists. Later Post Keynesian economists came in with their views.
- In macroeconomics studies aggregates, but in fact to any system, composition of aggregates or its structure effects more than aggregates itself. Suppose that in 2006 and 2007 A.D. price level is constant, but it's meant not completely that in 2007 there was no changing in Prices. It is possible that in 2007 may be decrease in Price and increment in the price of industrial goods. As a result, general price level may constant. Therefore, to understand problem properly, study of structure of aggregate is as necessary as aggregate itself. But in macroeconomics, structural analysis of parameters is given seldom equal importance.

Keywords

- Macro – Big
- Micro – Small
- Aggregate Demand - Demanded by all sector
- National Income - Income of the nation.

Self Assessment

1. Macroeconomics became popular after----------

A. Great depression of 1929- 33

B. 1972-73

C. 1996- 97

D. 2006- 07

2. The term 'macro' has been derived from----------

A. Greek word 'makros' which means large

B. English word 'makros' which means large

C. Greek word 'makros' which means small

D. French word 'makros' which means large

3. What are the tools of macroeconomics?

A. Monetary Policy

B. Fiscal Policy

C. Income Policy

D. All of the above

4. In macroeconomics, we study about ----------

A. Theory of National Income & Employment

B. Theory of Money Supply & Price Level

C. Theory of International Trade & Eco growth

D. All of the above.

5. Which of the following is/are the goals of macroeconomics----------

A. To Achieve Higher Level of GDP
B. To Achieve Higher Level of Employment
C. Stability of Prices
D. All of the above.

6. The concept of "laissez-faire" was the contribution of

A. Classical economist
B. Neo Classical economist
C. Keynesian economist
D. Supply side economist

7. Which of the following is not an assumption of classical theory?

A. Neutrality of money
B. Wage price flexibility
C. Involuntary unemployment
D. Long run

8. Under classical theory, rate of interest is determined by

A. Demand for money and supply of money
B. Demand for capital and supply of savings
C. Demand for investment and price level
D. Demand for investment and supply of money

9. A variable which has no time dimension but is described at a specific moment of time is:

A. Stock Variable
B. Flow Variable
C. Ratio Variable
D. None of the above

10. National Income is a:

A. Stock concept
B. Flow concept
C. Cross section analysis
D. None of the above

11. In explaining the level of unemployment, Keynes emphasized, -

A. Changes in technology.
B. Aggregate demand.
C. Inflationary expectations.
D. Lending by financial institutions.

12. Keynesian analysis is

A. A short run analysis.
B. Long run analysis.
C. Both short and long run analysis.

D. Neither short nor long run analysis.

13. Which branch of economists believed that our economy was either at full employment or tended toward full employment?

A. the classical economists
B. the Keynesians
C. both the classical and the Keynesians
D. neither the classical nor the Keynesians

14. Macroeconomics theory studied the economy as a whole.

A. True
B. False

15. The scopes of Macroeconomics are individual satisfaction level, agricultural price level etc.

A. True
B. False

Answers for Self-Assessment

1.	A	2.	A	3.	D	4.	D	5.	D
6.	A	7.	C	8.	B	9.	A	10.	B
11.	B	12.	A	13.	A	14.	A	15.	B

Review Questions

1. Do you think study of Macro Economic aggregates is useful for an individual firm? Justify your answer.
2. Discuss the main objectives of a Macro Economic policy.
3. Explain the relevance of Macro Economics in current national scenario.
4. Make a flow chart of evolution in the development of macroeconomic theory.
5. What are the main challenges of macroeconomic policy?
6. List the main macroeconomic policy tools.
7. Distinguish between fiscal policy and monetary policy.

Further Readings

- Macroeconomic Analysis by Shapiro, Edward, Galgotia Publications
- Macroeconomics by Andrew Abel, Ben Bernanke, Dean Croushore, Pearson

Unit 02: Circular Flow of Income

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand circular flow of income
- discuss circular flow of income in two sector economy, three sector and four sectors

Introduction

The modern economy may be a financial economy within the trendy economy, cash is employed within the process of exchange. Cash has expedited the method of exchange and has removed the difficulties of the barter system. Therefore, cash acts as a medium of exchange. The households provide the economic resources or factors to the productive companies and receive reciprocally the payments in terms of cash. In is therefore clear that, within the financial economy, there'll be flows of cash appreciate the flows of economic resources and also the flows of products and services. however, every cash flow is in opposite direction to the real flow. Circular flow of financial gain model shows the flow of financial gain between the producers and therefore the households World Health Organization get their product or services. financial gain moves from households to producers as the household's purchase product or services and financial gain moves from producers to households in the form of wages or profits.

The amount of financial gain generated during a given economy at intervals a amount of your time (national income) may be viewed from 3 views. These are:

a. Income,
b. Product, and
c. Expenditure.

The on top of assertion implies that we will read {national financial gain |value} as either the overall add of all income received at intervals a selected amount (income); the overall sensible and services made at intervals a selected amount (product) or total expenditure on product and services at intervals a given amount (expenditure). Whichever approach is employed, the worth we have a tendency to get is that the same. The circular flow of financial gain and products is employed to indicate graphically, the equivalence between the financial gain approach and also the product approach in measurement gross national product (GNP).

In analyzing the circular flow of financial gain, there square measure 3 scenarios:

a. an easy and closed economy with no government and external transactions, i.e., two-sector economy;

b. A mixed and open economy with savings, investment and governing, i.e., three-sector economy; and

c. A mixed and open economy with savings, investment, governing and external trade, i.e., four-sector economy.

What is Circular Flow of Income?

The circular flow of income shows the connection or linkages between different sectors of the economy. It can be explained with the help of economic models. The circular flow model is a picture of market economy in action. It tells how the money flows in the economy.

2.1 Circular Flow of Income in a 2 Sector Model

The description of the economy within the previous section permits us to own a rough plan of however an easy economy – while not a government, external trade or any savings – could perform. The households receive their payments from the firms for productive activities and they perform for the latter. As it has mentioned before, there could essentially be four sorts of contributions that may be made throughout the assembly of products and services (a) contribution created by human labour, remuneration that is named wage (b) contribution created by capital, remuneration that is named interest (c) contribution created by entrepreneurship, remuneration of that is profit (d) contribution created by mounted natural resources (called 'land'), remuneration that is named rent.

In this simplified economy, there's only 1 method within which the households may dispose of their earnings – by disbursal their entire financial gain on the products and services made by the domestic corporations. the opposite channels of disposing their financial gain area unit closed: we've got assumed that the households don't save, they do not pay taxes to the govt. – since there's no government, and neither do they purchase foreign merchandise since there's no external exchange this easy economy. In different words, factors of production use their remunerations to buy15National financial gain Accounting the goods and services that they motor-assisted in manufacturing. the mixture consumption by the households of the economy is capable the mixture expenditure on merchandise and services made by the corporations within the economy. The entire financial gain of the economy, therefore, comes back to the producers within the form of sales revenue. there's no outpouring from the system – there's no distinction between the number that the corporations had distributed within the variety of issue payments (which is that the sum of remunerations attained by the four factors of production) and the combination consumption expenditure that they receive as sales revenue.

Households Owners of factors of production, Spend income on goods and services (consumption).

In the next session, the corporations (Firms) can yet again manufacture merchandise and services and pay remunerations to the factors of production. These remunerations can once again be accustomed purchase the products and services. Thus, year when year we tend to can imagine the mixture financial gain of the economy inquiring the 2 sectors, firms and households, in an exceedingly circular method. When the financial gain is being spent on the products and services made by the corporations, it takes the shape of combination expenditure received by the corporations. Since the worth of expenditure should be capable the worth of products and services,

we can equivalently live the mixture financial gain by hard the mixture worth of goods and services made by the corporations. once the mixture revenue received by the corporations is paid resolute the factors of production it takes the shape of combination financial gain.

Firms (generation of income within a production unit)

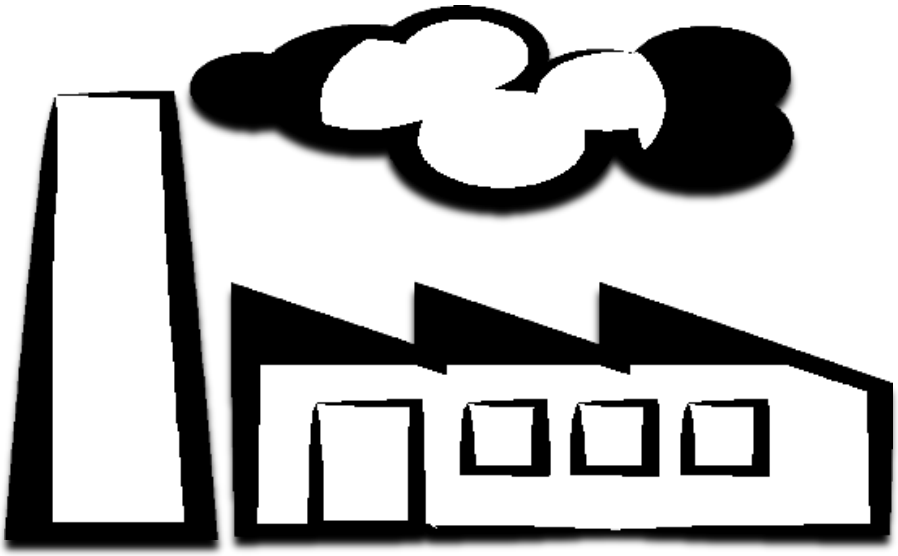


Figure 1 Generation of income within a production unit

Basic Assumptions of a Simple Circular Flow of Income Model

1. The economy consists of two sectors: households and firms.

2. Households spend all of their income (Y) on goods and services or consumption (C). There is no saving (S).

3. All output (O) produced by firms is purchased by households through their expenditure (E).

4. There is no financial sector.

5. There is no government sector.

6. There is no overseas sector.

In the simple two sector circular flow of income model the state of equilibrium is defined as a situation in which there is no tendency for the levels of income (Y), expenditure (E) and output

(O) to change, that is: Y = E = O.

This means that all household income (Y) is spent (E) on the output (O) of firms, which is equal in value to the payments for productive resources purchased by firms from households.

Example: This can be shown in an example where John earns 100.00, he doesn't save it and spends it all on the goods and services (O) provided by the firms.

Circular Flow of Income in a 2 Sector Model

To begin with, to explain the circular flow of income and expenditure we assume that all incomes which households receive are spent on consumer goods and services and thus there is no savings by them. Similarly, we assume that there is no investment by business firms. Money flows of income and expenditure corresponding to the real flows in terms of goods, services and productive factors are shown in Figure 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. This is how the economy functions.

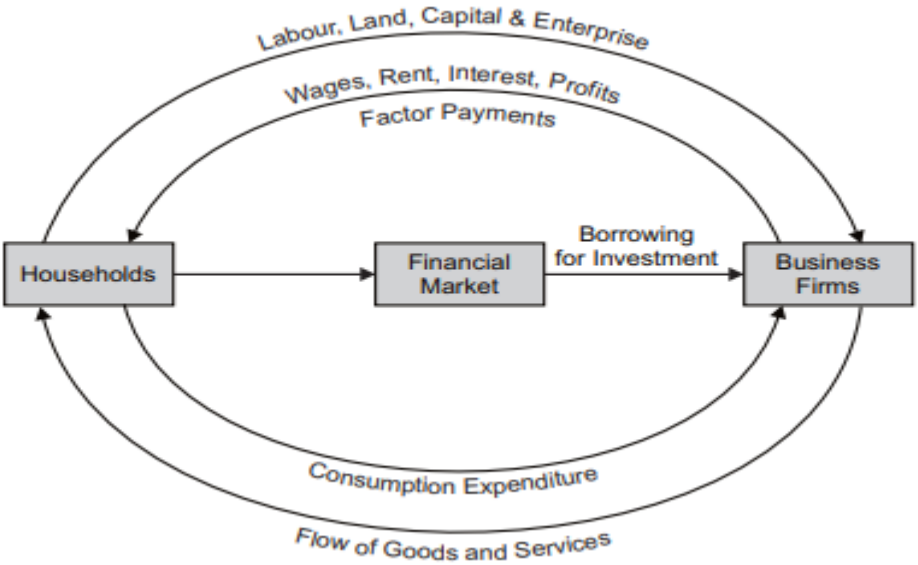


Figure 2 Two Sector Circular Flow of Income

It may, however, be pointed out that this flow of money income will not always remain the same in volume. In other words, the flow of money income will not always continue at a constant level. In years 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 years 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. In order to make our analysis simple and to explain the central issues involved, we take many assumptions. In the first place, we assume that neither the households save from their incomes, nor the firms save from their profits. We further assume that the government does not play any part in the national economy. In other words, the government does not receive any money from the people by way of taxes, nor does the government spend any money on the goods and services produced by the firms or on the resources and services supplied by the households. Thirdly, we assume that the economy neither imports goods and services, nor exports anything. In other words, in our above analysis we have not taken into account the role of foreign trade. In fact, we have explained above the flow of money that occurs in the functioning of a closed economy with no savings and no role of government.

Four key insights of simple Circular Flow of Income:

a. Spending = production. The total value of all spending by households becomes an inflow into the firm sector and thus ends up on the revenue side of a firm's balance sheet. The revenues received by firms provide us with a measure of the total value of production in an economy.

b. Production = payments to inputs. Flows in and out of the firm sector must balance. The revenues received by firms are ultimately paid out to households.

c. Payments to inputs = income. Firms are legal entities, not people. We may talk in common speech of a firm "making money," but any income generated by a firm must ultimately end up in the hands of real people—that is, in the household sector of an economy. The total value of the goods produced by firms becomes an outflow of dollars from the firm sector. These dollars end up in the hands of households in the form of income. (This ownership is achieved through many forms, ranging from firms that are owned and operated by individuals to giant corporations whose ownership is determined by stock holdings. Not all

households' own firms in this way, but in macroeconomics it is sufficient to think about the average household that does own stock in firms.)

d. Income = spending. We complete the circle by looking at the household sector. The dollars that flow into the household sector are the income of that sector. They must equal the dollars that flow out of the household sector—its spending.

2.2 Circular Flow of Income in Three Sector Model

We have so far discussed the two-sector economy consisting of household sector and business sectors. Under three-sector economy, the additional sector is the government. Two-sector economy is a hypothetical economy, whereas the three-sector economy is much more realistic. The inclusion of the government sector is very essential in measuring national income. The government levies taxes on households and on business sector, purchases goods and services from business sector, and attain factors of production from household sector. In the circular flow model three sector economy, government intervention has also been accounted for, although it is still assumed to be a closed economy where the income flow is not influenced by any foreign sector. Besides the income and expenditure of the households and business firms, government purchases or expenditures and taxation also come into play. Here, government purchases are injections into the circular flow, while, taxation is a leakage.

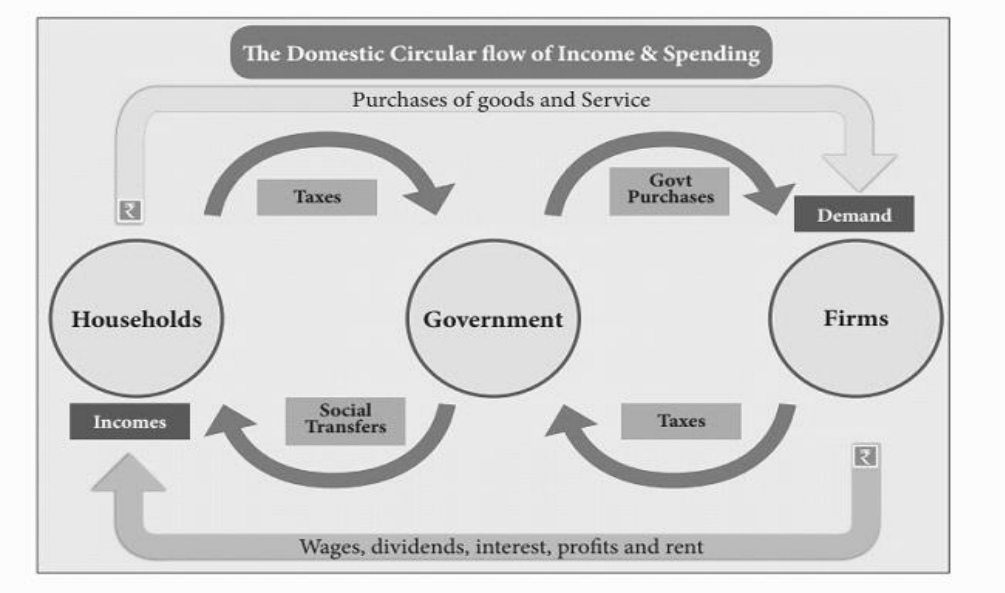


Figure 3 Circular Flow of Income in Three Sector

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, unemployment 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 take 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 services of the household sector equal to the amount of taxes. Thus, total sales again equal production of firms. In this way, the circular flows of income and expenditure remain in equilibrium.

It shows that taxes flow out of the household and business sectors and go to the government. Now the government makes investment and for this purchase good 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 then the government will incur a deficit equal to the difference 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.

If the government spends all its income received in the form of taxes, it flows back to the household and business sector in the form of subsidies and other government expenditures. This leads to the continuous circular flow of national income within the economy.

2.3 Circular Flow of Income in Four Sector Model

Two-sector economy and three-sector economy are briefly discussed in previous sections. These are hypothetical economies. In real life, only four-sector economy exists. The four-sector economy is composed of following sectors, i.e.:

(i) Household sector,

(ii) Business sector,

(iii) The government, and

(iv) Transaction with 'rest of the world' or foreign sector or external sector.

This is the complete model of the circular flow of income that incorporates all the four macroeconomic sectors. Along with the above three sectors it considers the effect of foreign trade on the circular flow. With the inclusion of this sector the economy now becomes an 'open economy'. Foreign trade includes two transactions, i.e., exports and imports. Goods and services are exported from one country to the other countries and imports come to a country from different countries in the goods market. There is inflow of income to the firms and government in the form of payments for the exports and there is outflow of income when the firms and governments make payments abroad for the imports. The import payments and export receipts transactions are done in the financial market. 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 for 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 pur-chase goods from foreign countries. These exports and imports in the circular flow as shown in 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.Like the business sector, modern governments 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.

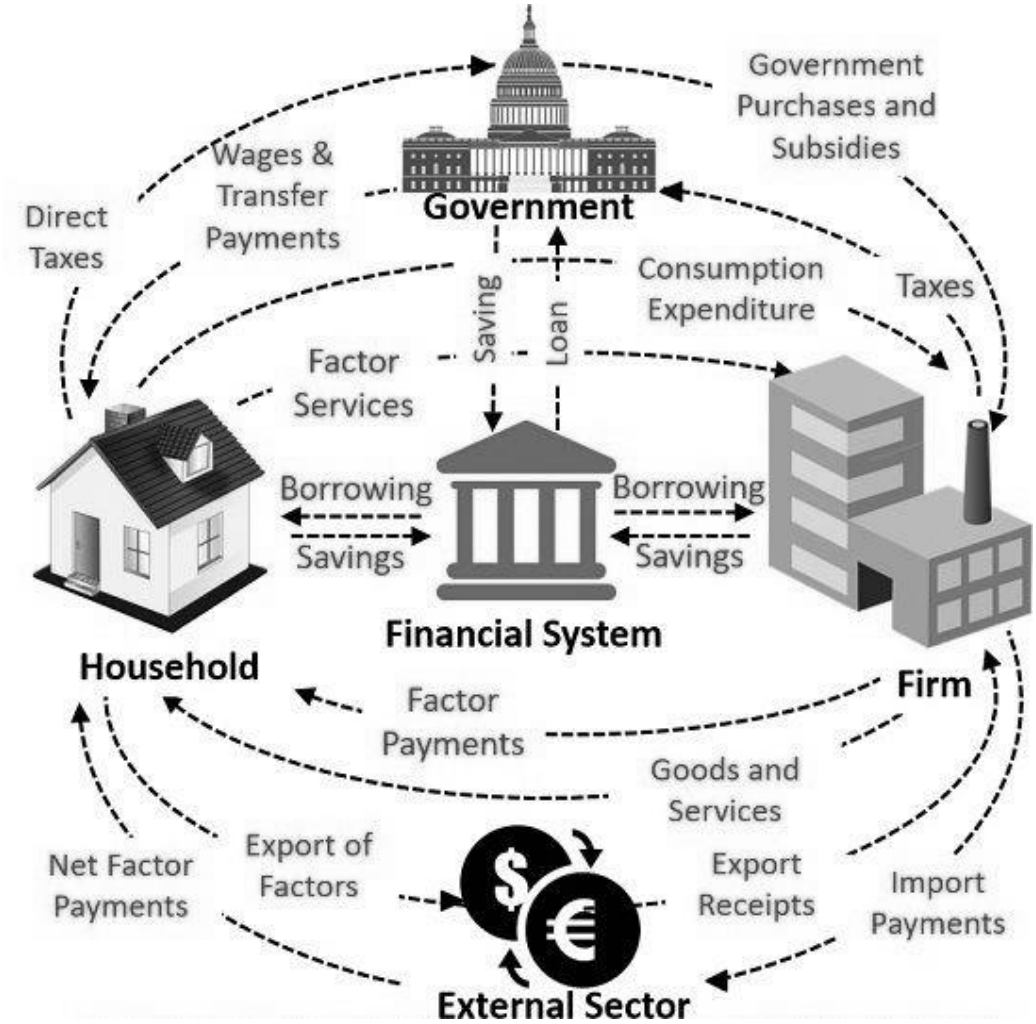


Figure 4 Circular Flow of Income in Four Sector

Figure 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.

2.4 Complications in Two sector Circular Flow of Income:

a. Leakages (withdrawals) from the circular flow: not all income will flow from households to businesses directly. The circular flow shows that some part of household income will be:

(1) Put aside for future spending, i.e. savings (S) in banks accounts and other types of deposit.

(2) Paid to the government in taxation (T) e.g. income tax and national insurance.

(3) Spent on foreign-made goods and services, i.e. imports (M) which flow into the economy

Withdrawals are increases in savings, taxes or imports so reducing the circular flow of income and leading to a multiplied contraction of production (output).

b. Injections into the circular flow are additions to investment, government spending or exports so boosting the circular flow of income leading to a multiplied expansion of output.

(1) Capital spending by firms, i.e. investment expenditure (I) e.g. on new technology.

(2) The government, i.e. government expenditure (G) e.g. on the NHS or defense.

(3) Overseas consumers buying UK goods and service, i.e. UK export expenditure (X).

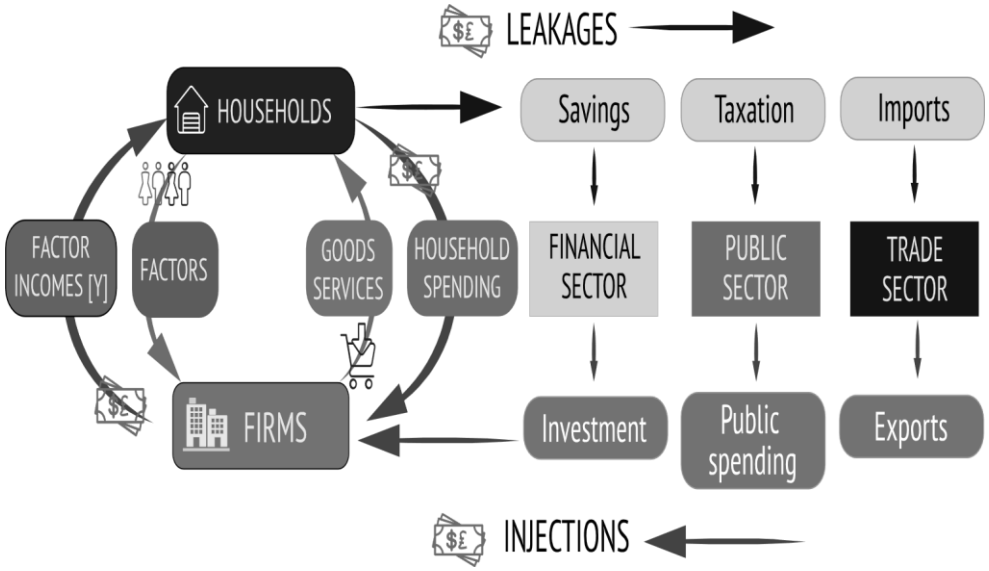


Figure 5 Circular Flow of Income in Two Sector

An economy is in equilibrium when the rate of injections = the rate of withdrawals from the circular flow.

2.5 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. As such, the circular flow is of immense significance for studying the functioning of the economy and for helping the government in formulating policy measures.

1. Study of Problems of Disequilibrium:

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

2. Effects of Leakages and Inflows:

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.

3. Link between Producers and Consumers:

The circular flow establishes a link between producers and consumers. It is through income that producers buy the services of the factors of production with which the latter, in turn, purchase goods from the producers.

4. Creates a Network of Markets:

As a corollary to the above point, the linking of producers and consumers through the circular flow of income and expenditure has created a network of markets for different goods and services where problems relating to their sale and purchase are automatically solved.

5. Inflationary and Deflationary Tendencies:

Leakages or injections in the circular flow disturb the smooth functioning of the economy. For example, saving is a leakage out of the expenditure stream. If saving increases, this depresses the circular flow of income. This tends to reduce employment, income and prices, thereby leading to a deflationary process in the economy. On the other hand, consumption tends to increase employment, income, output and prices that lead to inflationary tendencies.

6. Basis of the Multiplier:

Again, if leakages exceed injections in the circular flow, the total income becomes less than the total output. This leads to a cumulative decline in employment, income, output, and prices over time. On the other hand, if injections into the circular flow exceed leakages, the income is increased in the economy. This leads to a cumulative rise in employment, income, output, and prices over a period of time. In fact, the basis of the Keynesian multiplier is the cumulative movements in the circular flow of income.

7. Importance of Monetary Policy:

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 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.

8. Importance of Fiscal Policy:

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 represents leakages from the spending stream which must be offset by injections of I + G into the income stream. If S + T exceed I + G, government should adopt such fiscal measures as reduction in taxes and spending more itself. On the contrary. If I + G exceed S+T, the government should adjust its revenue 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.

9. Importance of Trade Policies:

Similarly, imports are leakages in the circular flow of money because they are payments made to a foreign country. To stop it, the government adopts such measures as to increase exports and decrease imports. Thus, the circular flow points toward the importance of adopting export promotion and import control policies.

10. Basis of Flow of Funds Accounts:

The circular flow helps in calculating national income on the basis of the flow of funds accounts. The flow of funds accounts is concerned with all transactions in the economy that are accomplished by money transfers. They show the financial transactions among different sectors of the economy, and the link between saving and investment, and lending and borrowing by them. To conclude, the circular flow of income possesses much theoretical and practical significance in an economy.

2.6 The limitations of the Basic Circular Flow of Income

Limitations of Circular Flow of Income are closely related to its assumptions.

1. First of all, the model does not account for any leakages. In reality however, leakages are fairly common. For example: households may not spend all their money on consumption, or firms may not produce the exact amount consumers will buy. Both of these situations will result in leakages from the circular flow.
2. Secondly, the model is limited to only two sectors. Therefore, it is unable to describe a number of critical economic processes, such as saving, government spending, and foreign trade. Fortunately, there are a number of more sophisticated circular flow of income models that do take those sectors into account.

Summary

1. The circular flow of income describes the movement of goods or services and income among the different sectors of the economy. It illustrates the interdependence of the sectors and the markets to facilitate both real and monetary flow.
2. The real flow refers to the flow of factor services and flow of goods and services. The movement to the money/cash payment from one sector to the other sector corresponding to the real flow is referred to as the monetary flow.

3. There are four sectors and three markets in the circular flow of income model. The four sectors are the household sector, the firm sector, the government sector and the foreign sector. The three markets are the goods market, the factor market and the financial market respectively.
4. The circular flow of income can be analyzed with the help of three different models, i.e., circular flow income in a two-sector model, in a three-sector model and a four-sector model.
5. A two-sector model is the simplest model of the circular flow of income. It is assumed to be a closed economy. There are only two sectors – the household sector and the firm sector. The flow of income and expenditure is between these two sectors only.
6. In a three-sector model, apart from the above two sectors there is another sector called the government sector. The economy is still a closed economy meaning that there is no transaction with the rest of the world.
7. A four-sector model is the complete model of the circular flow of income. It considers the effect of the foreign sector which includes transactions with the rest of the world. The economy is now an open economy.
8. The volume of income in the circular flow increases with the injections in the economy and decreases with the leakages in the economy.
9. Injections are inflows of income to the circular flow and leakages are outflows of income from the circular flow.
10. The Injections are mainly investment, government expenditure and exports and leakages are mainly saving, taxes and imports.

Keywords

- Circular flow of income
- Firms
- Households
- Government
- Foreign Sector
- Injections
- Leakages

Self-Assessment/Evaluation

Choose the right option:

1. Which of the following is the money flow that corresponds to the real flow of resources?
   a. factors of production
   b. consumption
   c. incomes
   d. goods and services.
2. On the circular flow diagram of the economy, the arrow from the producer sector to the overseas sector usually represents
   a. tariffs
   b. export receipts
   c. producer income
   d. import payments

3. Investment in Economics is
   a. putting money into a superannuation scheme.
   b. when firms buy capital goods.
   c. people putting money into an interest-bearing deposit.
   d. buying shares.
4. The Circular Flow Diagram is a model showing
   a. that the different sectors of the economy are interdependent.
   b. the relative importance of the different sectors of the economy.
   c. how the market system works.
   d. the relationship between major sectors of the economy.
5. An example of an income payment is wages. These are paid in exchange for
   a. investment.
   b. government spending.
   c. human resources.
   d. consumer spending.

Fill in the blanks:

6. The two sectors in the 'circular flow of income in two sector model' are represented by ..... and .....

7. In a ..... sector model, an economy moves from being a closed economy to an open economy.

8. Imports and exports happen in ..... economy.

Answers: Self-assessment

1.	c	2.	d	3.	b	4.	a	5.	c
6.	Household and Firm	7.	Four	8.	Open				

Review Questions:

1. Explain the concept of circular flow of income.
2. Distinguish between Real Flows and Real Flows.
3. Explain Circular Flows of income in
   i) Two Sector economy
   ii) Three sector economy
   iii) Four sector economy

Suggested Readings:

http://www.tradechakra.com/indian-economy/national-income.html

http://www.economywatch.com/world-country/national-income.html

http://www.wisegeek.com/what-is-a-circular-flow-of-income.html

http://tutor2u.net/economics/content/topics/macroeconomy/circular_flow.html

Unit 03: National Income

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand National Income, various terms and terminology of national Income
- comprehend the various concepts of National Income
- learn how to measure national income: methods to calculate.
- difficulties/ problems in the measurement of National Income

Introduction

The labour and capital of a country acting on its natural resources produce annually a certain amount of goods and services. This is called national income of the country. 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. Two things must be noted in regard to this meaning of national income. First, it measures the market value of annual output. In other words, national income is a monetary measure. This is because there is no other way of adding up the different sorts of goods and services except with them money prices. But in order to know accurately the changes in physical output, the figure for national income is adjusted for price changes. Secondly, for calculating national income accurately all goods and services produced in any given year must be counted only once, and not more than once. Most of the goods go through a series of production stages before reaching a market. As a result, parts or components of many goods are bought and sold many times. Hence, in order to avoid counting several times the parts of goods that are sold and resold, national income only includes the market value of all final goods and ignores the transactions involving intermediate goods.

The above way of explaining national income is only one way of interpreting it. In fact, the concept of national income has three interpretations. It represents a total value of production (as explained above), it represents a receipts total, and it represents an expenditure total. It is an obvious fact that every expenditure is at the same time a receipt. In other words, amount spent is equal to amount received. But if goods and services are valued at their market prices, we have three-fold identity, namely, that the value received equals the value paid equals the value of goods and services produced and sold.

To explain the above idea let us take an economy where there are only two agents: households and firms. Firms are required to produce goods. To produce them, they require services of factors of production. Factors of production are paid the rewards for their contribution to the production of goods. Thus, incomes of these factors arise in the course of production. The sales value of net production must equal the sum total of payments made by the firms to the factors of production in the course of production. The sales value of net production must equal the sum total of payments

made by the firms to the factors of production in the form of wages, rents, interest and profits. These incomes in turn become the sources of expenditure. Thus, income flows from the firms to the households in exchange for productive services. This income again returns to the firms when expenditure is made by the households on the goods produced by the firms.

From above it follows that: National Income = National Product = National Expenditure. In other words, there are three measures of national income of a country. They are:

(a) the sum of values of all final goods and services produced;

(b) the sum of all incomes, in cash and kind, accruing to factors of production in a year; and

(c) the sum of consumers' expenditure, net investment expenditure and government expenditure

on goods and services.

Sum of all income, sum of values of all final production, and sum of all expenditures will be the same, but the significance of each arises from the fact that they reflect the three basic activities of the nation's economy, viz., production, distribution and expenditure.

3.1 What is National Income?

The sum of all incomes of the people of a country is called national income. This national income is greatly related to the national product. In fact, in a two-sector economy without the Government and its imposition of indirect taxes and grant of subsidies and also assuming no depreciation national income and national product are one and the same thing. The incomes which different people of the society get are obtained by them for their contribution of labor, land, capital and entrepreneurial services to the national production. Hence the income which the laborer's get are wages for the productive services which laborers lend to the various firms which undertake the work of production. Similarly, the owners of land get income as rent because of their contribution of land to the productive firms; the capitalists get interest for lending their money capital to the entrepreneurs for undertaking any work of production or business. The entrepreneurs get profits for starting and organizing the work of production and bearing risk and uncertainty involved in it. It is thus clear that the different individuals of a country obtain their income either as wages of their labor, or as interest on their money capital, or as rent for their land, or as profits for their enterprise. The sum of incomes obtained as wages, rent, interest and profits are the national income of the country.

National income is the most comprehensive measure of the level of the aggregate economic activity in an economy. It is the total income of a nation as against the income of an individual but you must note that the term national income is not as simple and self-explanatory as the concept of individual income maybe.

Example: you cannot include all the income received by individuals during a given period in the national income, similarly not all the income that is generated in the process of production in an economy during a given period is received by the individuals in the economy.

13. Definitions:

"National income is that part of the objective income of the community, including, of course, income derived from abroad which can be measured in money."- **A.C. Pigou**.

"National income is the sum of all (a) wages, salaries, commissions, bonuses and other form of incomes, (b) net income from rentals and royalties, (c) interest, (d) profit.". **Gardner Ackley.**

3.2 Importance of National Income:

With national income, we can chart the movement of country from depression to prosperity.

- The economic welfare of community can be measured with national income.
- It helps in finding standard of living.
- It helps in determining the pace of economic development of the economy.
- With national income, we can chart the movement of country from depression to prosperity.
- The economic welfare of community can be measured with national income.
- It helps in finding standard of living.
- It helps in determining the pace of economic development of the economy.
- It helps to understand the contribution made by different sectors to the economy.

- It helps in development planning of a country.
- It provides information of the savings, consumption and investment structure of the economy.

3.3 National Aggregates (Important Concepts):

1.Economic Production: It refers to the production of those goods and services which are meant for sale and have market value, and those goods and services which are produced and provided jointly to the people by the government and public organizations, for which people pay indirectly through tax payment**.** All marketable production is economic production, but all economic production is not marketable.

2.Non-Economic Production: Non-economic production includes the production of goods and services that are not meant to be sold, nor is there any market for them, nor do they have a market price.

To this category belong mainly the following services:

- Services rendered to self.
- Services provided to the family members.
- Services provided by the neighbors to each other.

These services are not included in the measurement of the national income.

3. Intermediate goods- The goods that flow from one stage to another in the process of production of a good, with their form changing.

4. Final goods- The goods that reach the final stage of production and flow to their ultimate consumers/ users.

The need for distinction between the intermediate and final products arises because of the problem of double counting.

5. Intermediate Services: The classification of services under the intermediate and final product categories depends on the purpose of their use.

6. Final Services: When used for production purpose, these services are treated as intermediate products and when used for private consumption, they are treated as final products.

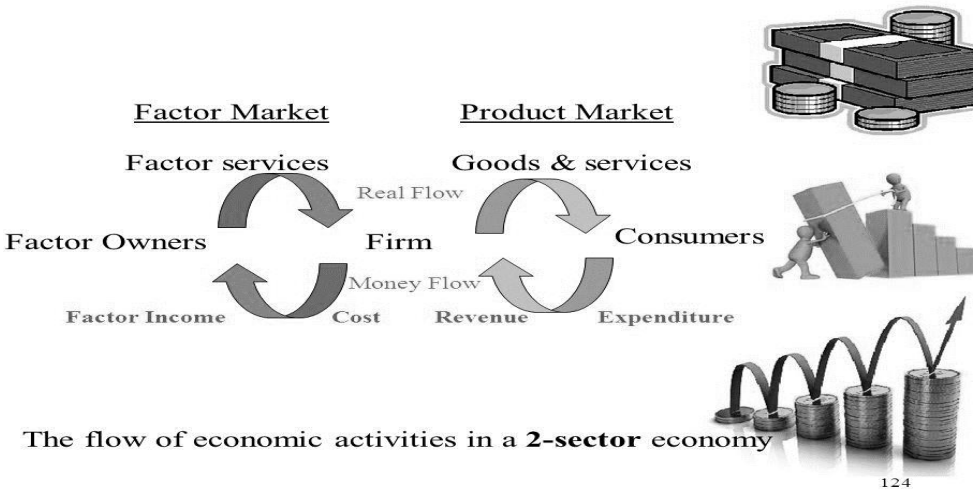
7. Sectoral Classification of Economy:

a. Primary sector-includes agriculture and allied activities, forestry, fishing, mining and quarrying;

b. Secondary sector- includes manufacturing industries

c. Tertiary sector or service sector- includes banking, insurance, transport and communication, trade and commerce.

8***. The Flow of Economic Activities in a 2-sector Economy:***



The flow of economic activities in a **2-sector** economy

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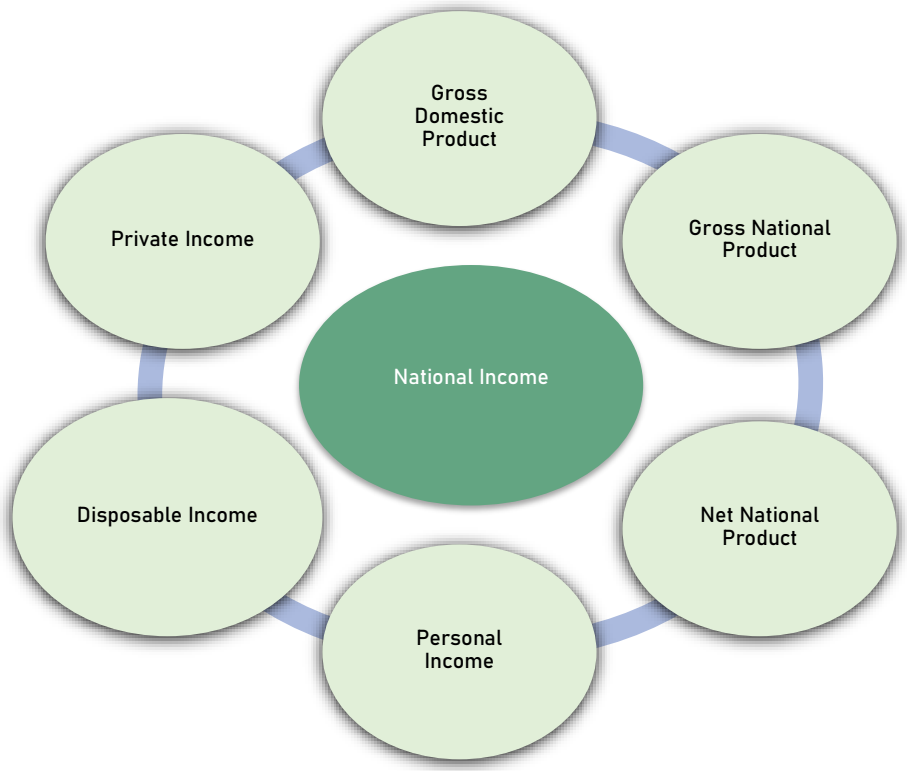
9. ***Transfer Payments***: The payments made by people to the people, and by people to the government, without corresponding transfer of goods and services or addition to the total output. It is not considered while counting the national income.

10. ***Consumer goods:*** The goods and services that are consumed by the people to directly satisfy their needs and yield utility to the consumer.

11. ***Producer goods:*** The category of final products which are used for enhancing the production capacity of the national economy with the purpose of increasing the flow of income in the future.

3.4 Six concepts of National Income:



a. ***Gross Domestic Product (GDP)***

Gross Domestic Product is defined as the sum of market value of all final goods and services produced in a country during a specific period, generally one year. It Includes income earned by the foreigners in the country and excludes income earned abroad by the residents.

The market value of domestic product is obtained at both constant and current prices.

"GDP = X + Y – Z"

Where,

X is Market value of goods and services produced by the residents in the country.

Y is incomes earned in the country by the foreigners.

Z is incomes received by residents of a country from abroad.

Two things must be noted in regard to gross national product. First, it measures the market value of annual output. In other words, GDP is a monetary measure. There is no other way of adding up the different sorts of goods and services produced in a year except in terms of their money prices. But in order to know accurately the changes in physical output, the figure for gross national product is adjusted for price changes. Secondly, for calculating gross domestic product accurately, all goods and services produced in any given year must be counted once, and not more than once.

b. *Gross National Product (GNP)*

The concept of GNP includes the income of the resident nationals which they receive abroad, and excludes the incomes generated locally but accruing to the non-nationals.

Gross National Product (at market prices) or GNPMP = GDPMP + net factor income from abroad

Net Factor Income from Abroad. Now, what does net factor income from abroad stand for? The sum of factor incomes such as wages and salaries (i.e., compensation to employees), rent, interest and profits generated within the domestic territory to a country in a year is called domestic factor income. It includes factor incomes generated both by residents and non-residents working in the domestic territory of a country. For example, non-residents (i.e., foreigners) work in the domestic territory of India and earn wages and salary. Thus, foreign individuals and companies from the USA, Great Britain and other countries have acquired property such as factories, offices, buildings, places and have also acquired financial assets such as bonds and shares of Indian companies. This generates incomes in the form of rent and interest to them. In addition to this, foreign residents—individuals and companies—have set up industrial plants and factories producing goods and services from which they earn profits.

On the other hand, Indians go abroad and work in the territories of other countries and earn wages and salaries. Likewise, some Indian individuals and corporate companies have acquired assets such as buildings, factories, commercial space, and have also invested in bonds, bank deposits of foreign countries and thus receive rent and interest. Some Indian companies have set up factories abroad and earn profits. Now, the net factor income from abroad is the difference between factor income received from abroad by normal residents of India for rendering factor services in other countries on the one hand and the factor incomes paid to the foreign residents for factor services rendered by them in the domestic territory of India on the other.

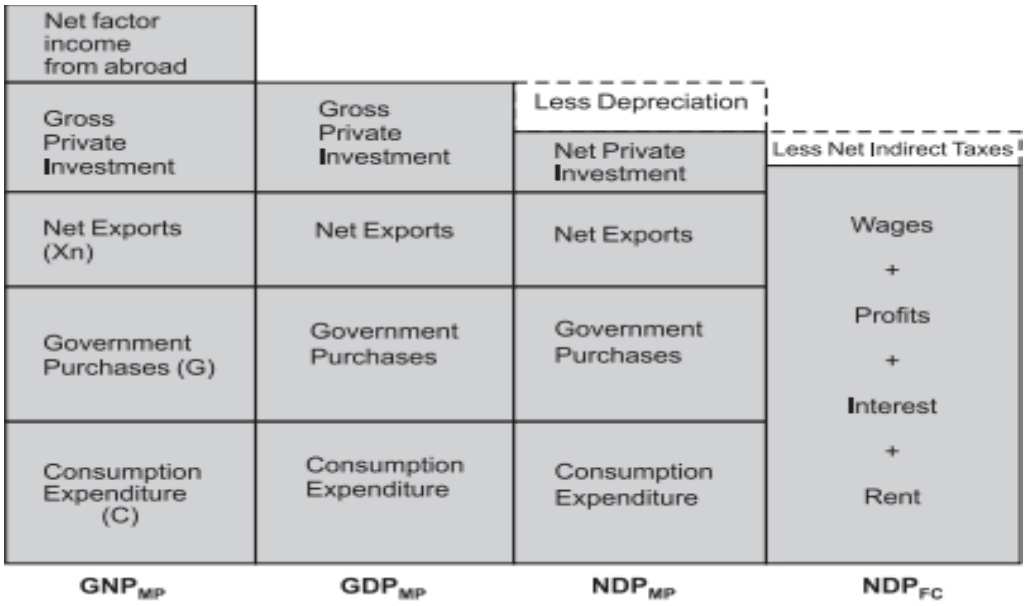
Net factor incomes earned from abroad have therefore the following three components:

1. Net compensation to employees.

2. Net income from property i.e., rent, interest and income from entrepreneurship (that is,

profits and dividends).

3. Net retained earnings of the resident companies working in foreign countries



c. *Net Domestic Product (NDP)*

The second important concept of national income is that of net domestic product (NDP). In the production of gross domestic product of a year, we consume or use up some fixed capital, i.e., equipment, machinery, etc. The capital goods, like machinery, wear out or fall in value as a result of its consumption or use in the production process. This consumption of fixed capital or fall in the value of fixed capital due to wear and tear is called depreciation. When charges for depreciation are deducted from the gross national product we get net national product. Clearly, it means the market

value of all final goods and services produced in a year after providing for depreciation. Therefore, it is also called 'domestic product or income at market prices. Therefore,

Net Domestic Product=Gross Domestic Product at market prices – Depreciation at Market Prices

or NDPMP = GDPMP – Depreciation at Factor Cost (NDPFC)

d. ***Net National Product at Factor Cost (NNP_{FC}) or National Income***

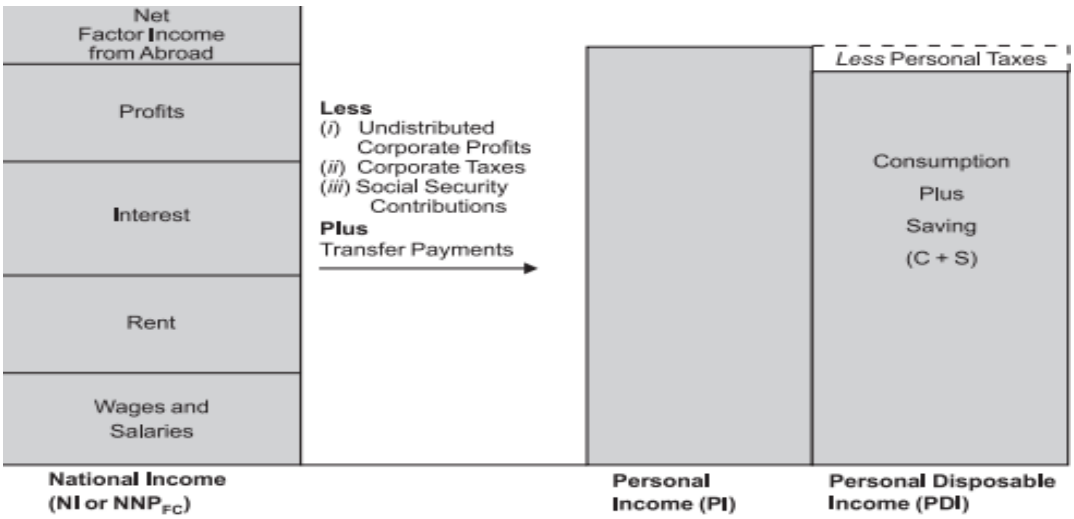
National Income at factor cost which is also simply called national income means the sum of all incomes earned by resource suppliers for their contribution of land, labour, capital and entrepreneurial ability which go into the year's net production. In other words, national income (or national income at factor cost) shows how much it costs society in terms of economic resources to produce net output. It is really the national income at factor cost for which we use the term National Income. The difference between national income (or national income at factor cost) and net national product (national income at market prices) arises from the fact that indirect taxes and subsidies cause market prices of output to be different from the factor incomes resulting from it. Suppose for instance, a metre of mill cloth sold for ` 200 includes ` 25 on account of the excise and the sales tax. In this case while the market price of the cloth is ` 200 a metre, the factors engaged in its production and distribution would receive ` 175 a metre. The value of cloth at factor cost would thus be equal to its value at market price less the indirect taxes on it. On the other hand, a subsidy causes the market price to be less than the factor cost. Suppose handloom cloth is subsidised at the rate of ` 10 per metre and it sells at ` 90 per metre. Then while the consumer pays ` 90 per metre, the factors engaged in the production and distribution of such cloth will receive ` 100 per metre (` 90 + 10 = ` 100). The value of handloom cloth at factor cost would thus be equal to its market price plus the subsidies paid on it. It follows, therefore, that the national income (or national income at factor cost) is equal to net national product minus indirect taxes plus subsidies (Net of indirect taxes and subsidies is called Net Indirect Taxes).

National Income /National Income at Factor

Therefore, National Income = Net National Product – Net Indirect Taxes

e. ***Personal Income (PI)***

Personal Income is the sum of all incomes actually received by all individuals or households during a given year. National income, that is, total incomes earned and personal income, that is, total incomes received must be different because some incomes which are earned such as social security contributions, corporate income taxes and undistributed corporate profits are not actually received by households, and conversely, some incomes which are received like transfer payments are not currently earned (examples of transfer payments are old-age pensions, unemployment compensation, relief payments, interest payments on the public debt, etc.). Obviously, in moving from national income as an indicator of income earned to personal income as an indicator of income actually received, we must subtract from national income those three types of income which are earned but not received and add those incomes which are received but currently not earned.



Therefore, Personal Income = National Income – Social Security Contributions – Corporate Income Taxes – Undistributed Corporate Profits + Transfer Payments.

f. ***Personal Disposable Income (PDI)***

Even whole of the incomes which are actually received by the people are not available to them for consumption. This is because governments levy some personal taxes such as income tax, personal property taxes. Therefore, after a part of personal income is paid to government in the form of personal taxes like income tax, personal property taxes, etc., what remains of personal income is called personal disposable income. Therefore,

Personal Disposable Income (PDI) = Personal Income – Personal Taxes. Personal Disposable Income can either be consumed or saved. Hence, Personal Disposable Income = Consumption + Saving

Rich Getting Richer

Case Study

Year 2009 may have been a cruel year for much of the country with slow growth and double-digit food inflation, but India's high net worth individuals (HNWIs) prospered - just over 120,000 in number, or 0.01% of the population, their combined worth is close to one-third of India's Gross National Income (GNI). HNWIs, in this context, are defined as those having investable assets of $1 million or more, excluding primary residence, collectibles, consumables, and consumer durables. According to the 2009 Asia-Pacific Wealth Report, brought out by financial services firms Capgemini and Merrill Lynch Wealth Management, at the peak of the recession in 2008, India had 84,000 HNWIs with a combined net worth of $310 billion. To put that figure in perspective, it was just under a third of India's market capitalization, that is, the total value of all companies listed on the Bombay Stock Exchange - as of end-March 2008. The average worth of each HNWI was 16.6 crore. To get a fix on just how rarefied a level it puts them in, we did some simple calculations that threw up stunning numbers. It would take an average urban Indian 2,238 years, based on the monthly per capita expenditure estimates in the 2007-8 National Sample Survey, to achieve a net worth equal to that of the average HNWI. And that's assuming that this average urban Indian just accumulates all his income without consuming anything. A similar calculation shows that an average rural Indian would have to wait a fair bit longer - 3,814 years! According to the firms' 2010 World Wealth Report, India now has 126,700 HNWIs, an increase of more than 50% over the 2008 number. While the figure for combined net worth is not available, it seems safe to assume that as a class not only have India's super-rich recouped their 2008 losses, they have even made gains over their pre-crisis (2007) positions. In 2007, 123,000 HNWIs were worth a combined $437 million. Meanwhile, in 2009 alone, an estimated 13.6 million more people in India became poor or remained in poverty than would have been the case had the 2008 growth rates continued, according to the United Nations Department of Economic and Social Affairs (UNDESA). Also, an estimated 33.6 million more people in India became poor or remained in poverty over 2008 and 2009 than would have been poor had the pre-crisis (2004-7) growth rates been maintained over these two years. The 2009 Asia-Pacific Wealth Report notes that the HNWI population in India is also expected to be more than three times its 2008 size by the year 2018, with emergent wealth playing a key role. Like China, relatively few among the current HNWI population (13%, compared to 22% in Japan) have inherited their wealth and even fewer (9%) are over the age of 66.

Question: What does the case say about distribution of income in India?

3.5 Measurement of National Income

14. 1. The Product or Value Added Method

In Product or Value/Added Method we calculate the aggregate annual value of goods and services produced (if a year is the unit of time). The term that is used to denote the net contribution made by a firm is called its value added. We have seen that the raw materials that a firm buys from another firm which are completely used up in the process of production are called „intermediate goods". Therefore, the value added of a firm is, value of production of the firm – value of intermediate goods used by the firm. The value added of a firm is distributed among its four factors of production,

namely, labour, capital, entrepreneurship and land. Therefore wages, interest, profits and rents paid out by the firm must add up to the value added of the firm. Value added is a flow variable. depreciation, is also known as consumption of fixed capital. Since the capital which is used to carry out production undergoes wear and tear, the producer has to undertake replacement investments to keep the value of capital constant. The replacement investment is same as depreciation of capital. If we include depreciation in value added then the measure of value added that we obtain is called Gross Value Added. If we deduct the value of depreciation from gross value added we obtain Net Value Added. In economics, the stock of unsold finished goods, or semi-finished goods, or raw materials which a firm carries from one year to the next is called inventory. Inventory is a stock variable. It may have a value at the beginning of the year; it may have a higher value at the end of the year. In such a case inventories have increased (or accumulated). If the value of inventories is less at the end of the year compared to the beginning of the year, inventories have decreased (decumulated).

The change of inventories of a firm during a year ≡ production of the firm during the year – sale of the firm during the year.

Inventories are treated as capital. Addition to the stock of capital of a firm is known as investment. change in the inventory of a firm is treated as investment.

Three major categories of investment.

First is the rise in the value of inventories of a firm over a year which is treated as investment expenditure undertaken by the firm. Second category of investment is the fixed business investment, which is defined as the addition to the machinery, factory buildings, and equipment's employed by the firms. Last category of investment is the residential investment, which refers to the addition of housing facilities. Change in inventories may be planned or unplanned. In case of an unexpected fall in sales, the firm will have unsold stock of goods which it had not anticipated. Hence there will be unplanned accumulation of inventories. In the opposite case where there is unexpected rise in the sales there will be unplanned de-cumulation of inventories. If we sum the gross value added of all the firms of the economy in a year, we get a measure of the value of aggregate amount of goods and services produced by the economy in a year (just as we had done in the wheat-bread example). Such an estimate is called Gross Domestic Product (GDP).

Steps Involved:

1. Identifying all of the manufacturing devices withinside the domestic economic machine and classifying them into the business sectors which incorporates primary, secondary, tertiary location on the idea of similarity of activities.

2. Estimating net rate brought at aspect rate with the resource of the usage of each producing unit deducting intermediate consumption, depreciation and net oblique taxes from rate of output.

3. Estimating net rate brought of each business location with the resource of the usage of summing up net rate brought at FC of all producing devices falling in each business location.

4. Computing domestic profits with the resource of the usage of inclusive of up NVA at FC of all business sectors.

5. Estimating net aspect profits from overseas thats brought to domestic profits for deriving countrywide profits.

Caution

1. Imputed rent of owner-occupied houses is also included in calculation of national income.
2. Imputed value of goods and services produced for self-consumption are included.
3. Value of own account production of fixed assets by enterprises, government and the households.

Thus GDP ≡ Sum total of gross value added of all the firms in the economy.

According to this method, in an economy in a financial year adding final goods produced and services to the market value, national income is estimated. As far as enterprise relationship is

concerned, this assumes its sell as final sell. For example, a farmer produces one ton of wheat and selit to a flour mill at ` 400. As far as farmer's relationship is concerned, for him sell of wheat is his final sell and he gains ` 400 exchange of it. But purchasing wheat for flour mill is intermediate goods. Mill converting it to flour sells to a bakery at ` 600. For flour mill, flour is a final product, but bakeryman will assume it an intermediate product and will use it for making bread. Bakeryman sells it to bread shopkeeper at ` 800. For bakeryman bread is a final product but for shopkeeper it is an intermediate product. Shopkeeper sells double bread to final consumer at ` 900. As far as question of farmer, flour mill, bakeryman and shopkeeper are concerned any person for estimation of final product will add ` 400, ` 600, ` 800 and ` 900, which will be ` 2700. But in economy, by this method GDP or total production is not estimated. In the above estimation of production, a producer /firm value of production is reflected in other producer's product value, because product one's is used as inputs for others. Hence in value flour's value of wheat is included and in value of bread of flour. In total value of production ` 2700, uses of ` 1800 value goods in form of intermediate goods or middle consumption. The value of final production's value, we do mistake of double counting, to escape from it is necessary.

Table 1.1: Value Added Approach

Stages of Production	Value of Output	Cost of Intermediate goods	Value Added
1. Wheat	400	-	400
2. Flour	600	400	200
3. Bread	800	600	200
4. Sell of bread	900	800	100
Total	2,700	1,800	900

It has been assumed in above table that at wheat producing time, there is no cost of intermediate goods. Therefore, farmer value addition is equal to his value of product means ` 400. flour mill buys wheat in ` 400 and making it flour, sells in ` 600. Flourman ` 600 – ` 400 = ` 200 value addition. Bakeryman bays flour in ` 600 and making it bread, sells it to shopkeeper in ` 800. Bakeryman value added ` 800 ` 600 = ` 200 and sell bread to shopkeeper in ` 800. Shopkeeper sells bread to consumer in ` 900. Thus value addition by shopkeeper ` 900– ` 800 = ` 100. Therefore, total value addition is equal to ` 400 + ` 200 + ` 200 +` 100 = ` 900. If in each step of production value addition is added then it will be ` 400 + ` 600 + ` 800 + ` 900 = ` 2700. The value of wheat and flour will be double counted. To escape from double counting value addition method is followed.

GDPMP IS estimated by adding up Value Addition by all the producing units in the economy.

Thus GDPMP = ΣGVAMP Generally, value addition has been done by primary, secondary and tertiary sectors of economy, we estimate separately. Therefore, in the whole context of economy these sectors' relative importance can be found out.After the estimation of GDPMP following adjustment find out NNPFC (National income)

GDPMP – Net Indirect Taxes = GDPFC – Depreciation = NDPFC + Net Factor Income from Abroad = NNPFC or Nation Income.

15. 2. Income Method:

For the calculation of national income by income method, factors of production for their producer service get emolument or total sum of income is added. Broadly, in its emoluments of labour in the form wage, land emolument on tax, capital emolument in interest and entrepreneurship emolument in profit. If factor income cannot be recognized separately then by Mixed Income (i.e., combination of rate, interest, profit and wages) national income is find out. Such is in economy's non-organized sector (or non-corporation sector) where factor of production is self-owned. Its service cannot obtain from market on rent. Income method is called Distributed Share Method of Factor Payment Method.

Components of Factor Income

Components of factor income are as follows:

1. Wages and salaries or Compensation of Employees. The income that gets from work is called compensation of employees also. According to Central Statistical Organisation, "Compensation of Employees means all payments by producer, wages and salaries to their employees in cash and in kind and contribution paid in respect of their employees to social security schemes, private pension, family allowance, causal insurance, life insurance and similar schemes." Thus, in employees, compensation

(i) wages and salaries, bonus, commission and dear allowance

(ii) Information of impute of payment, as a free residence, dress and medical facilities,

(iii) contribution of proprietor in social security scheme and (iv) Retired employees pension

etc., are included.

2. Rental Income: Rental income is that income which mainly gets from honourship of land or buildings. Therefore, the honour of land and buildings, for a fixed period of time, to give right to other persons for using them, gets income in the form of rent. Buses, tractors, machines etc. durable goods facilities of using for a fixed period can be given to other persons on rent. Thus accruing income will be understood as income from rent means those buildings in which their honour resides themselves their imputed rent is also part of income from rent and that is included in national income. Royalty is also included in income that gets from rent. People get royalty from the right of copyright, patent right and natural resources as mines.

3. Interest: Interest is that income that gets from bank deposit and loan given to firm. Remarkable thing is that the interest given by government and consumers are not included in national income because it is not considered payment for current economic production.

4. Profit: The income that gets from entrepreneurship is called profit. Here entrepreneur means corporation. An entrepreneur or corporation does not divide his total profit among his shareholders. He divides some parts of his profit. Profit of this divided part is called dividend. Companies keep undistributed profit in his hand as corporate savings. Some parts of profit go to government as corporate profit tax. Hence, corporate profit is divided into three parts means it has three components:

(i) Dividend – This is that part of profit which is distributed among shareholders. Shareholders getting income as dividend depends upon total profit of firms or corporates. Distributed profit is only called dividend.

(ii) Corporate Savings – This is that undistributed profit of firm, that he keeps in his hands as corporate savings.

(iii) Corporate profit tax – This tax by corporate or firm is paid to government on their profit.

5. Mixed Income or Income of Non-Corporate Sector: Mixed Income of the self-employed like doctors, engineers, retailers is the total income of own account workers as well as profit generated in the unincorporated enterprise. Income from employment and property as well as entrepreneurship is included in mixed income. Those persons get mixed income that gives his service in the form of households and as a producer uses his factor and services in the production of goods and services. These all are self-employed persons and earn self-employed income, in which wages, rent, interest, and profit are included. Those enterprises in which self-employed person's mixed income concept is used, thereby net value added at factor cost is equal to mixed income of self-employed persons.

6. Net Factor Income from Abroad: Getting income in exchange of giving factor service in abroad and in domestic boundary of a country by non-resident giving factor service paid income's difference is called Net Factor Income from Abroad.

Steps Involved:

1. Identifying companies which employ elements of production (labour, capital and entrepreneur).
2. Classifying numerous kinds of element bills like rent, interest, income and combined profits.
3. Estimating quantity of element bills made with the aid of using every enterprise.
4. Summing up of all elements bills inside home territory to get home profits.

5. Estimating internet element profits from abroad that is delivered to the home profits to derive country wide profits.

Caution

1. Sale and purchase of second-hand goods are excluded.
2. Imputed rent of owner- occupied houses and production for self-consumption are
3. included.
4. Incomes from illegal activities are not included.
5. Direct taxes such as Income tax are paid by employees from their salaries are included.

Net National Income = Compensation of employees + obsolescence (rent + interest + profit) + mixed income + net factor income from abroad.

16. 3. Expenditure Method

Expenditure method is that method by with in a financial year the total expenditure of domestic is measured in market value, this method is called Income disposable method or consumption investment method. This method calculates final expenditure or expenditure on gross domestic product.

Components of Final Expenditure

1. **Final Consumption Expenditure:** Its two main components are as follows:

(i) Private Final Consumption Expenditure: In domestic market for calculation of private final consumption expenditure, consumer households and private non-profit institutions, durable consumption goods, half-durable consumption goods and destructible goods and service final selling, their total quantity is multiplied to retail price. From it every purchase made by non-residents is subtracted and every purchase made by residents is added. Resulting data will be equal to private final consumption expenditure. Product for Self-Consumption is also a part of Private Consumption expenditure. For self-consumption quantity of production is necessary to multiply with producer's neighbor market uses cost. Similarly, owner occupied house rent is also included domestic market's final consumption expenditure.

(ii) Government Final Consumption Expenditure: To calculate government's final consumption expenditure made by enterprises total sells to government is multiplied by retail price. Purchase from abroad is added also.

2. Gross Domestic Capital Formation: (Capital formation of following two types is included in it):(A) Gross Domestic Fixed Capital Formation.

a. Expenditure on Construction – For the calculation of expenditure on construction, construction materials such as cement, steel, bricks, labour, capital factor quantity is multiplied with their prices. This type of expenditure calculation is called commodity flow approach. Following items are included in expenditure on construction – (i) self-accounting, production of fixed capital, (ii) consumer households purchasing of new building, (iii) construction place going work and (iv) Capital repairs as main change in old buildings.

b. The Final Expenditure on Machinery and Equipment – The expenditure on machinery and equipment can be estimated by two methods — (i) The quantity of final selling is multiplied with market in use value, (ii) according to commodity flow approach in current year finding total quantity of machinery produced and equipment in it cost paid by buyers is multiplied. By these two methods get equal sum. In it also purchase cost of machines and equipment for self-purpose is added.

(B) The Expenditure on change in Stock or Inventories: To calculate of expenditure on physical change in stock, quantity of physical change is multiplied with market value. We add in gross national product the cost of those goods and services which is produced in a financial year, but does not sell.

3. Net Exports: Finally, the cost of those calculated the value of net export (export-import) from abroad is calculated. The difference in value of export and import is called net export. Export production is done on the basis of production sources of the country. Sells of exporting goods have no effects on the income of domestic factor of production. Due to this reason export values are

considered a part of national income. The expenditure on imports is deducted from national income, because this expenditure is not done on domestic produced goods.

Steps Involved

1. Identification of economic units incurring final expenditure

2. Classification of final expenditure into following components:

(a) Private final consumption expenditure

(b) Government final consumption expenditure

(c) Gross final capital formation

(d) Change in stocks

(e) Net exports.

3. Measurement of final expenditure on the above components.

4. Estimation of net factor income from abroad which is added to NDPFC

Caution

1. Avoid double counting of goods.
2. Expenditure on purchase of second-hand goods is excluded.
3. Expenditure on purchase of old share is excluded.
4. Government expenditure on all transfer payment is excluded

Gross Domestic Product at Market Price = Final private consumption expenditure + Final government consumption expenditure + Gross domestic capital formation (Gross domestic permanent capital formation + change in stock) + Net export (Export – Import).

At factor cost to find out the national production or national income at market cost from domestic product, net indirect tax and depreciation is deducted and from abroad net factor income is added

Did you Know?

Production for self-consumption is also a part of private consumption expenditure.

3.6 Problems in Measuring National Income

The problems in measurement of national income are:

1. National income measures domestic economic performance and not social welfare. For real economic growth, there should be strong positive correlation between the two.
2. National Income understates social welfare-non-market transactions like home-makers service and do-it-yourself projects are not counted.
3. National Income does not measure an increase in leisure or work satisfaction or changes in product quality.
4. National Income does not accurately reflect changes in environment like oil spills cleanup is measured as positive output but increased in pollution is not measured as negative.
5. Per capital income is a more meaningful measure of living standards than total national income.
6. There is a problem of double counting. However, problem of double counting could be avoided by utilizing the value-added approach.

Example: The wheat that is used to make bread is an "intermediate good". The value of the bread only is counted as part of GNP and we do not count the value of wheat sold to the miller and the value of flour sold to the baker.

7. Problems of depreciation estimation as there are different methods of calculating or estimating depreciation.
8. Inclusion or exclusion of certain items in national income accounting can cause confusion:
   - Imputed rent of owner-occupied houses is also included in calculation of national income.
   - Imputed value of goods and services produced for self-consumption are included.
   - Sale and purchase of second-hand goods are excluded.
   - Imputed rent of owner-occupied houses and production for self-consumption are included.
   - Incomes from illegal activities are not included.
   - Direct taxes such as Income tax are paid by employees from their salaries are included.
9. Expenditure on purchase of old share is excluded. Government expenditure on all transfer payment is excluded.

Challenges like difficulties in getting information especially those related to underground economy (illegal activities).

3.7 Some examples of national income calculation:

Problem 1. Calculate (1) GDP at market prices and (2) national income from the following information.

Personal consumption expenditure	6,500
Indirect taxes less subsidies	150
State government consumption and investment expenditure	500
Central government consumption and investment expenditure	2,000
Change in business inventories	100
Gross private domestic fixed investment	1,200
Exports	900
Net factor payments to rest of the world	100
Imports	1,200
Depreciation	200

(i) GDPMP = (Private Consumption Expenditure + Gross private investment (both fixed and inventories) + Govt. Expenditure (both State and Central) + Net exports (X–M))

= 6500 + (1200 + 100) + (500 + 2000) + (900 – 1200)

= 6500 + 1300 + 2500 – 300

= 10,000

(ii) National Income. National income is net national product at factor cost (NNPFC). Therefore,

to find out net domestic product at factor cost we have to deduct depreciation and net indirect taxes from GDPMP and to get national income we have to deduct net factor payments to the rest of the world. Thus

NI or NNPFC = GDPMP – Depreciation – net Indirect taxes (i.e., indirect taxes less subsidies) – net factor payments to the rest of the world.

NI = 10,000 – 200 – 150 – 100

= 9550

2. Calculate the national income and personal disposable income from the following information:

GDPMP	6,000
Receipts of factor income from the rest of the world	150
Payments of factor income to the rest of the world	225
Depreciation	800
Indirect taxes minus subsidies	700
Corporate Profits	1,200
Dividend	600
Transfer payments to persons	1,300
Personal Taxes	1,500

Solution.

(i) National Income is Net National Product at factor cost

NI or NNPFC = GDPMP – Depreciation – Net Indirect taxes + Net Factor income from abroad

= 6000 – 800 – 700 + (150 – 225)

= 6000 –1500 – 75

= 6000 – 1575

= 4425

(ii) Personal Disposable income = National Income – Retained Corporate Profits + Transfer Payments to Persons – Personal taxes

PDI = 4425 – (1200 – 600) + 1300 – 1500

= 4425 – 600 + 1300 – 1500

= 3625

3. Calculate (1) Net Domestic Product at Market Prices and (2) National Income from the following data of all the enterprises in an economy. in Crore

(i) Subsidies	10
(ii) Sales	1000
(iii) Closing stock	100

(iv) Indirect taxes	50
(v) Intermediate consumption	300
(vi) Opening stock	200
(vii) Consumption of fixed capital	150
(viii) Net factor income from abroad	10

Solution.

i) NDPMP and National Income be obtained through value added method. Net Domestic Product

at Market Prices is the sum of net value added by all enterprises in the economy.

Value of output = Sales + Change in stock

= 1000 + (Closing Stock – Opening Stock)

= 1000 + (100 – 200)

= 900 crore

ii) Net value added (NVA) at market prices (NDPMP) = Value of output–Intermediate Consumption – Consumption of fixed capital

= 900 – 300 – 150

= 450 crore

iii) National Income (NNPFC) = NDPFC Net Indirect taxes + Net factor income from abroad

= 450 – (50 – 10) + 10

= 450 – 40 + 10

= 420 crore

4. Calculate gross domestic product at market prices (GDPMP), gross domestic product at factor cost (GDPFC) and net national product at factor cost (NNPFC) from the following data:` in Crore

(i) Private final consumption expenditure	290
(ii) Government's final consumption expenditure	50
(iii) Subsidies	20
(iv) Gross domestic fixed capital formation	105
(v) Indirect taxes	70
(vi) Depreciation (i.e., Consumption of Fixed Capital)	45
(vii) Net factor income from abroad	(–) 5
(viii) Net addition to stock	15
(ix) Net exports	(–) 5

Solution:

i) Gross domestic product at market prices (GDPMP) = Private final consumption expenditure+ Government's final consumption expenditure+ Gross domestic fixed capital formation + Change in stock + Net exports

= 290 + 50 + (105 + 15) + (– 5)

= 290 + 50 + 105 + 15 – 5

= 455 crore

ii) GDPFC = GDPMP – Net Indirect Taxes

= 455 – (Indirect Taxes – Subsidies)

= 455 – (70 – 20) = 405 crore

iii)NNPMP = GDPMP – Depreciation

= 455 – 45

= 410 crore

iv)NDPFC = NDPMP – Indirect taxes + Subsides

= 410 – 70 + 20

= 360 crore

v)NNPFC = NDPFC + Net factor income from abroad

= 360 + (–5)

= 360 – 5 = 355 crore

Summary:

- National income can be defined as the aggregate of money value of the annual flow of final goods and services in the national economy during a given period.
- GNI comprises the total value produced within a country, together with its income received from other countries less similar payments made to other countries.
- GNP at market price/factor cost = NNP at market price/factor + depreciation
- GNP at market price/factor cost = GDP at market price/factor cost + Net factor income from abroad
- NNP at market price/factor cost = NDP at market price/factor cost + Net factor income from abroad
- Net factor income from abroad = Factor income received from abroad - Factor income paid abroad.
- GNPMP = GNP at factor costs + indirect taxes-Subsidies.
- NNPMP = NNPFC + indirect taxes-Subsidies.
- GDP = GNP - Net factor income from abroad
- GNP = C + Ig + G + (X - M)
- GNPFC = GNPMP - Indirect taxes + Subsidies
- GNP = NNP + Depreciation
- National Income = GNP - Depreciation - Indirect taxes + Subsidies
- Personal income is calculated by subtracting from national income those types of incomes which are earned but not received and adding those types which are received but not currently earned.

- Disposable income is the total income that actually remains with individuals to dispose of as they wish. It differs from personal income by the amount of direct taxes paid by individuals.
- Value added can be defined as the difference between the value of output produced by that firm and the total expenditure incurred by it on the materials and intermediate products purchased from other business firms.
- There are three approaches to the calculation of national income- product approach, income approach and expenditure approach.
- In Product method, two approaches are adopted- final product approach and value added approach.
- In Final product approach, sum total of market value of all final goods and services produced by all productive units in the domestic economy in an accounting year is estimated by multiplying the gross product with market prices.
- In value added method net value added at factor cost by all the producing units during an accounting year within the domestic territory is summed up.
- As per the income method, National Income = compensation of employees + operating surplus.
- As per the expenditure method, GDP= C + I + G + (X - M).
  Circular flow of income model shows the flow of income between the producers and the households who buy their goods or services.

  Keywords

  Economic Interest: Interest related to wealth.

  Obsolescence: Out of operation.

  Expenditure Method: Process of expenses

Self-Assessment:

State whether the following statements are True or False:

1. The real meaning of concept of national income is national income at factor cost.

2. High level of national income shows low level of production of a country.

3. 'National Income' word is pure conceptual.

4. During a financial year, by normal resident of a country as a result of factor services did value addition's sum is called national income.

5. Government expenditure on transfer payments is included in national income calculation.

6. National income estimation doesn't consider the value of services of housewives.

7. National income is the subject matter of _____ Economics. (Micro / Macro/ Managerial / Business).

8. GDP (FC) = GDP (MP) – _____ (factor cost/indirect taxes/depreciation/subsidy)

9. Use the following data to compute GNP, NNP and NI. If NI computed at factor cost is 3,387 crores, what is the statistical discrepancy? (Note: All figures are in crores; any omitted items are zero).

Depreciation	455
Indirect business taxes	349
Gross investment	675
Consumption	2,762
Net exports	106

Government purchase	865

10. Use the following information to compute national income, personal income and disposable personal income for the year. (Note: All figures are in billions; any omitted items are zero).

Corporate profits	300
Net interest	295
Provident fund contributions	376
Wages and salaries	2,499
Income of self-employed	279
Rental income	16
Dividends	88
Corporate profit taxes	103
Government transfers	491
Undistributed profits	46
Personal tax	513
Business transfers	23

11. Define NNP, GNP, GDP and disposable income. Discuss the relation between them.

12. What is the relevance of national income statistics in business decisions? What kinds of business decisions are influenced by the change in national income?

17. Define 'national income'. How is it different from gross domestic product (GDP)? Explain.
18. Explain 'income method' of measuring national income. Which of the following terms will be included while calculating national income of a country through income method? (i) Transfer Payments by the government to individuals in a year (ii) Imputed rent of self-occupied houses (iii) Hawala money (iv) Windfall gains (v) The receipts from the sale of second-hand goods.
19. Is gross domestic product (GDP) a true indicator of welfare of the society? Explain

Answers: Self-Assessment:

1. True	2. False	3. True	4. True
5. False	6. True	7. Macro	8. Indirect Taxes

Further Readings

Macroeconomics : Economic Growth, Fluctuations and Policy—Report E. Hall and David H. Paipal, Vaina Books, 2010.
Macroeconomics : Theory and Policy—H.L. Ahuja, S. Chand Publishers, 2010.
Necessity of Macroeconomics—H. S Nath, Cyber Tech Publications, 2010.

Mandeep Bhardwaj, Lovely Professional University

Unit 04: Theories of Income, Output and Employment

CONTENTS

Objectives

After studying this unit, you will be able to,

Introduction

Before explaining the Keynesian macro-theory of income and employment, it will be in the fitness of things to explain classical theory regarding income and employment determination. The study of classical theory of income and employment is essential because some of the aspects of classical theory are more relevant to the conditions prevailing in the developing countries and this theory highlights those factors which govern income and employment in these countries. While the Keynesian theory emphasizes the role of effective demand in the determination of income and employment, classical economists believed that in a free-market economy there was always a tendency towards the establishment of full employment of labor and there was sufficient demand for the output produced.

Classical economics dominated the mainstream of economic thinking from the late 18th century until the 1930's. Its chief proponents were Adam Smith, J.B. Say and David Ricardo. The classical scheme of thinking assumes operation of free enterprise and free price mechanism leading to automatic adjustments in all the markets. The classicists believed in the existence of full employment in the economy and a situation less than full employment was regarded as abnormal necessary to have a special theory of employment. The classical analysis was based on Say's Law of Markets that "supply creates its own demand." They thus ruled out the possibility of over production. The classical economics was based on the laissez-faire policy of a self-adjusting economic system with no government intervention. In this unit you will learn about the Classical Theory of Income, Output and Employment.

4.1 Assumptions

The classical principle of employment and production is dependent on following assumptions:

1. Full employment is found without inflation.

2. A close laissez faire capital economy is found without foreign business.

3. Full competition is found in labour and things markets.

4. Total production of economy is divided in the expenditure of investment and consumption.

5. The quantity of currency is given.

6. Wages and prices are flexible.

7. Currency wages and actual wages have proportional relation.

8. Capital stock and technology knowledge are given.

4.2 Say's Law of Market

Say's law of market is the element of the classical principle of employment. In the starting of 19th century this establishment is presented by French writer Jean Bapiste Say that "Supply creates its own demand". It's called the rule of Say. In the words of Say, "Production created market for things. As anything produced then it creates market for other things which are similar to its price. The supply of other items is according to the demand of the item and not more than that. "This rule is applied on the barter economy, where finally things are sold in place of things. Everything brought in the market is the demand for any other thing. According to Say, doing work is not interesting, so if any person is not wanting to exchange his favorite thing with any other things then he did not do work for the production of that thing. So, the demand is involved in the work of supply of things. In that situation, more production is not possible because the supply of things will not be more than total demand. It may be possible that one special thing is more produced, because customers wrongly assessed the quantity of those things, which is necessary for others. However, this situation is temporary, because that special thing is more produced to reduce the production of others. So supply getting creates its own demand so unemployment is not possible.

Assumptions of Say's Law

Say's law is based upon the following assumptions:

- The amount of labour and capital can be raised in a free enterprise system based on price mechanism.
- In an expanding economy new firms and laborer's can have easy entry by offering their products in exchange without dislocating the position of existing firms and laborer's.
- The size of market is capable of expansion.
- All savings are automatically invested, i.e., savings always equals investment.
- The Government does not interfere in the functioning of the economy.

Classical economists thought that if price mechanism in a capitalist economy is allowed to work freely without any interference by the Government, there is always a tendency towards full employment in it. Of course, they admitted that in advanced capitalist economies often certain circumstances arise due to which they are not in full-employment equilibrium. But they firmly believed that there was always a tendency towards full employment in the economy and certain economic forces automatically operate so as to move the economy towards full employment. Therefore, according to the classical economists, whenever there are lapses from full-employment level, these are removed automatically by the working of free price mechanism. The modern economists do not regard this aspect of classical theory of employment as valid and correct description of the real world. J.M. Keynes bitterly criticised the classical theory of automatic establishment for full employment.

The classical theory of employment was based upon two basic assumptions. The first assumption is that there is always enough expenditure or aggregate demand to purchase the total production at full-employment level of resources. In other words, in this theory the classical economists disregarded the problem of deficiency of demand for purchasing goods produced at full-employment level of resources. The second assumption is that even when deficiency of aggregate expenditure or demand arises, the prices, wages and interest would adjust quickly so that equilibrium is restored at fullemployment level of output. The classical view that there was no problem of deficiency of expenditure and demand was based upon Say's Law of Markets. J.B. Say has been a famous French economist of the 19th century. Say's law is based upon the fact that every production of goods also creates incomes equal to the value of goods produced and these incomes are spent on purchasing these goods. In other words, production of goods itself creates its own purchasing power, that is, demand for buying them. Therefore, Say's law is

expressed as "supply creates its own demand", that is, the supply of goods produced creates demand for it equal to its own value with the result that the problem of general overproduction does not arise.

In this way in Say's law, the possibility of lack of aggregate demand has not been visualised. Say's law expresses an important fact about the working of a free-enterprise economy. The fact is that the source of demand for goods is the incomes earned by the various factors of production employed for their production. All unemployed and idle labourers and other resources when employed for production, create their own demand because the total incomes which they earn create equal market demand for the goods produced by their employment. When a new entrepreneur employs some factors of production and pays them their monetary rewards, he not only increases the supply of goods but also at the same time creates the demand for them. Therefore, it is the production which creates market or demand for goods. Production is the only source of demand. Dillard rightly writes that "Say's Law of Markets is the denial of the possibility of deficiency of aggregate demand. Therefore, employment of more resources will always be profitable and will take place to the point of full employment, subject to the limitation that the contributors of the resources are willing to accept rewards no greater than their physical productivity justifies. There could be no general unemployment, according to this view, if workers will account what they are worth."

Implications of Say's Law

- Since there is automatic adjustment between production and consumption, there is no need for the government to interfere in the functioning of economic system. Any interference by the government in the automatic functioning of the economic system will simply create imbalances and disequilibria.
- When the unemployed resources are employed, they lead to more production which covers their own costs. Hence, the economy will operate at the level of full employment.
- The mechanism of interest flexibility brings about an equality between savings and investment.
- The mechanism of wage- flexibility brings about full employment.

4.3 Concepts Related to Classical Theory

The main concepts used in the classical model are:

1. ***Full Employment:*** An economy is said to be in full employment when its entire labour force is gainfully employed. Labour force is that part of the population of the country which is physically and mentally able and at the same time willing to work.
2. ***Nominal Wage vs. Real Wage:*** Nominal wage is what a worker receives in the form of money. Real wage is what a worker can buy from the nominal wage.
3. Real wage = Nominal wage w/Price level p
4. Real Rate of Interest: Nominal rate of interest is the rate which the lender receives from the borrower in money. Real rate of interest is rate accruing after adjustment of inflation.
   Real ROI = Nominal ROI – rate of inflation
5. Value of Marginal Product of Labour (VMPL): VMPL equals MPL multiplied by the price of the product (P) the labour produces.

$$VMP_L = MP_L \times P = MP_L \times AR$$

It is distinguished from 'Marginal Revenue Product of Labour (MRPL), which equals

MPL ×MR. Since in case of perfect competition in the product market MR=AR, VMPL=MRPL

6. ***Aggregate Demand and Aggregate Supply:*** Aggregate demand is the total value of final goods and services that all sections of the economy taken together are planning to buy at a given level of income during a period of time. Aggregate supply is the value of final goods and services planned to be produced in an economy during a period.

7. ***Supply of Money:*** Money supply of a country is the stock of money on a specific day. This is the sum of currency held outside banks and chequable deposits. This is the money which can be directly used for transactions.

4.4 Equilibrium in Markets

Labour Market Equilibrium

Adjustment in 'real' wages ensures full employment. The equilibrium is when demand for labour equals supply of labour.

(a) Demand for Labour (D_L): The aggregate DL depends upon real w, prices firms receive for goods and services, and prices firms have to pay for non-labour inputs. With prices of goods and non-labour inputs held constant, DL becomes the function of real w:

DL = f (real w) = f (w/p)

> **Caution**
>
> There is inverse relation between real w and DL. There are two reasons: (i) As wages fall relative to the cost of machines, it pays the firm to substitute workers for machines; and (ii) as wages fall, VMPL becomes greater than w. (VMP_L equals MPP_L ×P). A firm employs labour upto the point where VMP_L = real w. A firm goes on employing additional labour so long as VMP_L is greater than real w. As more labour is employed MPPL falls, and so VMP_L falls. The firm employs labour upto when VMP_L is once again equal to real w.

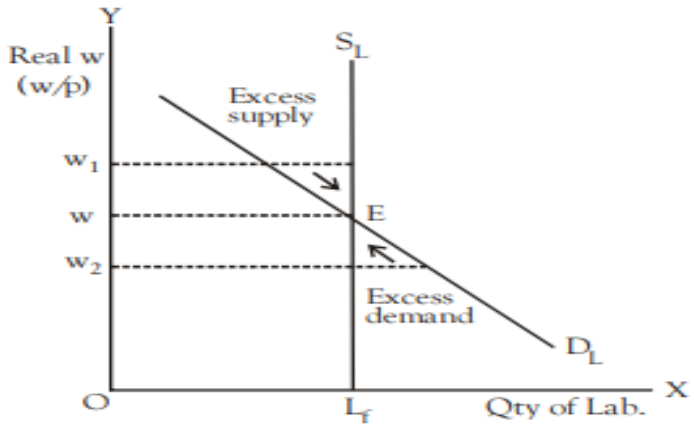
(b) Supply of Labour (S_L): When w changes, it produces two effects

SE and IE. SE: w rises, opportunity cost of labour rises. Therefore, D for leisure falls which means S_L rises.

IE: w rises, demand for leisure rises. S_L falls.

The two effects work in the opposite directions. Let us assume that the two effects offset each other, so that S_L remains unchanged. (We can also conceive of backward sloping supply curve.)

Fig. 1: Labor Market Equilibrium



(c) Market Equilibrium: Equilibrium occurs where DL and SL curves intersect. Ow is the equilibrium real w and OL the equilibrium quantity of labour. At real w, higher than Ow, there will be excess supply. At real w below Ow, there will be excess demand. In both situations, real w will adjust to reach Ow.

4.5 Product Market Equilibrium

The product market equilibrium is attained at that 'overall price level' at which Aggregate Demand (AD) equals Aggregate Supply (AS). What is the behavior of AD and AS with respect to price level?

Let us first take AS. In the classical scheme of things, AS has nothing to do with price level. How is AS determined? Labor market is in equilibrium at the full employment of labor (Figure 1). Given full employment of labor, the production function determines full employment level of output. Refer to the figure 2. The TP curve represents the production function of the variable input labor. Note that it is concave throughout because it is based on the assumption that the Law of Diminishing Returns is operating from the very beginning. (There is no increasing returns to a variable factor). It means that TP increases at a decreasing rate until it reaches maximum.

Given OL_f, the full employment quantity of labour, the total output produced by OL_f is OY_f. This is the potential GDP at full employment of labour, also called 'aggregate supply.

Fig. 2: Product Market Equilibrium

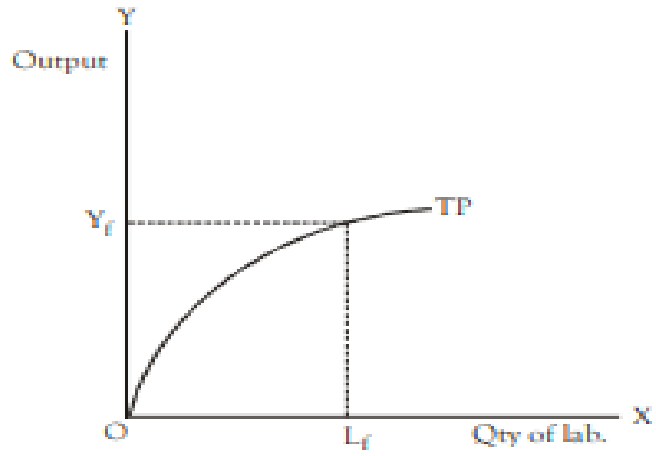
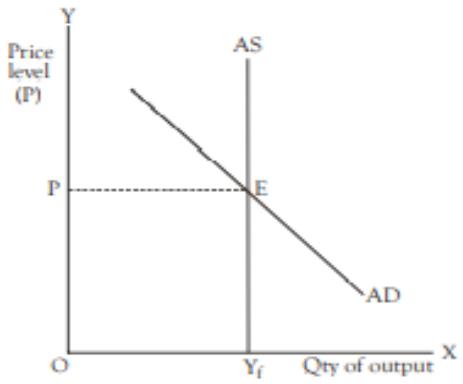


Fig. 3. Product Market Equilibrium



Since AS has nothing to do with the overall price level, the AS curve (Figure 3) is vertically parallel. The relation between the price level (P) and AD is the usual inverse relation. This makes the AD curve downward sloping. The equilibrium is achieved at E, the intersection of the AD and the AS curves. This is product market equilibrium at full employment level.

Product market equilibrium is full employment output equilibrium. To maintain this, it is necessary that AD equals AS. AD is the sum of consumption demand (C) and investment

demand (I). AS, being the value of final goods and services produced, is GDP. GDP can be used for spending on consumption (C) and for saving (S).

Saving is the leakage out of the spending stream. Investment is the injection into the spending stream. So long as the leakages (S) equal injections (I), AS will be equal to AD, and the product market will be in full employment equilibrium.

In the classical model, adjustments in the real rate of interest in the capital market ensure equality of saving and investment.

4.6 Capital Market Equilibrium

Generally speaking, capital market refers to the borrowing and lending activities of the financial institutions. It is the market in which there are suppliers of funds and demanders of funds. It is also called loanable funds market. The price at which the funds are lent and borrowed is rate of interest. In the classical model, it is the real rate of interest. The capital market is in equilibrium at that 'real rate of interest' (real ROI) at which the supply of funds (saving) equals demand for funds (investment).

Real ROI and Saving

Saving is a function of disposable income and real ROI. In the classical model, disposable income is full employment income and is fixed. With disposable income fixed saving depends on real ROI. How does saving behave as ROI changes?

A change in real ROI has income effect (IE) and substitution effect (SE). Suppose real ROI rises. The two effects are:

IE: Real ROI rises. Income from interest rises. Since income rises consumption rises. Since consumption rises, saving falls.

SE: Real ROI rises. Opportunity cost of saving rises. Consumption falls. Saving rises.

The two effects work in opposite directions. The evidence suggests that IE and SE offset each other. This makes the saving curve a vertical straight line (Figure 4).

Fig.4: Real ROI and Saving

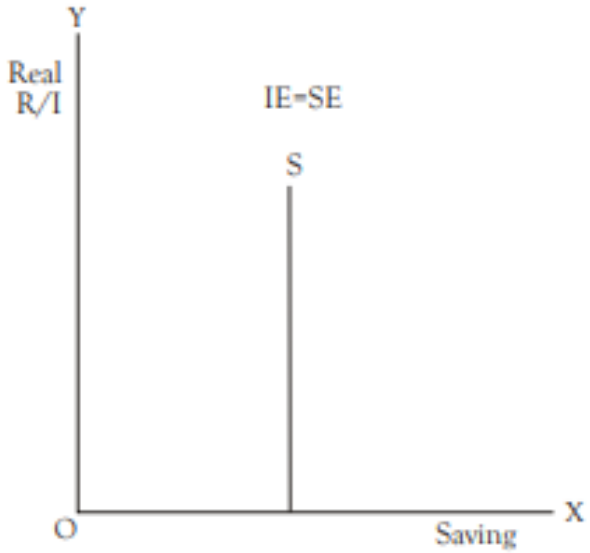
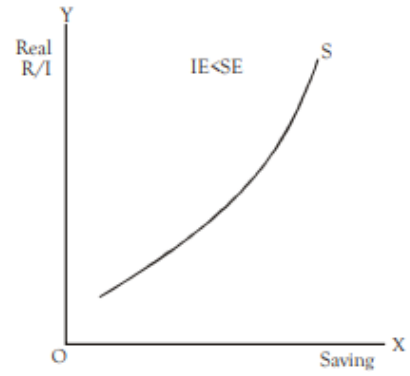


Fig. 5 Real ROI and Saving



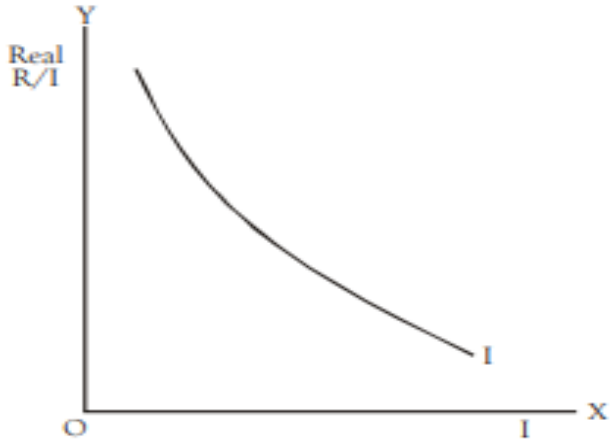
If, however, SE outweighs IE the saving curve is upward sloping.

Real ROI and Investment

There are two determinants of investment (in capital goods) – expected future earning and real ROI. Future earning is the return and ROI is the cost. The investor while taking investment decision compares return with cost. It is desirable to invest so long as future earning is greater than, or at least equal to, real ROI.

The model assumes future earning to be fixed. This makes investment as a function of real ROI. Since ROI is the cost, lower the real ROI more profitable it is to undertake investment. This establishes inverse relation between real ROI and investment. It means that the investment function curve is downward sloping (Figure 6).

Fig 6. Real ROI and Investment



4.7 Equilibrium

The capital market equilibrium is attained at that real ROI at which saving equals investment. Graphically, it is attained where the saving and investment curves intersect. In the Figure 7, the saving curve is vertically parallel because it is assumed that IE=SE. The equilibrium is at E. In the Figure 8 the saving curve is upward sloping because it is assumed that IE is less than SE. The equilibrium is at E. The equilibrium real ROI is Or.

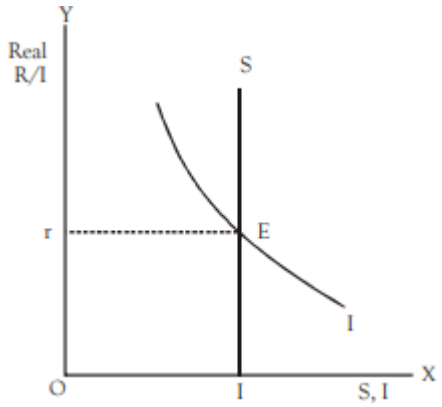


Fig.7 when IE=SE and SE IS Vertical

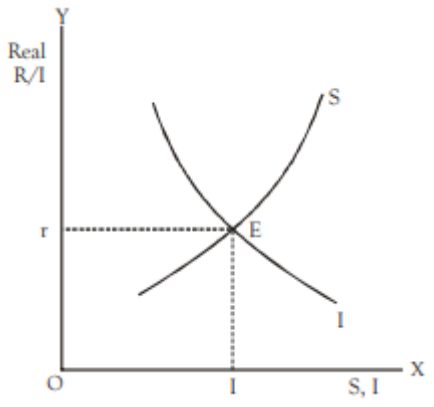
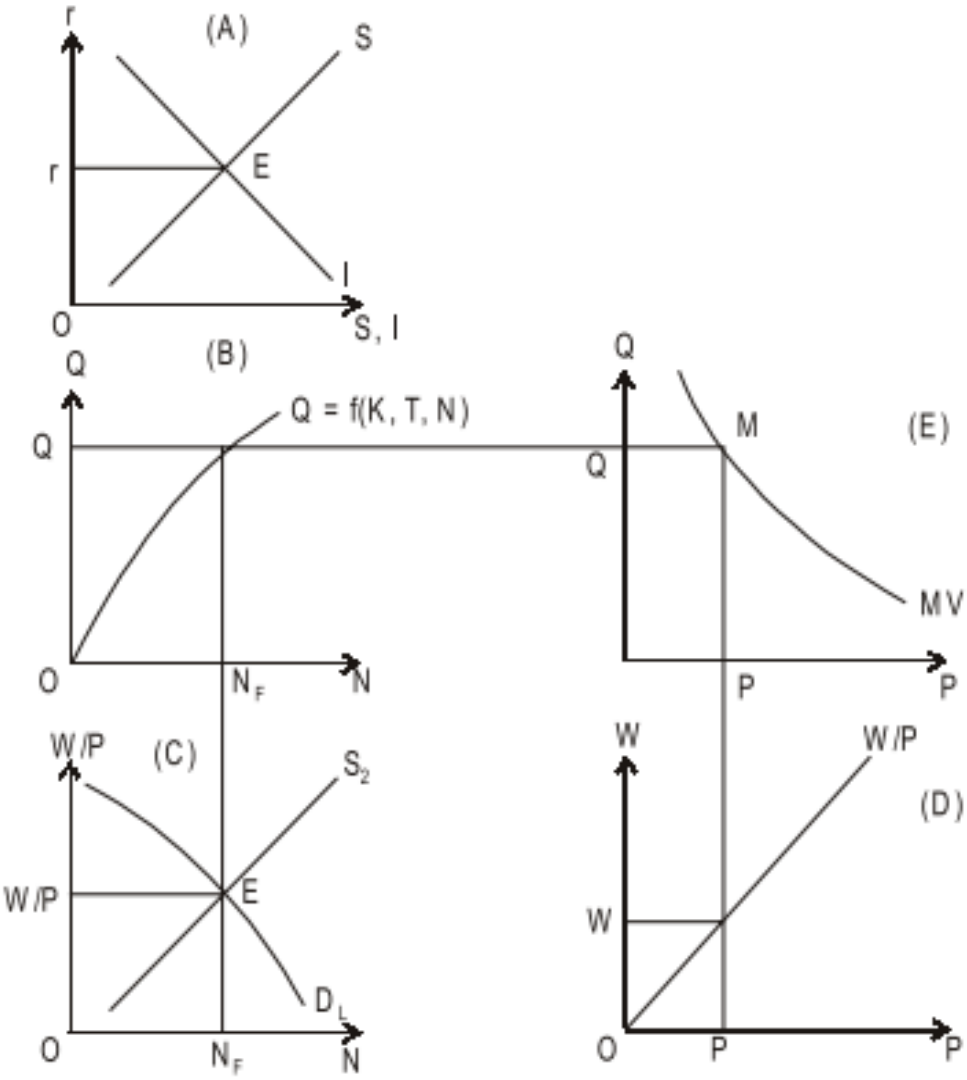


Fig.8 SE≠ IE and SE is upward sloping

4.8 Simultaneous Equilibrium in all the Markets



The Classical Principle of employment is based on the assumption of full employment, according to it a normal situation of full employment in economies is got and the abnormal situation of unemployment remains abnormal. In Classical Principle, the selection of production and employment is based on labour of economy, things and currency market, which is given in Fig. 9.

The power of supply and demand in this market will bring the full employment. By any interference of government there will not full employment. Production and all production functions of employment in the Classical analysis are decided by the demand of labourer and supply of labourer. Due to stock of capital, technical knowledge and other inputs have certain relation in the quantity of total production and employment it is Q = f (K, T, N) as shown in the Fig. 9 panel (B). In other words, total production is the function (f), capital stock (K), technology (T) and labour number (N). When K and T are given then labourer number function is Q = f(N). But when more labourer goes after a limit then get the diminishing marginal returns. The demand of labour and supply of labour in labour market distract the level of production and employment in economics. The demand of labour is dependent on total production. More production increases the demand of labour and the demand of labour is dependent on its frontier physical productivity (MPP) which reduce to apply more tax. The supply of labour is dependent on the labour rate Dl = f (W/P) which is the increment function of labour rate. Other side, the demand of labour is dependent on labour rate Sl = f (W/P) and it is the diminishing function. So the demand and supply of labour is because of the actual wages rate (W/P). The intersection point E of demand and supply of labour decides the full employment on wages rate (W/P), Dl = Sl –Nf , as shown in panel (C).

Commodity market, savings and equality of investment (I = S) are in balance so the similarity in both on full employment point E is by the mechanism of interest rate so demanding quantity of things on full employment is equal to the quantity of supply. Savings is the function of interest rate, I = f(r) and investment is the opposite function of interest rate, S = f(r). Currency market is balanced by the demand and supply of currency. It is elaborated by the currency magnitude principle. According to it, price level is the function of currency supply, P = f(MV). The change in price is proportionate to the quantity of currency. Balance is described by the equation MV = PT in currency market where MV is the supply of currency and PT is the demand of currency. The balances of currency market describe the similarity with full employment of the production of price level, which are penal (E) and (B). Line MQ is related with MQ. Price level OP is decided by the total production (Q) and the quantity of currency (MV) as shown in panel (B) and (E). Now actual wages are decided with currency wages. As shown in panel (D) by W/P curve. When currency wages are increased by increasing the price level then actual wages W/P are reduced so there will be effect on level of production and employment. So the conclusion is that to get the level of full employment, currency wages should be reduced. So continuing the situation of full employment, classical economists were in favour of flexible price-wages

Keynes' Criticism of Classical Theory

Keynes' criticized this principle because of the unreal perception of Classical Principle of employment.

He writes in his book 'General Theory' that, "Classical Principle is continuing to assume those specifics,

they did not keep relation with that economic society in which we live, its result is that when we apply

it on reality experience, then its training is proved doubtful and destructive. Whatever behaviour we

hope from our economy it expresses that type of facility. But it consider that it happens, is like closing

the eyes in difficulties."

Keynes' attacked on classical principle because of following reasons—

1. ***Under-employment Equilibrium:*** Keynes rejected the basic classical perception of balanced full employment in economics. He told unreal to this perception. He considers full employment a specific condition. Under-employment is the normal situation in socialist economy. Its reason is that capitalism does not work according to the rule of Say and supply is always increased by demand. We see that lakhs of labourers are ready to work on present wages and less than that, but they did not get work. So the existence of voluntary unemployment in capitalism economy proved that under-employment is the normal situation and full employment balanced situation is abnormal and immediate.

2. ***Over-production Possible:*** Keynes' disclaimed the market rule of Say that supply creates its own demand. His perception is that all income earned by sources-owner is not spent in purchase of those things which are helpful for production. Some parts are saved from the earned income, which are not automatically invested because saving and investment are two separate work. So when all earned income is not spent on consumer goods and some part remains, then total demand reduces.

Resultantly, it is normal hyper production, because all could not be sold which has been produced, further, it leads to common unemployment. So by this taking the support of this rule proved Say's rule to be meaningless.

3. ***Self:adjustment Impossible in the Economy:*** Keynes' was not satisfied by this idea of classical economist that for the self process of full employment balance, laissez faire is necessary. He declared that capitalism system is not self adjust because of unequal structure of their society. There are two major classes– rich and poor. "Rich have more money but they did not spend all money on consumption." The poor have no money for purchasing things. So in the comparison of total supply there are normal low levels of total demand by this there are over-production and unemployment in economy, then it never happens. So 'big depression' was the result of it. If capitalism arrangement became self adjusted and self arranged, then this will never happen. So Keynes supported that thing that states interfere for adjust the demand and supply under economies by the median of exchequer and oral method.

4. ***Equality between Saving and Investment through Income Changes:*** It was the belief of classical economists that saving and investment are equal at the level of full employment and if there is any deviation, then the mechanism of the rate of interest brings similarity in them. According to Keynes', the level of saving is dependent on the level of income. So the rate of interest of investment is also decided by the productivity of frontier. If the business expectancy is less then in the low rate of interest, investment will not increase. If saving increases from investment, then it means that people have spent less on consumption.

Resultantly, the demand reduces, and high production starts and investment in income and production reduces. By this, with the change of interest equality between investment and savings on account is maintained.

5***. Refutation of Wage Cut:*** Keynes' had disclaimed this principle of Pigou that full employment can be got in economy to cut the currency-wage. In the analysis of Pigou the big doubt is that the logic of specific industry is applied on all economy. In one industry the decrement in the rate of wage can increase the employment to increase the cost and demand but this type of employment is reduced for all economy. When normal wage is cut, then the income of labour reduces resultantly total demand reduces and employment also reduces.

Behaviourally Keynes' never supported the policy of cut in wage. Labourers establish a strong trade union in present era which protests the policy of reduced wage. They will agitate in its protest. As a result, whatever disturbance will generate in economies, by that income will reduce. Now, social justice demand is also that if profit is not disturbed then wage should not be reduced.Keynes has also not accepted that opinion that there is directly proportionate relation between currency wage and actual wage. According to him, they have opposite relation between them. When total wages are reduced, then actual wages are increased and vice versa. So as the believers of the traditions that, as not happen and being the reduction on currency-wage the actual wages are not reduced but increase, the cost of wage and price will be reduced more to cut the currency-wage. So the opinions of traditions are not outstaying that employment will increase to reduce the actual wage. But the believe of Keynes was that employment can increase more to reduce the currency-wage by the medium of currency and exchequer. Now the institutional protest is stronger of decrement of prices and wage so that type of policy cannot be continued in trend.

6. ***Support of State Intervention:*** Keynes was not satisfied by Pigou's opinion that ,"The failure of temporary is responsible to full use of our productive power." Capitalism arrangement is that if it fells alone, then it is not able to use full use of production power. So it is necessary for the interference of state. State can directly invest to increase the level of economic activity, or supplemented the self-investment. We make laws for determination of wages of workers, relief to the workers through medium of social security measures and they affiliated the trade unions. So as the opinion of Dillard, "To protest, the rule of labour and labour union are understood good at the sight of economics, but it is bad at the political sight." So Keynes supported the states processing for complete use of the source of economy for full employment.

7***. Short-run Analysis:*** In the long duration Keynes believed in full employment. Keynes had no patience that he can wait for long time, because he believed that "After long time we all die." As the objective of Shumpeter, "His life's philosophy was fundamentally of short duration." His analysis was limited till short duration sources. Opposite to traditionalists he believed that nature, method of production and labour are certain during short time he leaves the long duration impact on demand. Assuming that consumption demand is certain, he forced on those things that investment demand

increases to remove the unemployment. But by this the balance is achieved, it is the short duration employment level not full employment level.

8. ***Importance of Speculative Demand:*** Classic economists believed that currency is demanded for the objective and transaction. They did not consider the speculative demand because for the speculative objective currency is related to remains. But Keynes is not satisfied by this opinion. He kept his attention on the importance of speculative demand. He tells that earned interest by property to keep the transaction objective, can be less on low interest rate. But on low interest rate the speculative demand will be more. So the rate of interest will not fall by a special lowest level and the speculative demand of interest will be fully flexible. It is the liquidity trap of Keynes, classical economists were failed to analyze it.In this connection, Keynes cleared that being on positive interest rate possibly to more from the investment of savings. Liquidity trap is stopped to fall down from a certain lowest rate of interest rate.

9. ***Money not Neutral:*** Classical economists believed that currency was not effective. So they did not involve the production, employment and interest rate in currency principle. According to him, the level of production and employment and balance rate of interest are decided by actual powers.

Keynes criticizes the classical opinion that currency principle is different from value principle. He joined the production principle and currency principle with value principle and brought interest principle in the currency sector in which he considered rate of interest as currency principle. So by this he showed established relation between the quantity of currency and price level. For example, when the quantity of currency increases then interest rate decreases, investment increases and income, production increase, demand increases, sources cost and wage increase, related prices increase and normal price level increases. So, by this Keynes joined the currency and actual field of economics.

So, the classical principle employment is not able to solve the present economic problems of capitalism world.

Summary:

- The classicists believed in the existence of full employment in the economy and a situation less than full employment was regarded as abnormal necessary to have a special theory of employment.
- Say's law of market states that 'supply creates its own demand'. If goods are produced then there will automatically be a market for them. This means that there cannot be a general 'overproduction' or 'glut' in an economy that is based on a market system of production and exchange.
- There are three basic features. First, the classical model is called full employment model. Second, the labour, product and capital markets are interrelated markets. Third, there is simultaneous equilibrium in all the markets.
- Demand for money means holding of money by the people for carrying out transactions. The people hold a proportion of nominal income as money. Nominal income equals the price level (P) multiplied by real income (Y). The nominal income thus equals PY.
- Given supply of money, the overall price level P is determined at that level at which people decide to hold the entire money supply. P is determined where money supply equals demand for money.
- In the full employment model, change in supply of money has no real effect on the economy. The money is neutral. The relationship between the real variables is completely independent of changes in the nominal variables. This independence is called classical dichotomy.
- In the classical model, all the markets are interlinked and a change in one market brings changes in all other markets.

Keywords:

Aggregate Demand: It is the total value of final goods and services that all sections of the economy taken together are planning to buy at a given level of income during a period of time.

Aggregate Supply: It is the value of final goods and services planned to be produced in an economy during a period.

Classical Dichotomy: It refers to an idea attributed to classical and pre-Keynesian economics that real and nominal variables can be analyzed separately.

Full Employment: An economy is said to be in full employment when its entire labour force is gainfully employed.

Loanable Funds Market: It is a hypothetical market that brings savers and borrowers together, also bringing together the money available in commercial banks and lending institutions available for firms and households to finance expenditures, either investments or consumption.

Nominal Wages: Wages stated in terms of money paid, not in terms of purchasing power.

Real Wages: Income of an individual, organization, or country, after taking into consideration the effects of inflation on purchasing power.

Self-Assessment:

1. The concept of "laissez-faire" was the contribution of

a) Classical economist
b) Neo Classical economist
c) Keynesian economist
d) Supply side economist

2." Supply creates its own demand" is the idea of

a) JB Say
b) Samuelson
c) JM Keynes
d) Milton Friedman

3. Hardness in the structure of wage and interference in the causation of market economic brings unemployment.

a) True
b) False

4. If the quantity of currency is doubled, then price level also gets doubled.

a) True
b) False

5. Classical economists consider the savings of interest as ..... .

a) reward
b) measurement
c) part
d) none of these.

6. This basic …….. is not change on getting the currency.

a) Principle
b) rule
c) exchange
d) none of these

7. Saving is considered as the increasing function and investment is considered as the —.

a) diminishing function
b) increasing function

c) cost

d) none of these.

8. Which of the following is not an assumption of classical theory?

a) Price flexibility

b) Unemployment

c) Say's law

d) Neutrality of money

9. Which of the following is not an obstacle to full employment in classical theory?

a) Excess of saving over investment

b) Liquidity trap

c) Price rigidity

d) Wage Flexibility

10. The classical economists believed that the demand for labour is a function of:

a) Total money wages

b) Money wage rate

c) Total real wages

d) Real wage rate

11. The aggregate production function implied under classical theory is :

a) Long run

b) Short run

c) No time element

d) None of the above

12. As a result of an increase in capital, ceteris paribus, ------ the marginal productivity of labour:

a) Remains constant

b) Increase

c) decreases

d) none of these

13. . In the classical theory, output and employment are determined by

a) Production function

b) Demand for labor and supply of labour

c) Effective demand

d) Both A & B

14. This independence of real variables from changes in money supply and nominal variables is called

a) Money illusion

b) Neutrality of money

c) Classical dichotomy

d) Money multiplier

15. Under Classical theory, demand for labour is the same as

a) MP curve of labor

b) MRP curve of labor

c) MC curve of labor

d) . Write MPP curve of labour

Answers: Self -Assessment

1.	A	2.	A	3.	A	4.	A	5.	A
6.	B	7.	A	8.	B	9.	D	10.	D
11.	A	12.	B	13.	D	14.	C	15.	A

Review Questions

1. What is the classical principle of employment? Explain.

2 the summary of full employment mode

3. "The supply creates its own demand." How did classical economists justify this argument? How did Keynes challenge its validity?

4. Explain briefly classical theory of income and employment. How does this theory show that a free market economy automatically adjusts to full-employment level?

5. Show how classical theory of income and employment explains self-correction by the economy when there is depression in the economy causing a lot of unemployment.

6. Explain how the labour, product and capital markets are simultaneously in equilibrium in the classical model, With Diagram?

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Unit 05: Theories of Income, Output and Employment

CONTENTS

Objectives

Introduction

After learning about the Classical Theory in previous unit, we now move to the Keynesian version of the theory. The classical economists failed to explain the persistent high levels of unemployment and the low levels of business productivity in those times so Keynesian Model gained prominence.

No doubt that the Keynesian economics is built on the classical economics but it still differs drastically from the latter in terms of assumptions, presentation of tools of analysis and policy measures. Keynes possessed great intuitive power of economic analysis. Undoubtedly, the Keynesian analysis has significantly influenced policy matters in the capitalist economies of the world.

In this background, Keynes wrote his book, General Theory of Employment. Interest and Money, in which he challenged the validity of the classical theory of employment. Not only did he criticise the classical theory of full employment and proved it wrong but also presented a new theory of income and employment which is generally believed to be correct and valid by modern economists. Keynes brought about such a fundamental and important change in our economic thought at that time that the Keynesian theory is generally known as new economics. By being impressed by the fundamental and revolutionary nature of change in our economic theory by Keynes, many economists called his General Theory of Employment, Interest and Money as the Keynesian Revolution. We explain below the outline of Keynes's theory of employment.

5.1 Keynesian Theory of Employment

Keynesian gave a special name to a famous principle, which is applied on limited area of his normal principle. According to him in the normal situation economic system is based on self-property, there can happen anything from detailed unemployment to full employment. He strike established thoughts from his prosperous viewpoint and developed economics to bring revolution in economic idea and policy.

John Maynard Keynes was the first economist; who gave systematic principle of employment. When in 1930 A.D., the famous principle failed he criticized it. In spite of very low interest rate, there was no increment in investment at that time. At that time, Keynes presented a perception of an effective demand for understanding the principle of income and employment of rendering effective demand.

In effective demand two things are similar (i) demand of consumption things and (ii) demand of capitalism things and investment demand. If the increment of consumption demand is more than the increment of total income, then its difference shows the unemployment in economy. For increment in income and employment, the difference in income and consumption is removed by investment. So, the level of employment is dependent on investment. So, the effective demand is increased by investment for increase in the employment.

This perception of effective demand brought revolution in economic principle. The experience of this principle has been proved. This principle describes that facts and causes, which describe the level of employment and income.

5.2 Effective Demand

The principle of effective demand has a strategic importance with the employment principle of Keynes. It is that point, where public demand curve and public supply curve intersect each other. In other words, effective demand is that demand level in economy which is fully supported by related supply. So, entrepreneurs neither increase nor decrease supply. Effective demand decides the level of income and employment. The decrement in effective demand arises unemployment. In effective demand two things are similar

(i) demand of consumption things

(ii) demand of capitalism things and investment demand. If the increment of consumption demand is more than the increment of total income, then its difference shows the unemployment in economies.

For increment in income and employment the difference in income and consumption is removed by investment. So, the level of employment is dependent on level of investment. So, the effective demand is increased by investment for increasing the employment.

There are two important deciders of effective demand:

1. Aggregate Demand, and

2. Aggregate Supply.

1. Aggregate Demand: It is aggregate demand function which plays a more important role in the determination of employment. Aggregate demand function (curve) shows for each possible level of employment the total sum of money (proceeds) which all the firms or entrepreneurs in the economy actually expect to receive from the sale of output produced by those workers employed in the economy. The amount of expenditure actually expected by when a given number of workers are employed to produce goods and services is called aggregate demand price. Like the aggregate supply price, aggregate demand price also varies at different levels of employment. This is because at different levels of employment different income levels would be generated and at different income levels, expenditure, especially consumption expenditure, would be different. Aggregate demand has the following four components : (1) Consumption demand, (2) Investment demand, (3) Government expenditure, and (4) Net Exports (that is, exports-imports).

Consumption Demand:

The relation between income and consumption spending is called consumption function, assuming all other factors influencing consumption are unchanged. It is expressed as:

$C = a + bY$

Where C = Consumption spending

a = Consumption spending at zero income

b = The proportion of the increased income spent on consumption

Y = Income

In the function 'a' is constant. 'b' equals change in consumption (ΔC) divided by the change in income (ΔY). The value of 'b' is also called Marginal Propensity to Consume (MPC).

$$b = \Delta C / \Delta Y = MPC$$

Graphically, if we show aggregate income (Y) on the x-axis and the aggregate consumption (C)

on the y-axis, the straight line starting from c on the y-axis is the consumption function line.

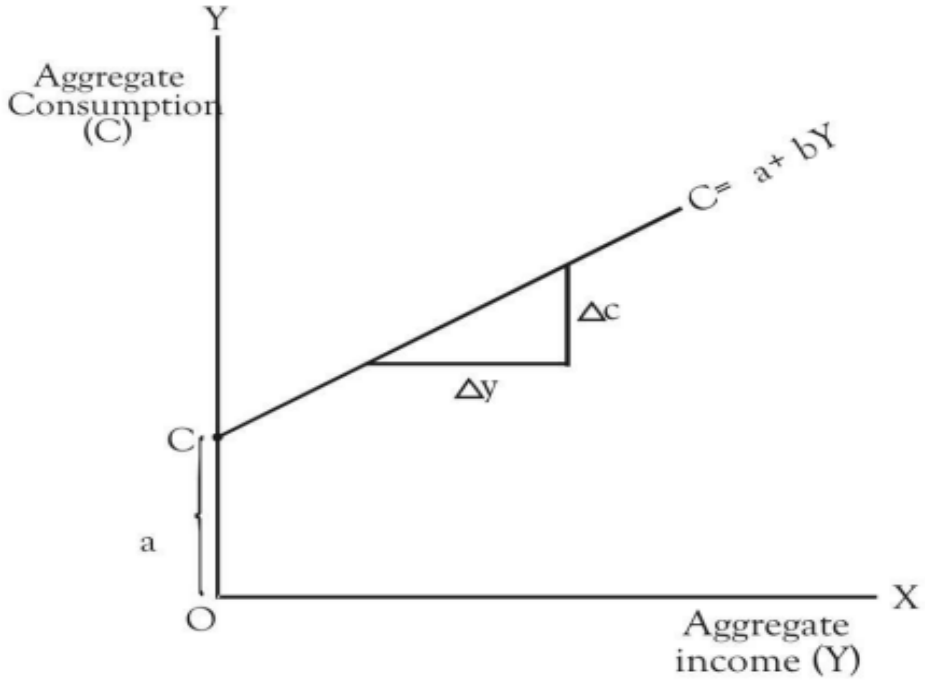
Here,

$$a = OC$$

$$b = \text{slope} = MPC = \Delta C / \Delta Y$$

It is upward sloping because as income rises C rises. It is a straight line because the slope is constant. The slope is constant because MPC is assumed to be constant.

Fig. 1 Consumption Function

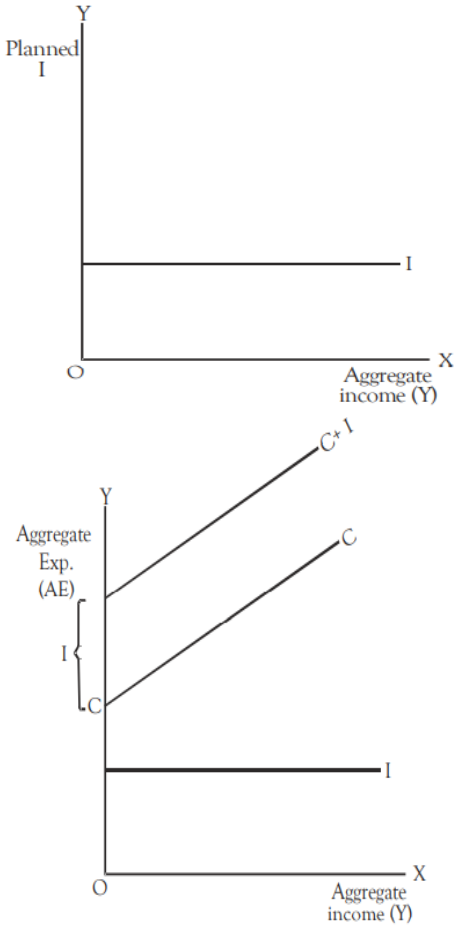


Planned Investment Spending (I)

Investment refers to the purchases of new capital goods like machines, buildings, equipment's, inventories of inputs and finished products. The theory of income determination assumed planned-investments to be fixed and not changing with change in income. This makes the investment curve parallel to the x-axis.

By combining Figure 2 with the Figure 1, we can get the 'aggregate spending' (C+I) curve.

Fig. 2 Planned Investment and Aggregate Spending



C+I curve is the Aggregate Expenditure (AE) curve. It is the vertical sum of I and C curves. The C+I curve is parallel to the C curve because investment spending is imagined to be constant and does not change with the change in aggregate income (Y).

Saving Function:

The relationship between income (Y) and saving (S) is referred to as the saving function.

Since Y = C + S and S = Y - C, the saving function can be derived in the following manner:

Given S = Y - C and C = a + bY

Therefore, S = Y - (a + bY)

= Y - a - bY

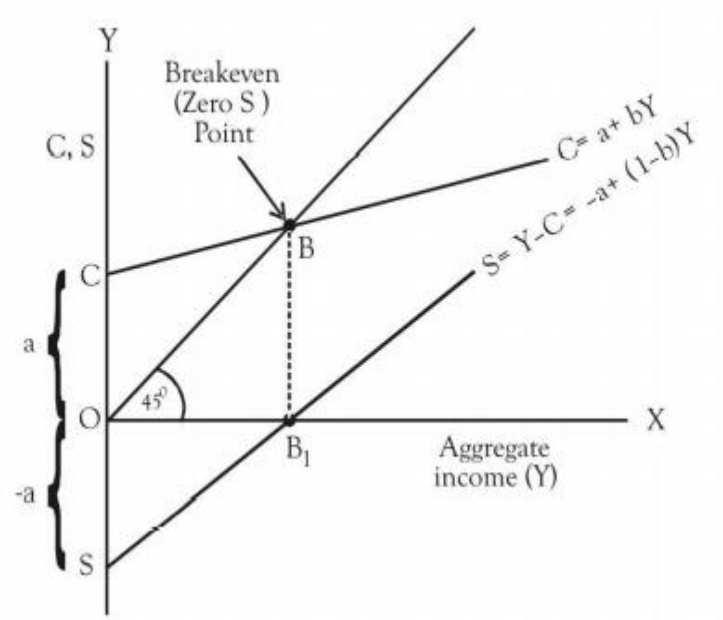
= -a + (1 - b) Y

where - a = saving at zero income

(1 - b) = the proportion of increase in income saved.

1– b= $\Delta S / \Delta Y$= MPS

Fig. 5: Saving curve



The saving curve (Figure.4) can be derived from the consumption curve with the help of 45° line from the origin. Given Y on the x-axis and C on the y-axis, all the points on the 45 ° line represent C = Y or S = O. The C curve intersects the 45° line at B which means that at B, Y equals C and S is zero. To derive a straight-line curve, we need only two points. One point is B1 on the x-axis derived from point B on the C curve. The other point, is S on the extended y-axis. At this point OS must be equal to OC. Joining S and B1, we get the S curve.

Here: -a = OS,

$$1\text{-}b = \text{slope} = MPS = \Delta S / \Delta Y$$

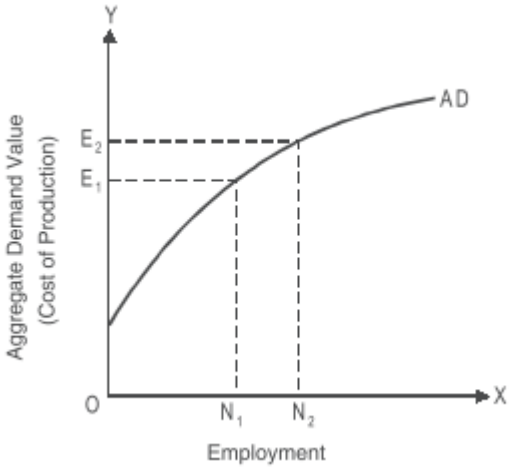
Note that the sum of MPC and MPS must be equal to one because that part of increased income which is not spent on consumption is saved.

Aggregate demand or expenditure consumption increases by the increment in investment expenditure or consumption. And it directly contacted with employment level in country.

In the Fig. 5, X-axis shows the volume of employment and Y-axis shows the total expenditure. Aggregate expenditure can be treated as the total achievements of firms too. Because all expenditures belong to firms, which supply the things and services.

In this way, Aggregate demand can be described as the received currency in exchange of those things and services of firms, which are produced in fixed number by labor. When firms want to earn more by increasing expenditure on services or society, they provide employment to more labor. Figure 6 shows the aggregate demand of produced things on different levels of employment and received by services. The expenditure on total production increases with the increment in the level of employment and reduces with the decrement of level of employment. In Fig. 6 the level of employment is increased with ON_1 and reached to ON_2, when anticipated expenditure (AD) on production is increased from OE_1 and reached to OE_2. Its function relation can be given as AD = f (N).

Fig.6. Aggregate Demand Function



Total demand function curve increases with decrement rate, because person spends less part of his income, which is increased in production and employment. So the shield is short of aggregate demand.

Aggregate Supply:

Aggregate Supply is the other important decider of equilibrium to income and employment level. It tells the addition of total things and services produced in an economy. If it is assumed that all things and services are available for consumption and investment, then total supply will be equal to national product and national income. Its national product, four sources (Land, Laborer, Capital and entrepreneurship) of production will be equal to the total income.

Aggregate supply or value is that low anticipated value, which is received by firms for production on a certain scale and for keeping the laborer's engaged.

In the words of Stonier and Hag, "Aggregate supply is that total volume of value currency on the given employment level which should be got by the sell of that product to all entrepreneurs, which was produced by given people, it is profitable to give employment to those." Aggregate supply increases within the value employment and decreases with decrement. It is shown in equation.

$$AS = f(N)$$

AS = Aggregate supply

N = Number of employed labors

In Fig. 7, X-axis shows volume of employment and Y-axis shows the aggregate supply. On the level of employment ON_1, the total income is OE_1 and total OE_2 is the total expenditure on the level on employment ON_2. Aggregate curve is also shown going up as Aggregate supply curve. As increase in the level of employment, total production and total cost are also increased. So, firm keeps expectance of 'low sell receiving'. When frontier cost is reduced, then production in increment quantity is benefitted. The shield of aggregate supply curve is increased with the increment in the level of employment. It happens because low skill sources get employment as relative on the increment in employment. According to it the optimum ratio is disturbed between different sources of production. Output is always according to the descending resources or return of scale. In this way by increasing the employment, the production is increased and therefore, total expense will always increase.

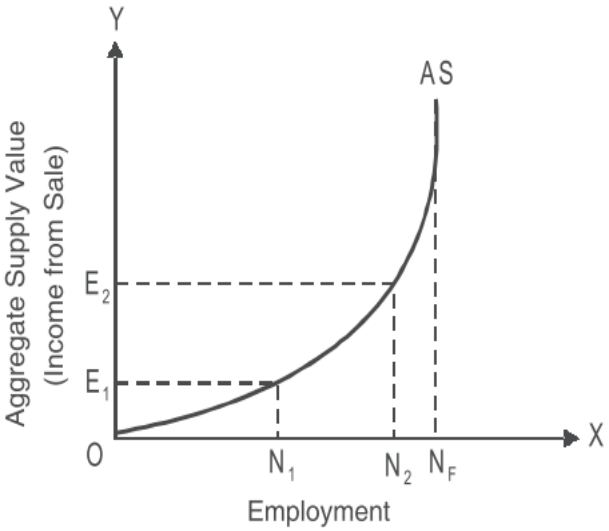


Fig.8: Aggregate Supply Function

The shield of Aggregate supply value curve is increasing as whenever every source is not getting employment. Any increment in receiving sell and cost on full employment point cannot increase the employment. Total Supply curve becomes vertical on employment level ON_1. Aggregate supply curve on that point becomes fully flexible on more national level. There will be no change in employment and production level.

Determination of the Equilibrium Level of Employment by Effective Demand

The level of employment production and income is decided by the effective demand, which itself is decided by the aggregate demand and aggregate supply. The firm increases the employment at such level, whenever the total anticipated receiving is more than from total cost. In other words, whenever the aggregate demand curve is up to aggregate supply curve (as shown in the employment level ON1 in Fig. 8, firms increase the employment level for receiving more profit. If aggregate demand curve is below in the aggregate supply curve (as shown in the employment level ON2 in Fig. 6.3), then firm will decrease the employment level because of the loss by high cost. So, equilibrium will decide at that point where both curves will intersect each other.

In Fig. 8, aggregate demand and aggregate supply curve are intersecting each other at E. This point (ON) is called the equilibrium point of effective demand and employment. This point represents expenses of produced things and services on equilibrium of employment. Briefly,

Effective Demand = National product = Volume of employment = National income = National expenditure = consumption expenses = investment expenses.

Firms have not the increment and decrement of nature at equilibrium point, because its profits are more at that point. The competition among labors takes employment level on equilibrium.

When aggregate demand curve increases on upside, then employment level increases. In snatch the possibility of change is not existent in aggregate supply curve, because that production depends on techniques, availability of raw materials and machinery etc. By increasing the productivity of labor in long period, the aggregate supply curve can be done at below side. But it is not possible on unemployment economy. Now it is important to say that Keynes considers an important decider of effective demand and employment level to aggregate demand.

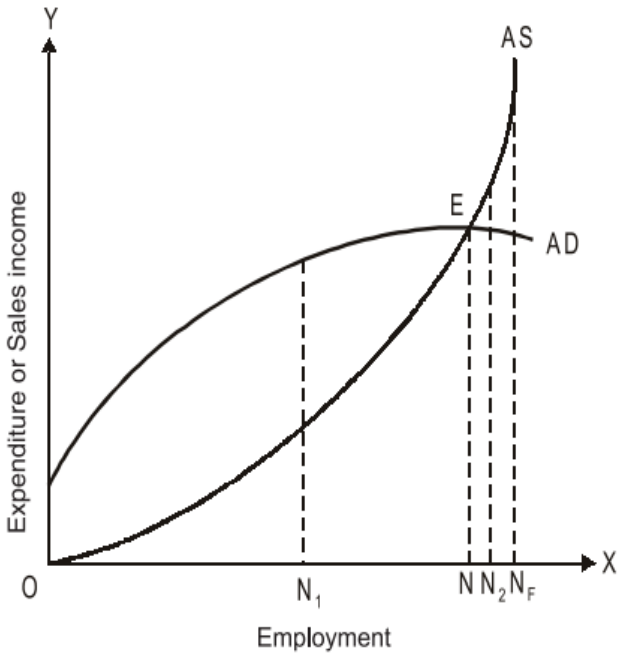


Fig. 8 Effective Demand

In Fig. 8, according to the increment in aggregate demand, effective demand is shift at right side. Therefore, equilibrium point becomes E1 from E which is according to the change in total demand. Because of the change in total demand, there are the situations of unemployment in economy at point 'E', where NNF laborers are unemployed. Whereas at point E_1 economy gets the full employment equilibrium. Here all persons who want employment get employment. In this way, situation of under-employment can be finished by changing the aggregate demand by increasing the investment expenses or consumption in an economy.

It is clear from above description that effective demand also can or get the point of full employment cannot. In other words, effective demand is always not related to full employment level.

The viewpoint of Keynes was that the situation of underemployment is a normal situation in a free entrepreneurship economy and full employment is a situation of exception. A country can get the situation of full employment only in the situation of more prosperity. The full employment is only

possible in an economy, when investment demand or investment expenses can find the total supply and difference at that level. The difference between income and consumption is due to inadequacy of bridging by investment that is responsible for underemployment in economy.

In Fig. 9, an economy will get the full employment situation to increase its appropriation from MM_1. Giving discount as tax and by decrement in institution cost to investor this investment can be inspired. With this in the work of social welfare should also invested by government. Full employment is important at one limit, because after that production and employment are unchanged to increase the effective demand. If aggregate demand is increased after the point of full employment, then it will raise the situation of currency inflation, because employment or production is not increased after full employment.

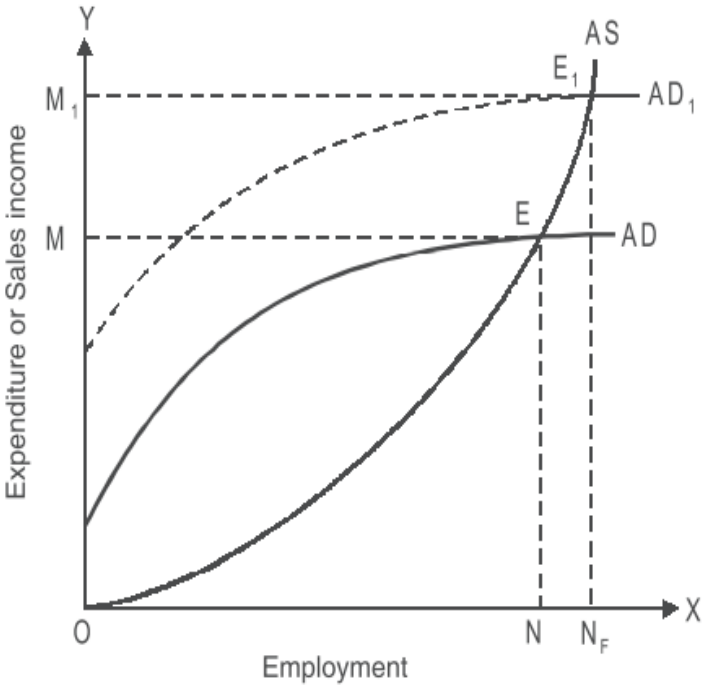
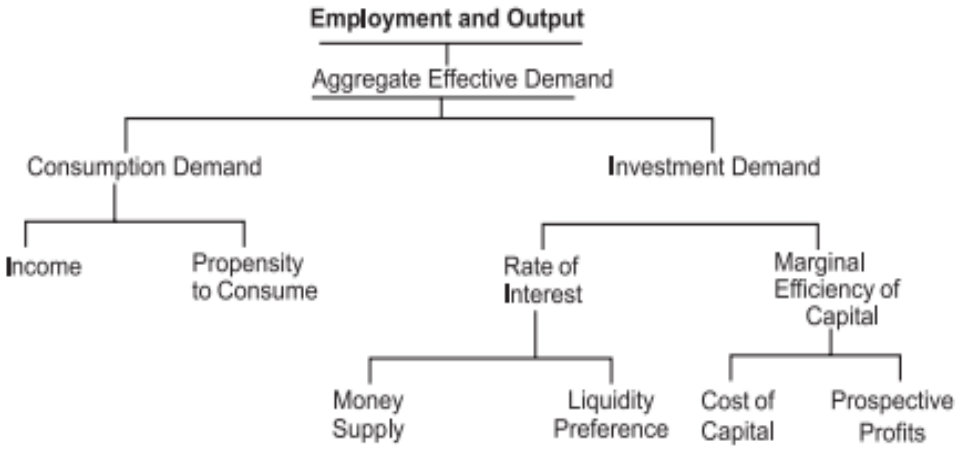


Fig. 9: Shifting in Effective Demand

5.3 Determinants of employment and income (output) in Keynesian



The equilibrium level of output, income and expenditure is determined at the point where aggregate demand (AD) is equal to aggregate supply (AS).

At equilibrium, Aggregate Demand = Aggregate Supply……..(i)

Keynes assumes that level of aggregate supply is given in short period.

Let us assume simple two sector macro-economic model in which all savings are made by household, and there is no government spending and taxation. Thus, such that aggregate demand is composed of two elements such as:

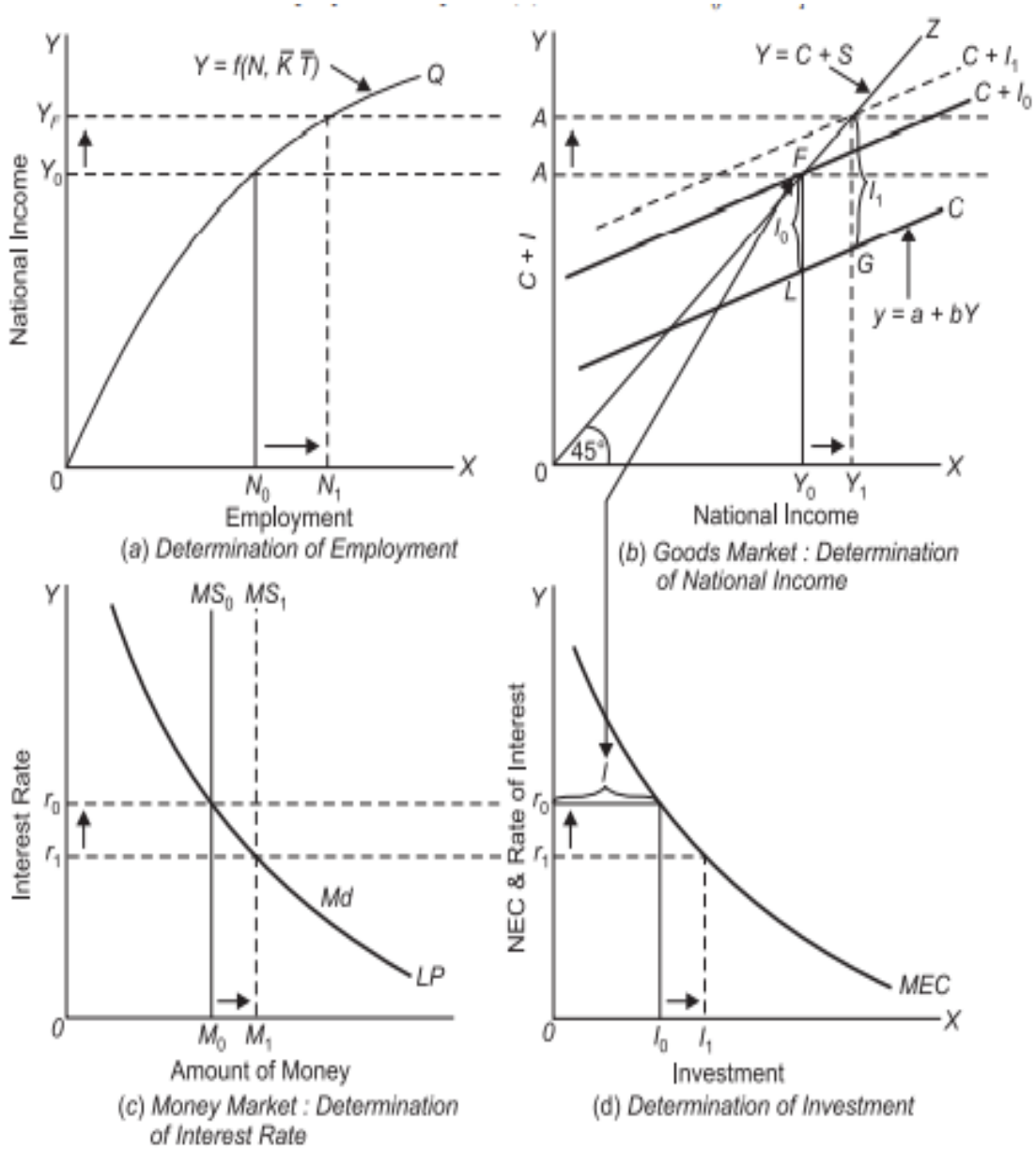
consumption expenditure of households (C) and the investment decision of the firms (I).

i.e. Aggregate Demand (AD)= Consumption + Investment …….. (ii)

Further, since for every possible level of output, an equivalent amount of money income is generated. Further, income is either spent or saved.

Thus, Aggregate Output = Aggregate Supply = Aggregate Income = Consumption + Saving …….. (iii)

Fig. 10. Determination of Income, Output and Employment



Using equations (ii) and (iii) in equation (i),

we get Consumption + Investment = Consumption + Saving Or, Saving=Investment ---------- (iv)

The interaction between aggregate demand and aggregate supply functions determines the level of effective demand. In figure 10, point F is the point of effective demand. Equilibrium level of income

is Oyo. At this level, total income is equal to total expenditure, that is, Y=C+I. Here, equilibrium level of income Oyo, as represented by the condition Y=C+I do not necessarily indicate a full employment level of national income and output. Thus, equilibrium is possible at a less than full employment level. According to Keynes, in a capitalist economy, investment is generally inadequate to fill the gap between income and consumption. And as aggregate supply function is given in the short period, Keynesian theory of income determination may be more properly called the theory of aggregate demand.

5.4 Determination of equilibrium level of national income: Algebraic analysis

A study of how the level of national income is determined will become clearer by using simple mathematics. As has been explained above, the level of national income is in equilibrium at which aggregate demand equals aggregate supply of output. In a simple model of income determination in which we do not consider the impact of Government expenditure and taxation and also exports and imports, the national income is the sum of consumption demand (C) and investment demand (I), that is,

$$Y = C + I$$

where Y stands for the level of national income.

Problem 1. Suppose in an economy, autonomous investment (I) is 600 crores and the following consumption function is given:

$C = 200 + 0.8Y$

Given the above, find out the equilibrium level of income.

Solution. The equilibrium level of income is

$Y = C + I$

$C = 200 + 0.8Y$ …(i)

$I = 600$

Putting the values of C and I in the equilibrium equation (i) we have

$Y = 200 + 0.8Y + 600$

$(Y - 0.8Y) = 200 + 600$

$Y(1 - 0.8) = 800$

or $Y = 800 / 0.2 = 10$

Problem 2. Suppose the consumption function of an economy is C = 0.8 Y. Planned investment by entrepreneurs for a year is 500 crores. Find out what will be the equilibrium level of income.

Solution. $Y = C + I$

$C = 0.8Y$

I = ` 500 crore

Substituting the values of C and I in (i) we have

$Y = 0.8Y + 500$

$Y - 0.8Y = 500$

$Y(1 - 0.8) = 500$

$0.2y = 500$

$y = 10* 500/ 2 \times = 2500$ crore.

Problem 3. Suppose the consumption of an economy is given by

C = 20 + 0.6Y

The following investment function is given:

I = 10 + 02Y

What will be the equilibrium level of national income?

Solution. Note that in this problem, investment varies with income. However, this will not change our method of determining equilibrium level of income.

$Y = C + I$

C = 20 + 0.6Y …(i)

I = 10 + 0.2Y

Substituting the values of C and I in (i) we have

Y = 20 + 0.6Y + 10 + 0.2Y

Y = 30 + 0.8Y

Y – 0.8Y = 30

Y(1 – 0.8Y) = 30

0.2Y = 30

Y = 10* 30/2 × = 150

Thus, we find that the equilibrium level of income is equal to 150.

Problem 4. The following consumption function of an economy is given:

40 + 0.8Y where Y is national income

If the planned level of investment in a year equals ` 75 crores, what will be the equilibrium level of national income and consumption?

Solution. Equilibrium level of national income is determined where

Y = C + I

Now, C = 40 + 0.8 Y

I = 75

Y = 40 + 0.8Y + 75

Y – 0.8Y = 40 + 785 = 115

0.2Y = 115

Y = 10 115 575 2

+ =

C = Y – I = 575 – 75 = 500

Problem 5. For an economy the following consumption function is given:

C = 60 + 0.75 Y.

(a) If investment in a year is 35 crores, what will be the equilibrium level of income or output?

(b) If full-employment level of income (i.e., level of potential output) is 460 crores, what investment is required to be undertaken to ensure equilibrium at full employment?

Solution. (a) Y = C + I

Y = 60 + 0.75Y + 35

Y – 0.75Y = 60 + 35 = 95

Y (1 – 0.75) = 95

0.25Y = 95

Y = 100 *95/25 × =380

(b) To ensure full-employment equilibrium, investment should be equal to the saving gap at full-employment income. With the given full-employment income equal to 460,

SF = YF – CF = YF – (60 + 0.75YF)

= 460 – 60 – (0.75 × 460)

= 400 – 345 = 55

Thus, investment required for full-employment equilibrium is 55 crores.

Summary

- Keynes in his arguments dropped the microeconomic principles of the supply and demand as they did not apply at the national level.
- In national level, Keynes said, the consumption of the nation will also affect their income. He formulated his analysis for the closed economy with no government, but the theory could be extended.
- So, all income is either spent or saved. Y=C+S, whereas the income of the nation will be the if S=I, but this is just stating an identity.
- In practice the time lags are involved and C+S comes from the previous time period, whereas C+I form the income for the next period.
- The aggregate demand curve shows the total demand for goods and services in an economy. By defining the aggregate demand curve in terms of the price level and output or income, it is possible to analyze the effects of other variables, like the interest rate, on aggregate demand through the aggregate demand equation.
- The aggregate supply curve represents the total supply of goods and services in an economy.
- By defining the aggregate supply curve in terms of the price level and output or income, we can analyze the effects of other variables, such as the interest rate, on aggregate supply.
- Aggregate supply and aggregate demand show the effects of economic changes on the economy as a whole.

Keywords

Aggregate Demand: It is the total demand for final goods and services in the economy (Y) at a given time and price level.

Aggregate Supply: It is the total supply of goods and services produced by a national economy during a specific time period.

Consumption Function: A relationship between consumption demand and its various determinants.

Effective Demand: The demand in which the consumer is able and willing to purchase at conceivable price.

Investment: An asset or item that is purchased with the hope that it will generate income or appreciate in the future.

Marginal Propensity to Consume: An economic term for the amount that consumption changes in response to an incremental change in disposable income.

Paradox of Thrift: Economic concept that if everyone tries to save an increasingly larger portion of his or her income, they would become poorer instead of richer.

Self-Assessment

1.In Keynesian economics, the state of Deficit Demand is called as:

a) Full Employment Equilibrium
b) Under Full Employment Equilibrium
c) Both (a) and (b)
d) None of the above

2.Which one of the following is the determining factor of Equilibrium Income is the Keynesian Viewpoint?

a) Aggregate Demand
b) Aggregate Supply
c) Both (a) and (b)
d) None of the above

3.On which factor Keynesian Theory of Employment depends?

a) Effective Demand
b) Supply
c) Production Efficiency
d) None of the above

4.Who is the author of the book 'General Theory of Employment, Interest, and Money'?

a) A.C. Pigou
b) Malthus
c) J.M. Keynes
d) Marshall

5. According to Keynes, investment implies:

a) Financial Investment
b) Real Investment
c) Both (a) and (b)
d) None of the above

6.Keynesian analysis is

a) A short run analysis.
b) Long run analysis.
c) Both short and long run analysis.
d) Neither short nor long run analysis.

7.The marginal propensity to consume is equal to

a) Total spending/Total consumption
b) Total consumption/ Total income.
c) Change in consumption/ Change in income
d) Change in consumption/ Change in savings

8.Keynes theory is associated with:

a) Effective demand
b) Propensity to consume
c) Propensity to save
d) All of these

9.Deflationary Gap shows the measurement of:

a) Deficit Demand
b) Surplus Demand
c) Full Employment
d) None of these

10.In the Keynesian model of income determination, consumer expenditure includes spending by

a) consumers on personal computers.
b) businesses on personal computers.
c) governments on personal computers.
d) all of the above since computers are consumer durables.

11.Which of the following statements concerning Keynesian analysis are true?

a) Keynes's analysis started with the recognition that the total quantity demanded of an economy's output was the sum of four types of spending: consumer expenditure, planned investment spending, government spending, and net exports.
b) Keynes recognized that equilibrium would occur in the economy when total quantity of output supplied (aggregate output produced, Y) equals quantity of output demanded (Yad), that is, when Y = Yad.
c) Keynes's analysis involves explaining why aggregate output is at a certain level by understanding what factors affect each component of aggregate demand and how the sum of these components could add up to an output smaller than the economy is capable of producing, resulting in less than full employment.
d) All of the above are true.

12.Keynes considered subjective and objective factors:

a) Important determinants of consumption
b) Unimportant determinants of consumption
c) Determinants of investment
d) Determinants of business's willingness to pay

13.Changes in the subjective or objective factors

a) Never affect consumption function
b) Always cause downward shift in consumption function
c) Always cause upward shift in consumption function
d) They cause upward or downward shifts in consumption function

14.The value of the multiplier is equal to 1/MPC.

a) True
b) False

15.Assume that the consumption function is of the form, C= 50+.8Y. If income is Rs 1000/- then consumption is,-

a) Rs 50/-
b) Rs 1050/-
c) Rs 50/-
d) Rs 850/-.

Review Questions

1. Explain the concept of Planned Aggregate Expenditure and its components.
2. Describe the Consumption Function. Explain by using graph.
3. Describe the Saving Function? Explain by using graph.
4. Explain Y=C+I approach of determination of equilibrium level of national income.

5. Explain S=I approach of determination of equilibrium level of national income.
6. Discuss the features of aggregate demand (AD). Explain the derivation of AD curve.
7. Discuss the short run and long run aggregate supply curves.
8. Given the following information:
   Consumption: C = 100 + .8Yd
   Taxes: T = 10
   Investment: I = 50
   Government expenditure: G = 70
   (i) Find equilibrium level of income.
   (ii) If full employment level of income is 1,100 what should the increase be in government expenditure to achieve this income level?
9. Suppose we have the following information for an economy:
   Md = 5,000 - 10,000 r + 0.5 Y
   Ms = 7,000 Y = 6,000
   where Md is the demand for money, Ms is the supply of money, r is the interest rate and Y is the aggregate income.
   Calculate the equilibrium rate of interest for this economy.
10. You are given the following information about an economy:
    Consumption function, C = 1000 + 0.5 (Y – T)
    Investment, I = 2,000 crores.
    Government expenditure = 1,000 crores
    Taxes = 1,000 crores
    (i) Find the equilibrium level of GDP without taxes.
    (ii) Find the equilibrium level of GDP with taxes.

Answers Self-Assessment

1.	B	2.	C	3.	A	4.	C	5.	B
6.	A	7.	C	8.	A	9.	A	10.	D
11.	D	12.	B	13.	D	14.	B	15.	D

Further Readings

Book

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Online Links

- http://www.peoi.org/Courses/Coursestu/mac/fram8.html
- http://www.futurecasts.com/Keynes,%20The%20General%20Theory%20(I).htm
- http://www.interzone.com/~cheung/SUM.dir/econthyk1.html

Unit 06: Consumption Function

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand Consumption function and its significance
- understand Keynes's Psychological Law of Consumption

Introduction

The world-famous modern economist Lord J. M. Keynes wrote a well-known book ―General theory of employment, interest and money‖ in 1936. Keynes theory of income and employment states that the volume of employment in the economy depends upon the level of effective demand. The level of effective demand is determined by the aggregate demand function and aggregate supply function. In a two-sector mode, Keynes made use of two components of aggregate demand viz. consumption expenditure and investment expenditure. Consumption expenditure is an important constituent of aggregate demand in an economy. Consumption function refers to the functional or causal relationships between consumption on the one hand and the various factors determining it on the other. Your income is considered to be the chief determinant of your consumption, so the consumption function conventionally refers to the functional relationship between income and consumption.

The relationship between income and consumption has always been a subject of intense study ever since Ernst Engel's, A German statistician, formulated the "legal guidelines of intake expenditure in 1857". On the premise of statistical data touching on the intake costs of the pattern of German families, Angel formulated a hard and fast of three generalizations that are popularly acknowledged as "Engels legal guidelines of intake".

Engels legal guidelines can be said as follows: As the extent of profits increases, families tend to spend:

• a reducing percent of profits on food,

• an increasing share of profits on matters which include education, scientific facilities, recreation, etc.

• a steady share of profits on vital intake objects which include rent, fuel, garb and lighting.

These generalizations widely hold from the premise of the regulation of intake or propensity to devour in the end formulated through J M Keynes. Keynes changed into the primary to strain the significance of the connection among profits and intake and to make it one in all the imperative components of Macro Economics.

6.1 The Concept of Consumption Function

Because the demand for a decent depends upon its price, equally consumption of a community depends on the amount of income. In alternative words, consumption could be a perform of income. The consumption function relates the number of consumptions to the amount of financial gain. once the income of a community rises, consumption conjointly rises. what proportion consumption rises in response to a given increase in financial gain depends upon the marginal propensity to consume. It ought to be borne in mind that the consumption perform is that the whole schedule which describes the amounts of consumption at

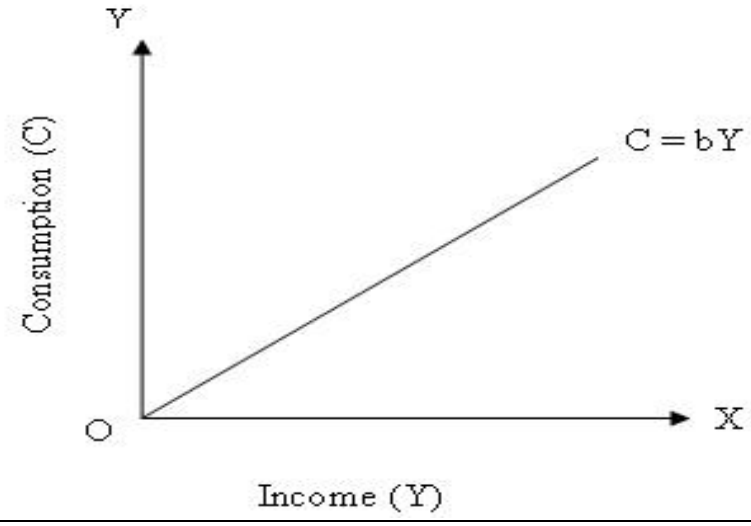
Symbolically C = f (Y)

Where, C: Consumption

f: Functional relationship

Y: Income

In the functional relation, consumption is dependent variable and income is independent variable. Hence consumption is dependent on income. Apart from income there are many other subjective and objective factors which can influence consumption. But income is an important factor. Thus, the consumption function is based on Ceteris Paribus assumption. The functional relationship between income and consumption can take different forms.



C = bY

Where, C: Consumption

B: Marginal propensity to consume

Y: Income

The consumption function expressed above shows that consumption is a constant proportion of income. This consumption function is shown graphically.

In the fig. 1.1, income is measured on X-axis and consumption is measured on Y-axis. The 45degree line (i.e C = Y) shows that consumption equals income. The curve C = bY ……. is the curve of the consumption function. The curve of the consumption function C = bY shows that with an income of zero, consumption is zero. In practice, however, this is the case. However, with zero income, consumption is positive (since its function will eventually be expressed in the following way.

$C = C_0 + bY$

Where, C: Consumption

C_0: autonomous consumption

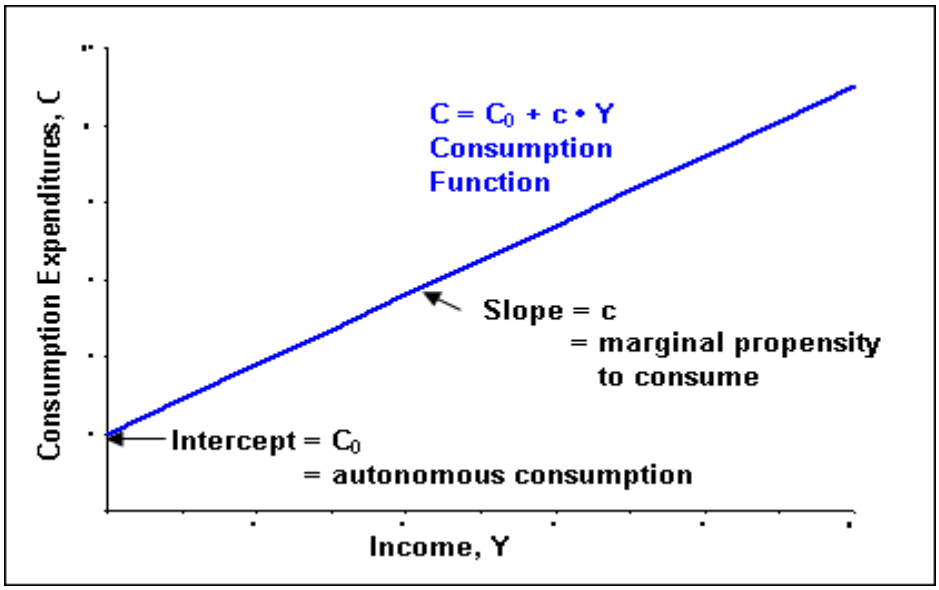
b: Marginal propensity to consume

Y: Income

In fact, the consumption function is a program of different amounts of consumption expenditure corresponding to different income levels. The schedule of consumption function is illustrated in the following table:

Table 1.1 Income (Y) = Consumption (C) + Savings (S)		
00	20	-20
70	80	-10
140	140	00
210	200	10
280	260	20
350	320	30
420	380	40

Table: 1.1 shows that consumption one is increasing function of income. When rent is zero (00), people are spending their past savings or borrowed income on consumption because they have to eat to live. However, when income increases the economy of 70 million rupees, it is not enough to meet consumption expenditure rs.80Crors (negative savings). If the earnings and consumption costs are the same RS.140 core, this is a fundamental level of consumption. where savings are zero. After demonstrating that these revenues are RS.70 Crores and consumption of Rs 60 crore is a saving of Rs 10 crore. This implies a stable or constant consumption function in the short term, which Keynes assumed. The above program is explained schematically in Figure 2. In the figure, income is measured in X-axis and consumption in Y-axis 45 Line iY = C Line I of the unit line, in which consumption and at all levels. The curve C = Co + bY is a linear consumption function curve based on the assumption that consumption changes by the same amount for a short time. The curve C = Co + bY increases from left to right, indicating that the consumption is a. At point B, the curve of the consumption function intersects the unit line in which consumption is OC and income is OY. In the figure, point B is the equilibrium point. where consumption is the same(C = Y). Before the breakeven point, the consumption is greater than (C> Y). Above the breakeven point the saving becomes positive and below the breakeven point the saving becomes negative. Consumption function form as explained in Figure 3.1, but has the non-linear consumption function form (linear curve)



6.2 Factors affecting the Consumption function:

1. Subjective Factors:

(1) Motive of Precaution: Generally, people save to meet unexpected contingencies such as accidents, illness etc.

(2) Motive of Foresight: Individuals save more to provide for anticipated requirement in future such as old age, education of children, etc,

(3) Motive of Calculation: In order to earn income people invest in shares, debentures. This reduces their present consumption.

(4) Motive of Improvement: To enjoy a improved standard of living in future, people save more.

(5) Motive of Independence: People want to have financial independence and freedom, so they save more now and consume less.

(6) Motive of Enterprise: To set up business or to expand the business in future people save more and spend less.

(7) Motive of Pride: Individuals take pride in leaving money and wealth for their children. So they will accumulate money by savings.

(8) Motive of Avarice: If people are miserly by temperature they will save more and consume less.

2. Objective Factors

They are external to individual behavior. Important objective factors, which cause changes in the nature, shape and position of consumption function are as follows:

(1) Change in Income: There is a direct and positive relation between income and consumption.

(2) Change in rate of interest: If rate of interest rise people will consume less and save more in order to gain from higher rate of interest.

(3) Windfall gains or losses: Unexpected gains like a lottery prize increase the income and hence their consumption increases. Similarly, sudden loss will reduce consumption.

(4) Fiscal Policy: The Fiscal Policy of the government relating to Income tax, capital gain tax, etc. have significant effect on consumption function.

(5) Demographic Factors: There is variation in consumption expenditure due to demographic factors, which include factors like the size of the family, occupation, place of residence, etc. Large families spend more than small families, urban families spend more than rural families.

(6) Future Expectations: Future expectations about availability of goods, prices, income, etc. influence the consumption pattern. If future income is expected to increase people are likely to consume more and save less.

(7) Burden of Debt: If the burden of debt is more the propensity to consume would be less and vice versa.

(8) Social Security Benefits: Increase in government social security benefits like pensions, health, insurance etc. will increase consumption expenditure.

(9) Change in Disposable Income: Consumption expenditure depends on disposable income. If disposable income changes due to tax then consumption expenditure will change.

(10) Change in Depreciation Allowance: Increase in depreciation allowance would reduce income of shareholders and consumption.

6.3 Properties or Technical Attributes of Consumption Function

In this analysis Keynes has used two technical attributes or properties of consumption function.

(1) Average propensity to consume (APC),

(2) Marginal propensity to consume (MPC)

(3) Average propensity to Save (APS)

(4) Marginal Propensity to Save (MPS)

Consumption and Saving Schedules

Consumption and Saving Schedules (in Billions) and Propensities to Consume and Save

(1) Level of Output and Income GDP=DI	(2) Consumption (C)	(3) Saving (S), (1) – (2)	(4) Average Propensity to Consume (APC), (2)/(1)	(5) Average Propensity to Save (APS), (3)/(1)	(6) Marginal Propensity to Consume (MPC), Δ(2)/Δ(1)*	(7) Marginal Propensity to Save (MPS), Δ(3)/Δ(1)*
(1) $370	$375	$-5	1.01	-.01	.75	.25
(2) 390	390	0	1.00	.00	.75	.25
(3) 410	405	5	.99	.01	.75	.25
(4) 430	420	10	.98	.02	.75	.25
(5) 450	435	15	.97	.03	.75	.25
(6) 470	450	20	.96	.04	.75	.25
(7) 490	465	25	.95	.05	.75	.25
(8) 510	480	30	.94	.06	.75	.25
(9) 530	495	35	.93	.07	.75	.25
(10) 550	510	40	.93	.07	.75	.25

(1) ***The Average Propensity to consume:*** The average propensity to consume is defined as the ratio of consumption expenditure to total income of the consumer. It is calculated as a consumption expenditure as a percentage of total income of the consumer. Average propesity to consume (APC) is always expressed as the percentage or proportion of income consumed. Symbolically, it can be expressed as:

Average Propensity to Consume = (APC) = C/Y (1)

Where, C = Consumption Expenditure,

Y = Income of the consumer

In general, the APC declines as income of the consumer increases. This is because the proportion of income spent on consumption expenditure decreases with increase in income.We can also express the average propensity to consume with the help of a Figure.3

(2) ***The Marginal Propensity to Consume:*** Along with average propensity to consume, a discussion is made regarding marginal propensity to consume. The marginal propensity to consume is defined as the ratio of the change in consumption to the change in income. We can also express marginal propensity to consume as the change in the average propensity to consume as income changes. In other words, marginal propensity to consume is the rate of change in consumption spending.

MPC=Change in Consumption (C_1C_2)/Change in Income (Y_1Y_2)

Symbolically, Marginal propensity to consume is expressed as:

Marginal Propensity to Consume (MPC) = $\Delta C/\Delta Y$.....(2)

where, represent change in consumption and represents the change in income. Like average propensity to consume, marginal propensity to consume can be shown with the help Figure 3.

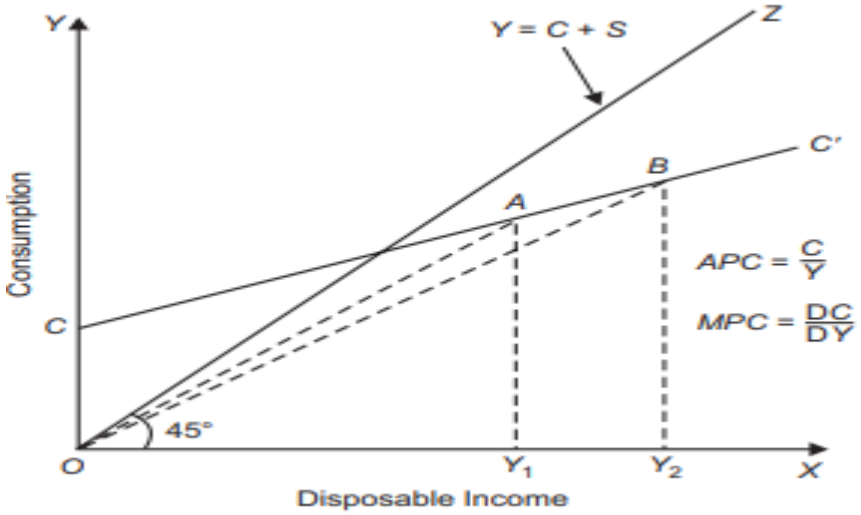


Fig. 3. Average and Marginal Propensity To Consume

(3) ***Average Propensity to Save (APS):*** An important relationship between income and saving is described by the concept of average propensity to save. (APS). Average propensity to save is the proportion of disposable income that is saved (i.e. not consumed).

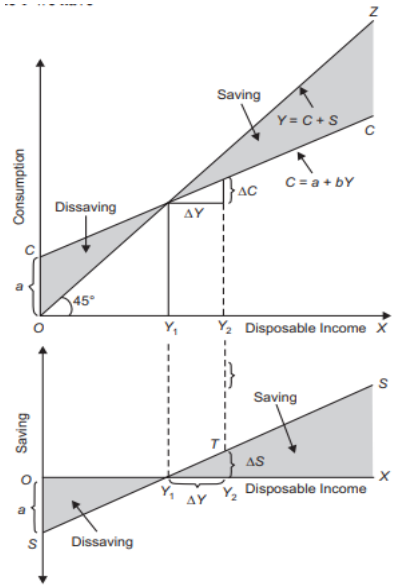
Mathematically, APS = Savings Disposable/ Income = (S /Y)

Like the average propensity to consume (APC) average propensity to save also generally varies as income increases. As seen above, average propensity to consume (APC) falls as income increases. This implies that average propensity to save will increase as income rises

(4) Marginal Propensity to Save (MPS). Whereas average propensity to save indicates the proportion of income that is saved, marginal propensity to save represents how much of the additional disposable income is devoted to saving. The marginal propensity to save is therefore change in saving induced by a change in the disposable income.

Thus, MPS = ΔS/ΔY

Keynes's Theory of Consumption



In the Fig.4, we have drawn the saving function curve SS in the panel at the bottom. The saving function curve SS shows the gap between consumption curve CC and the income curve OZ in the upper panel of Fig. 6.5. It will be seen that upto income level OY1, consumption exceeds income, that is, there is dissaving. Beyond income level OY1, there is positive saving. It is worth mentioning that as average propensity to consume (APC) falls with the increase in income in the upper panel, average propensity to save rises as income increases. Thus in Fig. 6.5 with the increase in income not only the absolute amount of saving increases, the average propensity to save also increases.

Fig 4. Saving Function derived from Consumption Function

Relationship between Average Propensity to Consume and Average Propensity to Save.

APS is a counterpart of APC, both together constitute total income. It can be derived as

follows:

$Y = C + S$

Divide both sides by Y, we get,

$Y/Y = C/Y + S/Y$

$1 = APC + APS$

$APC + APS = 1$

Or, $APC = 1 - APS$

As income increases, APC decreases then APS must increase as income increases because these two ratios add up to 1 at all levels of income.

Relationship between Marginal Propensity to Consume and Save

Similarly, one can derive the relationship between marginal propensity to consume and

save given,

$Y = C + S$

A change is income would bring a change in consumption and saving implying

$\Delta Y = \Delta C + \Delta S$

Similarly divide Y both sides, we derive:

$\Delta Y/ \Delta Y = \Delta C/ \Delta Y + \Delta S/ \Delta Y$

$1 = MPC + MPS$

MPC and MPS also add up to one. If MPC is positive but less than one, then it follows by subtraction because MPS = 1 – MPC, that is MPS must also be positive but less than 1. Furthermore, if the APC is always greater than the MPC, it follows that's APS is always less than MPS.

6.4 Keynes's Theory of Consumption

Keynes in his "General theory", published in 1936, laid the foundations of modern macroeconomics. The concept of consumption function plays an important role in Keynes's theory of income and employment. Keynes mentioned several subjective and objective factors which determine consumption of a society. However, according to Keynes, of all the factors it is the current level of income that determines the consumption of an individual and also of society. Since Keynes laid stress on the absolute size of current income as a determinant of consumption, his theory of consumption is also known as absolute income theory of consumption. While Keynes recognized that many subjective and objective factors including interest rate and wealth influenced the level consumption expenditure, he emphasized that it is the current level of income on which the consumption spending of an individual and the society mainly depends.

Keynes's Psychological Law of Consumption. Further, Keynes put forward a psychological law of consumption, according to which, as income increases consumption increases but not by as much as the increase in income. In other words, marginal propensity to consume is less than one but greater than zero. That is,

$1 > \Delta C/\Delta Y > 0$

Thus, implies that out of an increment in income a part is consumed and a part saved. To quote Keynes, "The amount of aggregate consumption depends mainly on the amount of aggregate income. The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori from our knowledge of human nature and from (the detailed facts of experience is that men (and women, too) are disposed, as a rule and on an average to increase their consumption as their income increases, but not by as much as the increase in their income."

It is given by

$C = a + cY_d$

Where a is a positive autonomous consumption that is affected by non-income component on consumption. So, it is not affected by the increment or decrement in income. It is constant. c is the frontier consumption nature (MPC) and yd is disposable income which is left with customers as expenses after paying tax.

The relation between consumption and income is dependent on Keynes' 'Psychological rule of consumption' which indicates that when income increases then consumption expense also increases but in low quantity. In other words, when there is increment in income, consumption expenses are not increased but not proportionally. The meaning of perception of this non-proportional consumption function is that short period average nature (APC) and frontier consumption nature (MPC) are not similar. But APC > MPC and MPC is positive but less than unity: 0 < MPC < 1. Lastly, consumption function of Keynes takes constant. value in both short period and long period. The principle of Keynes proved unsatisfied because it cannot describe statically short period rationally in consumption and income.

Thus, Keynes' psychological law of consumption is based on the following propositions:

i. When the total income of a community increases, the consumption expenditure of the community will also increase, but less proportionately.

ii. It follows from this that an increase in income is always bifurcated into spending and saving.

iii. An increase in income will, thus, lead to an increase in both consumption and savings. This means that with an increase in income in the community, we cannot normally expect a reduction in total consumption or a reduction in total savings. A rising income will often be accompanied by increased savings and a falling income by decreased savings. The rate of increase or decrease in savings will be greater in the initial stages of increase or decrease of income than in the later stages.

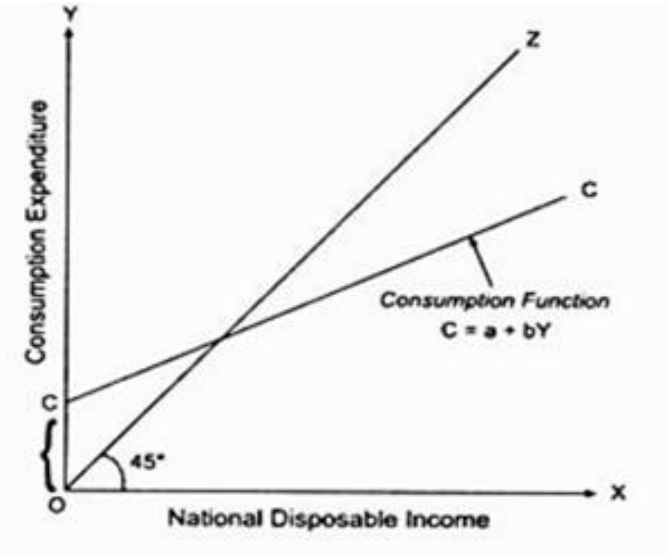
The gist of Keynes' law is that consumption mainly depends on income and that income recipients always do not tend to spend all of the increased income on consumption. This is the fundamental maxim upon which Keynes' concept of consumption function is based.

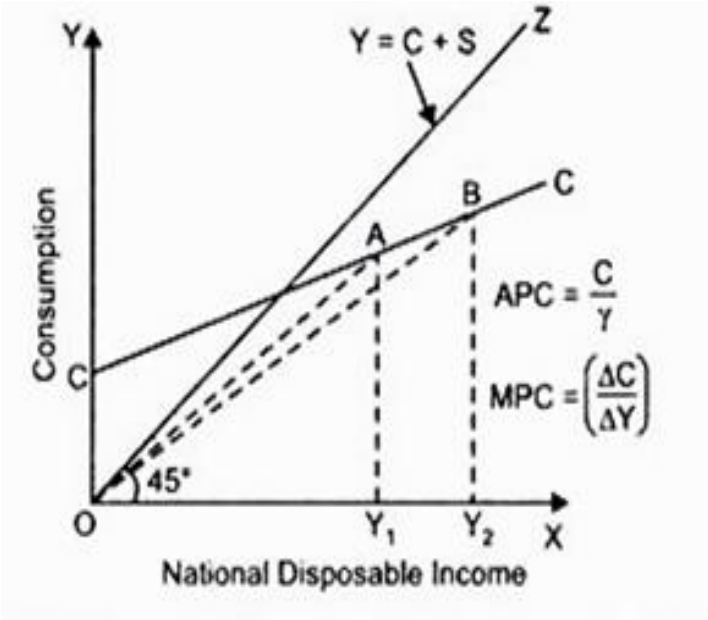
Assumptions of Keynes Psychological Law of Consumptions:

1.Constancy of Psychological and Institutional Factors: Propensity to consume will remain stable owing to the constancy of the existing psychological and institutional complexities influencing consumption expenditure.

2. Normal Economic Conditions: General economic conditions are normal and there are no abnormal and extraordinary circumstances such as war, revolution, inflation, etc.

3. Laissez-faire Policy: It is assumed that there exists a free capitalist economy, in which there is no government restriction on consumption when income increases.





we have shown a linear consumption function with an intercept term. In this form of linear consumption function, though marginal propensity to consume ($\Delta C/\Delta Y$) is constant, average propensity to consume is declining with the increase in income as indicated by the slopes of the lines OA and OB at levels of income Y1 and Y2 respectively. The straight line OB .drawn from the origin indicating average propensity to consume at higher income level Y2 has a relatively less slope than the straight line OA drawn from the origin to point A at lower income level Y1. The decline in average propensity to consume as the income increases implies that the proportion of income that is saved increases with the increase in national income of the country. This result also follows from the studies of family budgets of various families at different income levels. The fraction of income spent on consumption by the rich families is lower than that of the poor families. In other words, the rich families save a higher proportion of their incomes as compared to the poor families.

The assumption of diminishing average propensity to consume is a significant part of Keynesian theory of income and employment. This implies that as income increases, a progressively larger proportion of national income would be saved. Therefore, to achieve and maintain equilibrium at full-employment level of income, increasing proportion of national income is needed to be invested. If sufficient profitable opportunities for investment are not available, the economy would then run into trouble and in that case it would not be possible to maintain full-employment because aggregate demand will fall short of full-employment output. On the basis of this increasing proportion of saving with the increase in income and consequently the emergence of the problem of demand deficiency, some Keynesian economists such as Hanson based the theory of secular stagnation on the declining average propensity to consume.

6.5 Important Features of Keynes's Consumption Function

In macroeconomics, Keynes's consumption function plays a highly important role. Therefore, it is essential to state its important features. The following are the important features of Keynes's consumption function:

1. First, absolute level of current income is the important factor that determines consumption of the community. Increase in national income causes an increase in consumption. On the other hand, classical economists thought that it was rate of interest that primarily determined saving and consumption of the community. A rise in rate of interest induces the people to save more and thus to reduce their level of consumption. According to Keynes, though rate of interest is one of the factors that determine consumption of the community, he did not consider it a very important determinant of it. By considering level of current income as the most important factor determining consumption and saving, Keynes made a significant contribution to the macroeconomic theory.

2. The second important feature of Keynes' consumption function is that marginal propensity to consume is less than one but greater than zero ($0 < MPC < 1$). As has been explained above, the feature of Keynes's consumption functions that marginal propensity to consume is less than one is

known as Keynes's psychological law of consumption. According to this law, as income increases, consumption increases but not as much as the increase in income. We will explain in a later chapter that Keynes's theory of multiplier is based on the marginal propensity to consume being less than one but greater than zero.

3. In Keynes's consumption function, namely, C = a + by, as income increases, average propensity to consume (APC) falls. Keynes was of the view that rich people relatively save a higher proportion of their income so that at higher levels of income average propensity to consume (APC), that is, proportion of total consumption to national income falls as national income rises.

4. Another important feature of consumption function as put forward by Keynes is that it remains stable in the short run. Consumption function, according to Keynes, depends on various institutional factors such as distribution of income and wealth and psychological factors such as willingness to save. Since there cannot be much changes in these institutional and psychological factors, consumption function remains stable in the short run, that is, it does not shift upward or downward. Therefore, Keynes in his theory explains the determination of income and employment in the short run by considering that the consumption function is stable.

Summary:

1. The consumption function – the relationship between consumption and income – is largely a Keynesian contribution. Keynes postulated that consumption depends mainly on income.
2. The relation between consumption and income is dependent on Keynes 'Psychological rule of consumption'. It indicates that when income increases then consumption expenses also increases but in low quantity. In other words, being incremented in income, consumption expenses are not increased proportionally.
3. In regard to the relationship, he argued that consumption increases as income increases but by an amount less than the increase in income.
4. Marginal Propensity to Consume is a component of Keynesian theory that represents the proportion of an aggregate raise in pay that is spent on the consumption of goods and services, as opposed to being saved.
5. On the other hand, Marginal Propensity to Save is the proportion of a small change in disposable income that would be saved, instead of being spent on consumption.It is computed by dividing the change in savings by the change in disposable income that caused the change.

Keywords

Autonomous Consumption: The minimum level of consumption that would still exist even if a consumer had absolutely no income.

Average Propensity to Consume: Fraction or percentage of disposable (after tax) personal income spent for consumer goods.

Average Propensity to Save: The proportion of total disposable income (individual, household or national) which represents income used for savings as opposed to expenditure.

Consumption Function: A mathematical function that emphasizes the relationship between consumption and income (factors determining consumption).

Disposable Income: The amount of money that households have available for spending and saving after income taxes have been accounted for.

Induced Consumption: Consumption expenditure by households on goods and services which varies with income.

Marginal Propensity to Consume: Proportion of a small change in the disposable income that would be spent on consumption instead of being saved.

Marginal Propensity to Save: Proportion of a small change in disposable income that would be saved, instead of being spent on consumption.

Propensity to Consume: The proportion of total income or of an increase in income that consumers tend to spend on goods and services rather than to save.

Savings Function: The relationship between an individual's total savings and his or her income.

Self-Assessment:

Fill in the blanks:

1. Keynes renders the principle of consumption function in his book …… .

2. Being increment and decrement in income …… expenses are also increased and decreased.

3. The consumption function of Keynes gives the name of …… income hypothesis.

4. Short-duration consumption function is

(a) non-rational

(b) rational

(c) a study

(d) none of these

5. Long duration consumption function is

(a) rational

(b) non-rational

(c) proportionate.

(d) none of these.

6. When income increases during resilience period, then it increases with the increment in saving

(a) consumption

(b) non-enjoyment

(c) expenses

(d) none of these

7. This principle of Keynes proved unsatisfied because it can rationally describe the statistics in long period in consumption and income.

8. Kuznets studied the data in 1946 of income and consumption of USA in 1869–1938 time periods.

9. When income increases then consumption also increases.

10. Consumption function tries to re-define the free component.

11.In Keynes consumption theory the chief factor that determines consumption expenditure is

a. Personal income

b. Relative income

c. Permanent income

d. Disposable income

12.Under Keynes Psychological law of consumption the relationship between consumption and income is

a. Non-linear and proportional

b. Linear and non-proportional

c. Nonlinear and non-proportional

d. Both B &C

13. Assume a consumption function of the following form: C = 50 + .8Y. If income is equal to rs. 1,000, then consumption is

A. 50

B. 1,050

C. 1,000

D. 850-d

14. An increase in marginal propensity to consume will

(a) Lead to the consumption function becoming steeper.

(b) Shift the consumption function upwards.

c) Shift the consumption function downwards.

(d) Shift the savings function upwards.

15. The marginal propensity to consume is equal to

(a) Total spending/Total consumption

(b) Total consumption/ Total income.

(c) Change in consumption/ Change in income

(d) Change in consumption/ Change in savings

Answer for Self Assessment

1.	General theory	2.	Consumption	3.	Absolute	4.	A	5.	A
6.	A	7.	False	8.	True	9.	True	10.	True
11.	A	12.	D	13.	D	14.	A	15.	C

Review Questions

1. What is consumption function?

2. What are three forms of consumption function? How do APC and MPC behave in these forms of consumption function? Which form of the consumption function seems to be realistic? What do you understand by the consumption function principle of Keynes?

3. What is the meaning of absolute income hypothesis?

4. Critically evaluate the absolute income hypothesis.

5. Show the relationship between APC and MPC. With Diagram/Numerical?

6. Explain the objective and subjective factors which determine consumption expenditure in the economy.

Further Readings

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2. Dr. Atmanand, Managerial Economics, Excel Books, Delhi.

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Mandeep Bhardwaj, Lovely Professional University

Unit 07: Income-consumption relationship

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand circular flow of income
- discuss circular flow of income in two sector economy, three sector and four sectors

Introduction

While describing his principle of consumption function Dussenberry writes, "If we really want to understand the problem of consumer behavior, then we have to first give respect to sociological nature of consumption structure." By 'Sociological nature of consumption structure' he meant that the nature of human is not only to reach till the status of their rich neighbor but also to overtake them.

7.1 Relative Income Hypothesis

An American economist J.S. Duesenberry put forward the theory of consumer behavior which lays stress on relative income of an individual rather than his absolute income as a determinant of his consumption. Another important departure made by Duesenberry from Keynes's consumption theory is that, according to him, the consumption of a person does not depend on his current income but on a certain previously reached income level.

With its attempts to derive a theory of consumption on the basis of new empirical evidence in the 1940s was James Duesenberry's theory known as relative income hypothesis. This hypothesis comprises two parts: the first part does not assume that a household's consumption is a function of its absolute income. Instead, the household's position in the income distribution of all households is considered to determine the relative income of the household. Duesenberry maintains that if a household's relative income remains constant as its income increases, then it will continue to spend the same proportion of its additional income on consumption that it did prior to the increase. In other words, the household's APC remains constant.

Dussenberry says that (1) the consumption behavior of every person is not free but it depends on the behavior of every other person, and (2) consumption behavior is not permanent. In other words, the nature is that one must continuously strive to extend to high consumption level and to do rivalry with rich neighbor and friends based on the consumption structure. In this way, the preference of consumers is dependent on each other. It is known as Dussenberry Effect or Demonstration Effect. However, in any two communities, the differences of relative income of people decide the consumption expenses. The APC of any rich person will be relatively less because he will need some parts of his income to keep for his consumption structure. On the other side, the APC of poor person is relatively more because he tries to reach till consumption standard of his neighbour and friends. This clears the stability of long period APC, because overall less and more APC will be balanced. So,

if in any country, the absolute size of income increases, then the APC of whole economy will stable on high absolute level of income.

Caution The relative income hypothesis focuses on the imitative or emulative nature of consumption. Households tend to emulate the consumption standards of their rich neighbours although their own incomes do not, in fact, permit these standards. This is what Duesenberry calls the "demonstration effect". This means that, in effect, the consumption of a household in a locality is determined not so much by its own income as by the income of its richest neighbours.

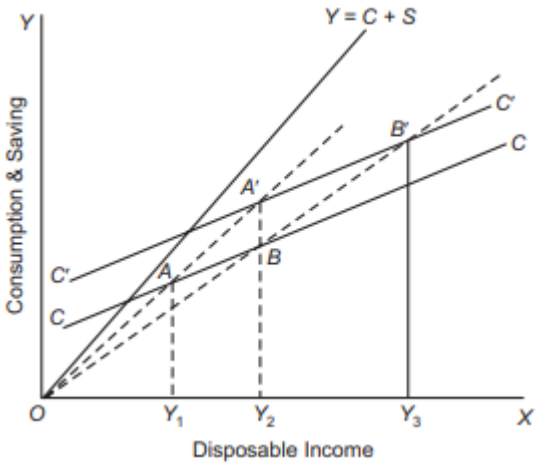
The second part of the relative income hypothesis is used to explain the non-proportionality over the course of a business cycle. Duesenberry holds that it is much easier for households to adjust to rising incomes than to falling incomes. As the household's absolute income rises, its standard of living also rises and this higher standard soon becomes the "expected" standard of living. Thus, as a household's income begins to decline in a recession, its attempt to maintain this standard of living results in a less rapid decline in consumption than income.

Because consumption does not decline in proportion to the decline in national income, the aggregate consumption function observed over a period of falling income will have a smaller MPC than the MPC of a consumption function that has a continuously rising income

Caution This notion was corroborated by the empirical data according to which the MPC in the US during the Great Depression of 1929-33 was approximately 0.77 while the MPC of the long run aggregate consumption function derived from Kurnet's data was about 0.89. The relative income hypothesis states that this difference between the long run MPC and the short run MPC results from the fact that the peak disposable income of 1929 was not surpassed until 1939.

As mentioned above, empirical studies based on time-series data made by Kuznets reveal that over a long period the average propensity to consume remains almost constant. Now, Duesenberry's relative income hypothesis suggests that in the long run the community would continue to consume the same proportion of income as its income increases. According to Duesenberry, saving as a proportion of income of the individuals with relatively low incomes would not rise much with the increase in their incomes. That is, their savings would not rise to the same proportion of income as was being done by the individuals who had the same higher income prior to the present increase in income. This is because with the increase in incomes of all individuals by the same proportion, the relative incomes of the individuals would not change and therefore they would consume the same proportion of their income. This applies to all individuals and households. It therefore follows that assuming that relative distribution of income remains the same with the growth of income of a society, its average propensity to consume (APC) would remain constant. Thus, this conclusion of the relative income hypothesis differs from the Keynesian theory of consumption according to which, as seen above, as absolute income of a community increases, it will devote a smaller proportion of its income to consumption expenditure, that is, its APC will decline.

It is important to note that relative income theory implies that with the increase in income of a community, the relative distribution of income remaining the same, it does not move along the same aggregate consumption function, but its consumption function shifts upward. Since as income increases, movement along the same consumption function curve implies a fall in average propensity to consume, Duesenberry's relative income hypothesis suggests that as income increases consumption function curve shifts above so that average propensity to consume remains constant. This is illustrated in Figure 1.



Suppose a family A′ has Y1 level of income and is spending Y1A′ on consumption. Suppose its income level rises to Y2. Now, its consumption would not rise only to Y2 B (i.e. equal to the consumption of the family B at Y2 income level) but to Y2A′ where A′ lies on the same ray from the origin as the previous point A of consumption. This implies that the consumption expenditure of family A has risen in the same proportion as its income with the result that its average propensity to consume remains constant. Likewise, if income of family B which is having

Fig. 1 : Relative Income Hypothesis

consumption expenditure Y2B at income level Y2, rises to Y3, its consumption expenditure will increase to Y3B′ where B′ lies on the same ray from the origin as B. This again means that the proportion of income devoted to consumption by family B (i.e. its APC) remains constant as there is increase in its absolute income. Thus, if the proportion of income devoted to consumption of the average family at each income level remains the same as its income increases, the aggregate consumption of the community as proportion of its income will also remain constant though its absolute consumption and absolute savings will increase with the absolute increase in income. As income increases and a society moves along the same consumption function curve, its average propensity to consume falls. But Duessenbery relative income hypothesis suggests that as income increases consumption function curve shifts above so that average propensity to consume remains constant. In Figure 1 it will be seen that if points A′ and B′ are joined together, we get, a new consumption function curve C′C′.

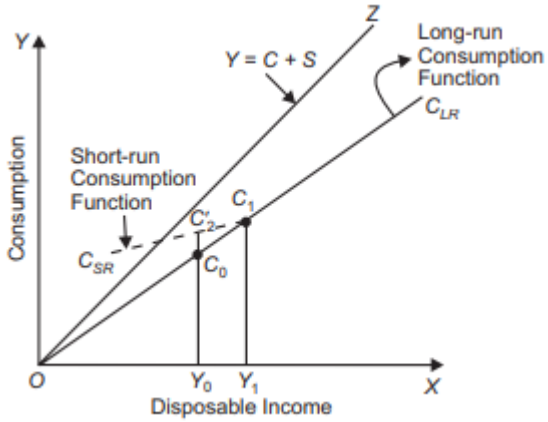
Duesenberry's explanation has some obvious appeal and appears to capture some elements of the psychological behaviours of consumers. It is easier to adjust consumption habits while the level of income is rising and it is not unrealistic to assume that these habits are formed through emulation and the desire for social acceptance and approval. Moreover, income declines do pose problems for consumers and the hypothesized behaviour that they tend to retain the old habits for as long as possible is quite plausible.

Thus, Duesenberry's introduction of socio-psychological motivations makes his consumption theory more impressive than the simple Keynesian absolute income hypothesis. Other economists have also tried to reconcile the inconsistent empirical consumption functions and their explanations too lead to the conclusion that the long run income-consumption relation is more basic and stable, although their reasons differ somewhat from Duesenberry's. At least three important alternative empirical studies on consumption function deserve discussion. They are: permanent income hypothesis by Milton Friedman, life cycle income hypothesis by Albert Ando, Franco Modigliani and Richard Brumberg and drift hypothesis by Arthur Smithies and James Tobin.

Demonstration Effect: By emphasising relative income as a determinant of consumption, the relative income hypothesis suggests that individuals or households try to imitate or copy the consumption levels of their neighbours or other families in a particular community. This is called demonstration effect or Duesenberry effect.

Two things follow from this. First, the average propensity to consume does not fall. This is because if incomes of all families increase in the same proportion, distribution of relative incomes would remain unchanged and therefore the proportion of consumption expenditure to income which depends on relative income will remain constant. Secondly, a family with a given income would devote more of his income to consumption if it is living in a community in which that income is regarded as relatively low because of the working of demonstration effect. On the other hand, a family will spend a lower proportion of its income if it is living in a community in which that income is considered as relatively high because demonstration effect will not be present in this case. For example, the recent studies of household expenditure made in India reveal that the families with a given income, say ` 5000 per month spend a larger proportion of their income on consumption if they live in urban areas as compared to their counterparts in rural areas. The higher propensity to

consume of families living in urban areas is due to the working of demonstration effect where families with relatively higher income reside whose higher consumption standards tempt others in lower income brackets to consume more.



Ratchet Effect: The other significant part of Duessenberry's relative income hypothesis is that it suggests that when income of individuals or households falls, their consumption expenditure does not fall to that extent. This is often called a ratchet effect. This is because, according to Duessenberry, the people try to maintain their consumption at the highest level attained earlier. This is partly due to the demonstration effect explained above. People do not want to show to their neighbors that they no longer afford to maintain their previous high standard of living. Further, this is also partly due to the

Fig.2: Relative Income Hypothesis Ratchet Effect and Demonstration Effect

fact that they become accustomed to their previous higher level of consumption and it is quite hard and difficult to reduce their consumption expenditure when their income has fallen. They maintain their earlier consumption level by reducing their savings. Therefore, the fall in their income, as during the period of recession or depression, does not result in decrease in consumption expenditure very much as one would conclude from family budget studies.

When income increases during the period of recovery, then consumption increases fast with the increment in savings.

Criticisms of Relative Income Hypothesis:

1. No Proportional Increase in Consumption: The assumption of Relative Income principle is that income and consumption are rationally increased. But there is not always rational increment in consumption by the increment on full employment status.

2. No Direct Relation between Consumption and Income: This principle assumes that consumption and income are directly related. But this thing is not supported on the basis of experience. Consumption is not always reducing according to business depression. Example, consumption was not reducing during business depression of 1948–49 and 1974–75.

3. Distribution of Income not Unchanged: Presented principle is based on the assumption that the distribution of income is almost unchanged even after change on the level of whole income. If income is reorganized in more similar side with the increment in income, then the APC of every person related to poor and rich family will reduce. So, when income increases, then consumption function will not shift up from CS1 to CS2.

4. Reversible Consumer Behaviour: According to Michael Ivenj, "Consumer behavior is slowly-slowly changed not fully unchanged. Then as more time expend from last maximum level, current consumption of last maximum income status will be least affected." If we know it also that how any consumer had to spend on last maximum income status, then it is not possible to know that now how he will spend.

5. Neglect of Other Factors: Present principle is based on assumption that the change in expenditure of consumer is related to his last high-income level. This principle is weak that it neglects the other component that affects the consumer-behaviour like updating new consumer things, changes in age-structure, urbanizations and asset holder.

6. ***Consumer Preferences do not Depend upon others:*** The unreal assumption of this principle is that consumer preferences are dependent on each other. As a result the expenditure of any consumer is related to the consumption structure of his rich neighbour. But it is not always. By the direct study of Prof. George Katona it can be concluded that expectancy and nature are important in consumer

expenditure. He says that the nature of income –expectancy and asset perception based on the status of ambition is more affected to consumer expenditure relation in comparison to display effect.

7. Reverse Lighting Bolt Effect: Prof. Smith and Prof. Jackson criticize Dussenberry on the basis of their experience that the income is recovering after depression it is not because of Ratchet effect but the consumption experience of consumer is just like 'reverse lightning bolt effect'. It is because that consumer increases his consumption on increasing income slowly-slowly because of 'irregular habit stability' after depression. It is shown in Fig. 8.2 where consumption status is shown with increasing income by arrows as the reverse lightning bolt.

7.2 Life cycle Theory of Consumption

An important post-Keynesian theory of consumption has been put forward by Modigliani and Ando1which is known as life cycle theory. According to life cycle theory, the consumption in any period is not the function of current income of that period but of the whole lifetime expected income. Thus, in life cycle hypothesis the individual is assumed to plan a pattern of consumption expenditure based on expected income in their entire lifetime. It is further assumed that individual maintains a more or less constant or slightly increasing level of consumption. However, this level of consumption is limited by his expectations of lifetime income. A typical individual in this theory in his early years of life spends on consumption either by borrowing from others or spending the assets bequeathed from his parents. It is in his main working years of his lifetime that he consumes less than the income he earns and therefore makes net positive savings. He invests these savings in assets, that is, accumulates wealth which he consumes in the future years. In his lifetime after retirement he again dissaves, that is, consumes more than his income in these later years of his life and is able to maintain or even slightly increase his consumption in the lifetime after retirement.

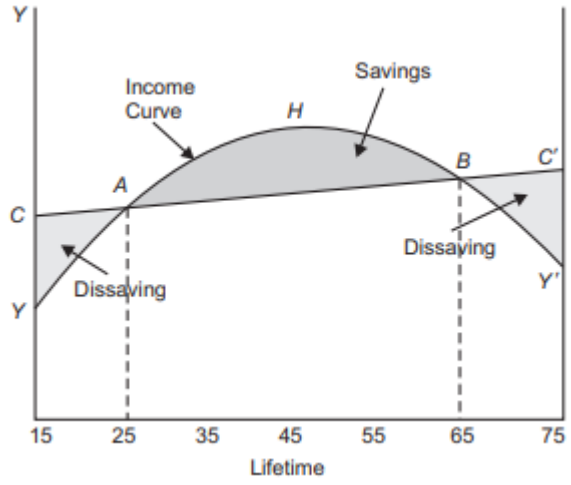
Its Assumption: Life cycle principle depends on following assumptions:

1. There is no change in the price level of consumer lifetime.

2. The rate of interest is constant.

3. Consumers have not received any assets in heritage and their nibble assets are the result of their savings.

The aim of a consumer is to keep his needs maximum in his lifetime, which further will depend on this thing that what is his total income and services in lifetime. If the life duration of a person is given then his consumption and sources are in ratio. But the plan he makes to spend his sources (income) the law is that in starting years of his life income increased, in the middle years of his life income is high and at the time of his retirement income becomes low. Therefore, he will dissave or save less in his youth, consume more in pubertal, save more and consume less in middle of his age and then consume more than his income on dissaving in old age. Resultantly, his consumption level remains constant or increases a little during his whole life.



Life cycle hypothesis has been depicted in Fig.3. It is assumed that a typical individual knows exactly at what age he will die. In Fig. 3 it is taken that the individual would die at the age of 75 years. That is, years 75 is his expected lifetime. If it is further assumed that net savings in the entire lifetime is zero, that is, the savings done by the individual in his working years of his life is equal to the dissavings made by him in his early years of life before he is able to earn income as well as the dissavings which he makes after retirement. It is also assumed for the

Fig 3. Life Cycle Theory of Consumption

sake of simplicity that interest paid on his assets is zero. The curve YY′ shows income pattern of the whole life-time of the individual whereas CC′ is the curve of consumption which is assumed to be

slightly increasing as the individual grows old. It is assumed that our individual enters into labour force (i.e., working life) at the age of 15 years. It will be noticed from Fig. 3 that upto the age of 25 years his income, though increasing, is less than his consumption, that is, he will be dissaving during the first 10 years of his working life. To finance his excess consumption over his income, he may be borrowing from others.

Beyond the age of 25 or point A on the income and consumption curves and upto the age of 65 years his income exceeds his consumption, that is, he will be saving during this period of his working life. With these savings he will build up assets or wealth. He may use these savings or wealth to pay off his debt incurred by him in the early stage of his working life. Another important motive of his savings and building up assets or wealth is to provide for his consumption after retirement when his income drops below his level of consumption. It will be observed from the Fig. 3 that beyond point B (that is, after retirement at 65 years) his current income falls short of his consumption and therefore he once again dissaves. He would be using his accumulated assets or wealth from his earlier working years to meet the dissavings after retirement at the age of 65. It is important to note that we assume that he does not intend to leave any assets for his children. Given this assumption, his net savings over his lifetime will be zero. Therefore, in Fig. 3 his savings during the period when he earns more than his consumption expenditure, that is, the shaded area AHB will be equal to the two areas of dissavings, CYA + BC'Y'. Thus, he dies leaving behind no assets or wealth. He has planned his consumption expenditure over the years that his net savings at the time of death are zero. However, this assumption can be relaxed if he wishes to leave some assets or wealth for his children as is usually the case in India. In case he wants to bequeath some assets for his children and wife, he will have to save more in the working period of his life so that his total savings exceed the total dissavings.

Some important conclusions follow from the life cycle theory of consumption. The fundamental idea of the life-cycle hypothesis is that people make their consumption plans for their entire lifetime and further that they make their lifetime consumption plans on the basis of their expectations of lifetime income. Thus, in the life cycle model consumption is not a function of current income but of the expected lifetime income. Besides, in life cycle theory the wealth presently held by individuals also affects their consumption.

How the consumption of an individual in a period depends on these factors highlighted by life cycle theory can be expressed in the form of an equation. To do so let us consider an individual of a given age with an additional life expectancy of T years and intends to retire from working after serving for N years more. Then suppose that in the current period and thereafter in his life span the individual will consume a constant proportion, 1/T of his life-time income in equal instalments per year.

Thus

$$Ct = 1/T(Y_{Lt}+(N-1)Y^{e}_{L}+W_t)$$

where

Ct = the consumption expenditure in the current period t

Y_{Lt} = Income earned from doing some labour in the current period t

N – 1 = remaining future years of doing some labour or work

Y^{e}_{L} = the average annual income expected to be earned over N–1 year for which individual plans to do some work

W_t = the presently held wealth or assets

It will be observed from the above equation that life cycle hypothesis suggests that consumption in any period does not depend only on current income but also on expected income over his entire working years. Besides, consumption in any period also depends on his presently owned wealth or assets which are built up during the prime working years of one's life when income exceeds savings.

The general consumption behavior as suggested by Ando-Modigliani life cycle hypothesis can be expressed in the following functional form:

$$C_t = b_1Y_{Lt}+B_2Y^{e}_{L}+b_3W_t$$

where C_t = Consumption expenditure in a period t.

Y_{Lt} = Income earned from doing some labor in the current

period t.

Y^e_L = the average annual income expected to be earned from labor during the further years of working life.

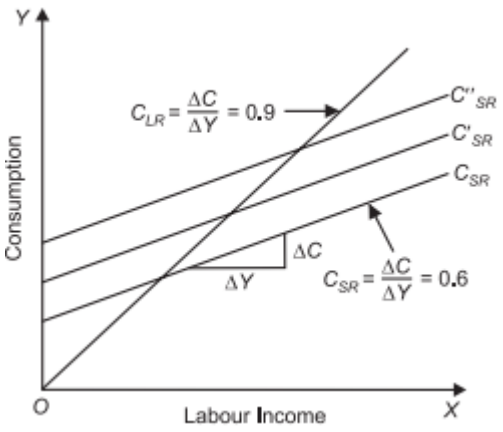
W_t = wealth currently owned

b_1 represents marginal propensity to consume out of current income

b_2 is marginal propensity to consume out of expected lifetime income, and

b_3 is the marginal propensity to consume

It is significant to note that consumption would not be much responsive to changes in current income (i.e., Y_{Lt}) unless it also changes expected future lifetime income (Y^e_L). A one time or temporary change in income, say, by Rs. 1000, will affect consumption in the same way as the increase in wealth. The consumption of these Rs 1000 will be spread over the entire lifetime in a planned consumption flow per period. With 50 years of future life, increase of Rs. 1000 of transient or temporary income will raise the consumption by 1000/50 = Rs. 20 per period. This implies that consumption function curve will shift above. A permanent increase in income that is expected to persist throughout the working years, which implies that in future expected lifetime income also rises, will produce a large effect on consumption in each of the remaining period of one's lifetime. Further, the increase in wealth will shift the consumption function upward, that is, will increase the intercept term of the consumption function.



The consumption function based on life cycle hypothesis is illustrated in Fig. 4 where along the X-axis we measure disposable income and along the Y-axis the consumption expenditure. The short-run consumption function is shown by the curve CSR which has a slope of 0.6 which is the marginal propensity to consume out of labor income in the short run. This short-run consumption function is linear and has an intercept term indicating that average propensity to consume declines as labor income increases and MPC < APC. The intercept of the short-run consumption function measures the effect of wealth on consumption. Since wealth increases over a period of time due to savings in the prime

Fig 4. Life Cycle Consumption and Income: Short Run and Long Run

working years, the short-run consumption function will be shifting upward, that is, the intercept of the short-run consumption function will be increasing as wealth grows in the long run. Overtime the shift in the short-run consumption function may trace a series of points on a long-run consumption function CLR passing through the origin. Since the ratios of wealth and labor income to the personal disposable income are constant over time, the life cycle consumption function is in accord with the conclusion arrived at by Kuznets from the long-run time series data that the long-run consumption function is proportional, with average propensity to consume (APC or MPC) remaining constant and being equal to nearly 0.9. These facts are quite consistent with the long-run consumption function of life cycle hypothesis and thus help in resolving the Kuznets puzzle.

Life cycle hypothesis also explains the non-proportional relationship between consumption and income found in the cross-sectional family budget-studies. It has been found in these studies that high income families consume a smaller proportion of their income, that is, their average propensity to consume (APC) is relatively lower than those of the low-income families. This can be easily explained by life-cycle hypothesis. Suppose we choose a random sample of families from the population and rank them according to their incomes. The families with higher incomes are expected to be middle-aged income earners who are in the prime working years of their lifetime and therefore earn more than they consume (i.e., their APC will be relatively lower). On the other hand, the families with lower incomes are likely to have relatively high proportion of new entrants into the labor force and the old people who have retired and, as seen above, they consume more than their current income and their APC being quite high pushes up the APC of the low-income families.

Criticism– There are some limits of life cycle principle.

1. Plan for Lifetime Consumption Unrealistic: The statement of Ando-Modigliani is that consumer plans for the consumption of his throughout life; it is unrealistic because consumer focuses more on present consumption rather than future consumption which is uncertain.

2. Consumption not Directly Related to Assets: From the starting, life-cycle principle considers consumption is directly related to assets of persons. As assets increase their consumption increase and consumption decrease on the decrement of assets. It is also unnecessary because it is possible that a person reduces his consumption for increasing his assets. Consumption Dependent on Attitude towards Life: Consumption depends on the viewpoint of the life of a person. Being given the same income and asset, one person can consume more except others.

3. Consumer not Rational and Knowledgeable: This depends on the hypothesis that consumer is full prudent and he has full knowledge about his income and life. It is realistic to being rational and prudent of any consumer.

4. Many Variables: This principle is dependent on many variables like current income, future anticipated labour income, value of assets and life. It is very hard to assume it. So, it is unrealistic.

5. Despite these things, life-cycle principle is great from all those theories, that are already described, because it includes only assets as variable within consumption function, and it also clears the thing that why MPC < APC in short duration and APC remain constant.

7.3 Permanent Income Hypothesis

Friedman defines permanent income like this, "Consumer-unit can consume such quantity of income to keep his money safe (or understand that can be consumed)". This income is the major of any familial unit that further depends on time-horizon and foresight. These all are included within it like personal qualities of non-human earners of family, qualities of economic activities of earners like their business, place of economic activities etc.

Permanent income theory of consumers' behaviour has been put forward by a well-known American economist, Milton Friedman.3 Though Friedman's permanent income hypothesis differs from life cycle consumption theory in details, it has important common features with the latter. Like the life cycle approach, according to Friedman, consumption is determined by long-term expected income rather than current level of income. It is this long-term expected income which is called by Friedman as permanent income on the basis of which people make their consumption plans. To make his point clear, Friedman gives an example which is worth quoting. According to Friedman, an individual who is paid or receives income only once a week, say on Friday, he would not concentrate his consumption on one day with zero consumption on all other days of the week. He argues that an individual would prefer a smooth consumption flow per day rather than plenty of consumption today and little consumption tomorrow. Thus, consumption in one day is not determined by income received on that particular day. Instead, it is determined by average daily income received for a period. This is on the line of life cycle hypothesis. Thus, according to him, people plan their consumption on the basis of expected average income over a long period which Friedman calls permanent income.

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Relationship between Consumption and Permanent Income

Now, what is the precise relationship between consumption and permanent income (that is, the expected long period average income). According to permanent income hypothesis, Friedman thinks that consumption is proportional to permanent income.

$$C^P = kY^P$$

Where Y^P is the permanent income

C^P is the permanent consumption

k is the proportion of permanent income that is consumed.

The proportion or fraction k of permanent income that is consumed depends upon the following factors:

1. Rate of interest (i): At a higher rate of interest the people would tend to save more and them consumption expenditure will decrease. The lowering of rate of interest will have opposite effect on the consumption.

2. The proportion of non-human wealth to human wealth: The relative amounts of income from physical assets (i.e., non-human wealth) and income from labor (i.e., human wealth) also affects consumption expenditure. This is denoted by the term w in the permanent consumption function and is measured by the ratio of non-human wealth to income. In his permanent income hypothesis Friedman suggests that consumption expenditure depends a good deal on the wealth or assets possessed by the people. The greater the amount of wealth or assets held by an individual, the greater would be its propensity to consume and vice-versa.

3. Desire to add to one's wealth: Lastly, households' preference for immediate consumption as against the desire to add to the stock of wealth or assets also determines the proportion of permanent income to be devoted to consumption. The desire to add to one's wealth rather than to fulfil one's wants of immediate consumption is denoted by u. Thus, rewriting the consumption function based on Friedman's permanent income hypothesis, we have

$$C^P = k\ (i, w, u)\ Y^P$$

The above function implies that permanent consumption is function of permanent income. The proportion of permanent income devoted to consumption depends on the rate of interest (i), the ratio of non-human wealth to labor income (w) and desire to add to the stock of assets (u).

Permanent and transitory income: In addition to permanent income, the individual's income may contain a transitory component that Friedman calls as a transitory income. A transitory income is a temporary income that is not going to persist in future periods. For example, a clerk in an office may get a substantial income from overtime work in a month which he thinks cannot be maintained. Thus, this large overtime income for a month will be transitory component of income. According to Friedman, transitory income is not likely to have much effect on consumption. Thus, income of an individual consists of two parts, permanent and transitory, which we may write as under:

$$Y^m = Y^P + Y^t$$

where Y^m is measured income in a period, Y^P is the permanent income and Y^t is transitory income.

Measuring Permanent Income

To make the permanent income hypothesis operational we need to measure permanent income. Permanent income, as is generally defined is "the steady rate of consumption a person could maintain for the rest of his or her life, given the present level of wealth and income now and in the future." However, it is very difficult for a person to know what part of any change in income is likely to persist and is therefore permanent and what part would not persist and is therefore transitory. Friedman has suggested a simple way of measuring permanent income by relating it to the current and past incomes. According to him, permanent income is equal to the last year's income plus a proportion of change in income occurred between the last year and the current year. Thus, permanent income can be measured as under:

$$Y^P = Y_{t-1} + a(Y_t - Y_{t-1})\ o < a < 1 \ldots(1)$$

$$Y^P = aY_t + (1 - a)\ Y_{t-1} \ldots.(2)$$

Let us illustrate this with an example. Suppose, the proportion of change in income in the last year and the current year equals 0.6 and the last year's income (Yt–1) is Rs. 80,000 and the current year's income (Yt) is Rs. 85,000, then from above equation permanent income can be estimated as under.

$$Y^P = 0.6\ (85{,}000) + (1 - 0.6)\ 80{,}000$$

$$= 51{,}000 + 32{,}000$$

= 83,000

It is worthwhile to note the two features of the above equations estimating permanent income. First, if Yt = Yt–1, it implies that current year's income is equal to last year. This further means that last year income is being maintained and therefore the individual would expect to earn the same income in the future also. In this case then permanent income is equal to the current or last year's income. Secondly, when income of an individual increases in the current year as compared to the last year, the permanent income will be less than the current year's income. This is because individual is not sure whether the increase in income will persist in the future and therefore does not immediately revise his estimate of permanent income by the full amount of the increase in his income in the current year.

Current or measured income determines the consumption expenditure.

Its Assumptions: Friedman has presented the following assumptions about constant and variable parts of income and consumption –

1. There is not any correlation between variable and constant income.

2. There is not any correlation between variable and constant consumption.

3. There is not any correlation between variable consumption and variable income.

4. Only the changes in constant income affect the consumption in organized form.

Permanent Income, Long-Run and Short-Run Consumption Functions

Now, having known the meaning of permanent income and permanent consumption we can describe the precise relationship between consumption and income both in the short run and the long run as under.

$$C = kY^P = kaY_t + k\,(1 - a)\,Y_{t-1}$$

In the above consumption function ka is the marginal propensity to consume in the short-run which is obviously less than the long-run marginal propensity to consume which is equal to k. Thus, according to Friedman's permanent income hypothesis, short-run marginal propensity to consume differs from long-run marginal propensity to consume, the latter being greater than the former. Further, $k(1–a)Y_{t-1}$ is the intercept of the short-run consumption function.

Friedman's permanent income hypothesis is illustrated in Figure 4. It shall be seen from this figure that permanent consumption function is represented by the long-run consumption function curve C_{LR}, ($C_{LR} = kY_p$). This long-run consumption function shows the proportional relationship between consumption and income and is a straight line passing through the origin which implies that APC is constant and is equal to MPC.

In accordance with permanent income hypothesis, short-run consumption function curves are flatter as compared to the long-run consumption function curve indicating that the short-run marginal propensity to consume is lower than long-run marginal propensity to consume. The reason for this is that the individual is not sure whether the increase in income will persist over the longer period which determines the consumption plans of individuals. Therefore, the individuals do not fully adjust their consumption expenditure according to their higher current income than would be the case if the current increase in income is expected to be permanent. If the rise in income happens to be permanent, that is, if the next year's income is equal to the higher income of the current year, the individual will fully adjust his consumption expenditure to the higher income level.

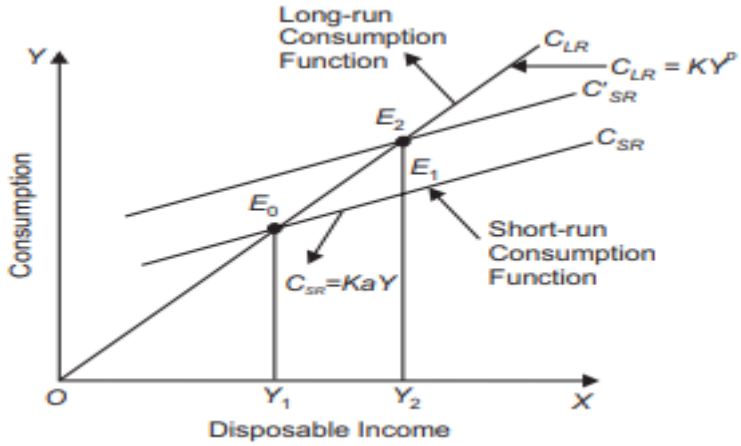


Figure explains the Friedman constant income approach where, C_{LR} is a long duration consumption function which shows the long duration proportional relationship between the income and consumption of an individual on which APC = MPC. C_{SR} is a non-proportional short-termed consumption function where measured or current income includes both the constant and variable parts, C_{LR} and C_{SR}. Both the curves are equal to point E0 of OY1 income level where constant income and measured income are same and therefore constant and measured consumption (YE0) are same. The variable factors are not found on point E. If consumer income becomes OY_2 on increment then he will increase his consumption according to the increment in his income. For this he will move on C_{SR} curve from E0 towards E1 where his measured income in short period is OY_2 and measured consumption is Y_2E_2. But if OY_2 income becomes constant income level then consumer will accordingly increase his consumption from which his short period consumption function C_{SR} will move upwards on C_{SR} and cut the long duration consumption function C_{LR} on E_2. Therefore, consumer will consume Y_1 E_1 on constant income level OY_2. Friedman constant income principle is similar to cross sectional budgetary data. Long period data shows the proportionate relation between income and consumption. But it has been found out by the study of the fluctuation related income by short period balance way that measure income and measure consumption are non-proportionately related.

Permanent income hypothesis is similar to life cycle hypothesis and differs only in details. Like the life cycle hypothesis, permanent income hypothesis can explain the puzzle about the relationship between consumption and income, namely, whereas in the long-run time series data, consumption-income ratio (i.e., APC) is constant, in the short run it declines with the increase in income as we have seen above. The permanent income hypothesis is quite consistent with the constancy of APC in the long run and its variation in the short run.

Criticisms– Still there are some drawbacks in this principle:

1. Correlation between Temporary Income and Consumption: The assumption of Friedman is unrealistic that there is no relationship in the temporary part of consumption and income. The meaning of this assumption is that when the measured income of a family increases or decreases, then its consumption neither increases nor decreases, because accordingly he neither save nor spends. But this thing is opposite to real consumer behavior. If any person gets immediate profit then he did not deposit full money in bank account but he spends partly on his current saving. Therefore, if a person-losses his wallet, then he will not go to bank for money for fulfilling his needs, but he will ignore or cut his present consumption.

2. APC of all Income Groups is not Equal: The rule of Friedman says that APC is equal to poor and rich families in long term. But this thing is against to the normal-behaviour of family. It is realistic that low income family do not save more income as more income holder. There is not only one reason that their income is low but also it is that they will prefer to present consumption expect to future consumption for fulfilling their left needs. So, the savings of low income are low relatively to their income but the savings of more income families are more relatively to their income. The saving level is different in normal income level and consumption also.

3. Use of Various Terms for Income and Consumption Confusing: Friedman used these words in his principle like 'Permanent', 'Temporary' and 'measured', it untangles that principle. The perception of measured income at one side state permanent and temporary income and on other side by permanent and temporary consumption improperly.

4. No Distinction between Human and Non-Human Wealth: One more defect of permanent income principle is that Friedman did not do distinction between human and non-human wealth and in the experiential analysis of his principle, he mixed the income of the both under a single term. Despite of these defects, in the words of Michael Ivenz, "It can be said oppositely that certification is the supporter of this principle that by the replacement of Friedman the research of consumption gets new way and new side."

Summary

- The permanent income principle of Friedman is according to oblique hole budget. Long period data shows the proportionate relation between income and consumption. But it has been found out by the study of the fluctuation related income by short period balance way that measure income and measure consumption are non-proportionately related.
- The second part of Dussenberry principle is that, "The hypothesis of 'past peak of income' that describes the short period ups and downs in consumption function and disclaim the assumption of Keynes that consumption relation is not permanent. The establishment of this hypothesis is that consumption will increase during the period of prosperity and slowly-slowly it will adjust on more high status.

Keywords

Earner: One who earns money.

Over time: Long period.

Adjust: Regulate.

Recovery: Improvement.

Self-Assessment/Evaluation

Choose the right option:

1. The principle of Dussenberry solves the direct opposition among short period and long period study.

   True

   False

2. The relative income assumption is that income and consumption are rationally increased.

   True

   False

3. In some communities, the difference of relative income hypothesis of people is …… the consumption expenses.
   A. Restricted
   B. determined
   C. low
   D. high
4. Consumption relation is unchanged in time, and it is not .....
   A. Unchanged
   B. related
   C. changed
   D. none of these
5. The preferences of consumers are ……. on each other.
   A. dependent

B. attached
C. non-devoted
D. none of these

6. The life-cycle theory of consumption can be summarized as follows:

A. people always tend to consume almost all their current income
B. people want instant gratification and seldom worry about the future
C. people plan their consuming and saving patterns to optimize the lifetime benefit from their income
D. retired people need less so they can save more than working people

7. The life-cycle hypothesis suggests that wealth during a person's working years should

A. increase
B. decrease
C. not change, on average
D. all be spent

8. According to the life-cycle theory of consumption, we should expect that over a person's lifetime (as the person gets older)

A. The marginal propensity to consume (MPC) out of an expected temporary change in income will decrease
B. The MPC out of an expected temporary change in income will increase
C. The MPC out of an expected temporary change in income will remain the same
D. None of the above

9. According to the life cycle/permanent income theories, which of the following would have the greatest impact on the current consumption of a 30-year-old college teacher:

A. a promotion to associate professor combined with a $2,000/year raise
B. winning $3,000 in the state lottery
C. $2,000 one-time payment of royalties from a textbook that took three years to write
D. choices (A) and (C), since they have equal effects

10. Liquidity constraints (constraints on people's ability to borrow money at the market interest rate) explain

A. why consumers may spend less than predicted by the life cycle/permanent-income theories as their current income falls
B. why consumption might increase more than predicted by the life cycle/permanent income theories when income rises again after a recession
C. both of the above
D. neither of the above

11. According to the permanent income hypothesis if a person received a windfall of Rs. 100,000, he would spend ___ that year.

A. some of it
B. most of it
C. nearly all of it
D. all of it

12. In the long run, the transitory consumption will:

A. Be infinity
B. Remain unchanged
C. Decline but will remain positive
D. Be zero

13. Who propounded the permanent income hypothesis of consumer behaviour?

A. J. M Keynes
B. Milton Friedman
C. Duesenberry
D. James Tobin

14. Permanent income hypothesis assumes positive correlation between which of the following pairs of variables?

A. Permanent income and transitory income
B. Permanent income and transitory consumption
C. Permanent income and permanent consumption
D. Transitory income and transitory consumption

15. Milton Friedman argued that, over long periods of time, the average propensity to consume is constant, because, over these long periods of time:

A. the variation in income is dominated by the transitory component
B. the variation in income is dominated by the permanent component.
C. it is the behavior of the average consumer that dominates.
D. income averages out to a constant.

Review Questions

16. What do you understand by the permanent income hypothesis?

17. What do you know about life cycle hypothesis?

18. What are the assumptions of life cycle principle

Answers: Self-Assessment

1. True	2. True	3. B	4. C	5. D
6. C	7. A	8. B	9. A	10. C
11. A	12. D	13. B	14. A	15. B

Further Readings

Macroeconomics: Economic Growth, Fluctuations and Policy — Robert E. Hall and David H. Paipal, Vaina Books, 2010.

Macroeconomics: Theory and Policy — H. L. Ahuja, S. Chand Publishers, 2010.

The Necessity of Macroeconomics — H. S. Nath, Cyber Tech Publications, 2012.

Unit 08: Investment

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand Investment and its various types.
- understand the factors affecting Investment.

Introduction

The largest piece of investment spending, accounting for about three-quarters of the total, is business fixed investment. The term "business" means that these investment goods are bought by firms for use in future production. The term "fixed" means that this spending is for capital that will stay put for a while, as opposed to inventory investment, which will be used or sold within a short time. Business fixed investment includes everything from office furniture to factories, computers to company cars.

The survival of a business in the competitive market involves a lot of monetary and non-monetary effort. One of the major strategies adopted by the firms is investing in new opportunities. Firms make investments, the long run, by generating capital from their own resources and borrowing. However, for firms, capital may be a scarce resource so they have to allocate it in such a manner that they get the maximum return from their investment. As capital is expensive, the basic objective of the investor is to maximize the net return, i.e., revenue minus costs. Capital would then be invested in only those products where there is an excess of revenue over (capital) expenditure or return is the maximum over the period of that Notes investment. In setting up a management consultancy firm, for example, investment will be made in acquiring professionals. In most cases, they are very expensive. The product, here would be the service provided by these professionals in solving a client's problem. Revenue will come from the sale of their services. Accordingly, capital would be required to set up such an organization. In this unit, you are going to learn about various types of investments and factors that affect investment decisions.

Meaning of Investment:

Investment refers to that part of current output which makes a new addition to the existing stock of capital. It is a flow variable because it is not the total stock of capital but the net addition made thereto, with respect to time.

Investment is the new addition to the stock of physical capital such as plant, machines, trucks, new factories and so on that creates income and employment. Therefore, by real investment we mean the addition to the stock of physical capital. Thus, in economics, investment means the new expenditure incurred on addition to the stock of capital goods such as machines, buildings, equipment, tools, etc. The addition to the stock of physical capital, i.e., net investment-raises the level of aggregate demand which brings about addition to the level of income and employment in the economy. Like consumption, investment depends on many variables. For simplifying our analysis, we assume that investment is given independently of the level of income. Thus, investment is a constant, I_0.

In his income and employment theory, JM Keynes considered only autonomous investment. He ignored induced investment because he was concerned with the economic problems of depreciation. During depression national income tends to fall steadily. Therefore, induced investment is unlikely to occur. However, in 1917, J.M. Clark developed the famous acceleration principle on the basis of the concept of induced investment.

Types of Investment:

1. ***Net Investment:*** Net Investment is Gross Investment less (minus) Capital Consumption (Depreciation) during a period, usually a year. It must be noted that a part of the investment is meant for depreciation of the capital asset or for replacing a worn-out capital asset. Hence, it must be deducted to arrive at net investment.

2. ***Autonomous Investment:*** Investment which does not change with the changes in income level, is called as Autonomous or Government Investment. Autonomous Investment remains constant irrespective of income level. Which means even if the income is low, the autonomous, Investment remains the same. It refers to the investment made on houses, roads, public buildings and other parts of Infrastructure.

3. ***Induced Investment***: Investment which changes with the changes in the income level, is called as Induced Investment. Induced Investment is positively related to the income level. That is, at high levels of income entrepreneurs are induced to invest more and vice-versa. At a high level of income, Consumption expenditure increases this leads to an increase in investment of capital goods, in order to produce more consumer goods.

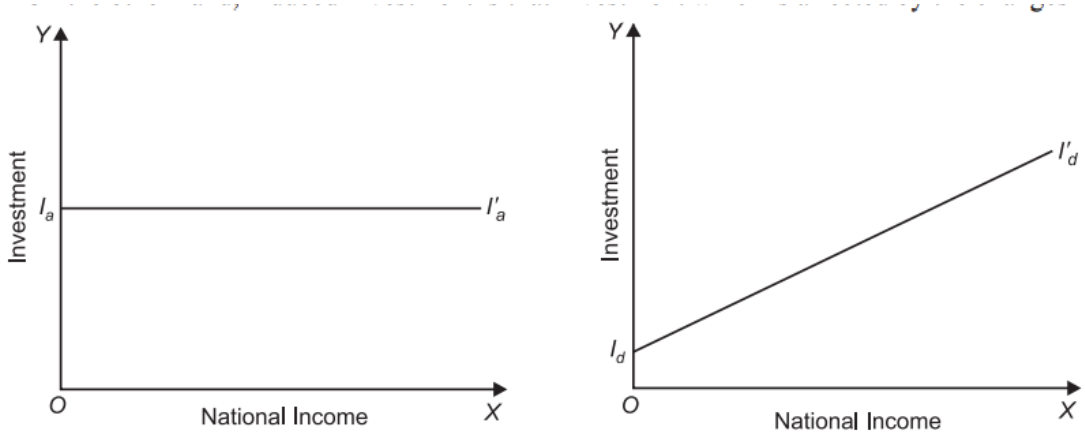


Fig 1. A) Autonomous Investment B) Induced Investment

4. ***Gross Investment:*** Gross Investment means the total amount of money spent for creation of new capital assets like Plant and Machinery, Factory Building, etc. It is the total expenditure made on new capital assets in a period.

5. ***Real Investment:*** Investment made in new plant and equipment, construction of public utilities like schools, roads and railways, etc., is considered as Real Investment. Real investment in new machine tools, plant and equipment's purchased, factory buildings, etc. increases employment, production and economic growth of the nation. Thus, real investment has a direct impact on employment generation, economic growth, etc.
6. ***Planned Investment:*** Investment made with a plan in several sectors of the economy with specific objectives is called as Planned or Intended Investment. Planned Investment can also be called as Intended Investment because an investor while making investment make a concrete plan of his investment.
7. ***Unplanned Investment:*** Investment done without any planning is called as an Unplanned or Unintended Investment. Unplanned type of investment, investors make investment randomly without making any concrete plans. Hence it can also be called as Unintended Investment.

Under this type of investment, the investor may not consider the specific objectives while making an investment decision.

Factors affecting Investment Decisions:

1. The rate of investment
2. The marginal efficiency of capital (or the yield)
3. The cost and productivity of capital goods
4. Business expectations
5. Profits
6. Process innovations
7. Product innovations
8. The level of income

1. ***The rate of investment:*** Investment is financed either out of current savings or by borrowing. Therefore, investment is strongly influenced by interest rates. The lower the rate of interest, the lower will be the cost of borrowing money to acquire an income-earning asset like a machine. So, business firms, in general would be willing to make more investment. A simple example may illustrate the investment. Suppose a firm is faced with four investment opportunities. The cost of each investment is 100 and each one involves receiving a single cash flow after one year.

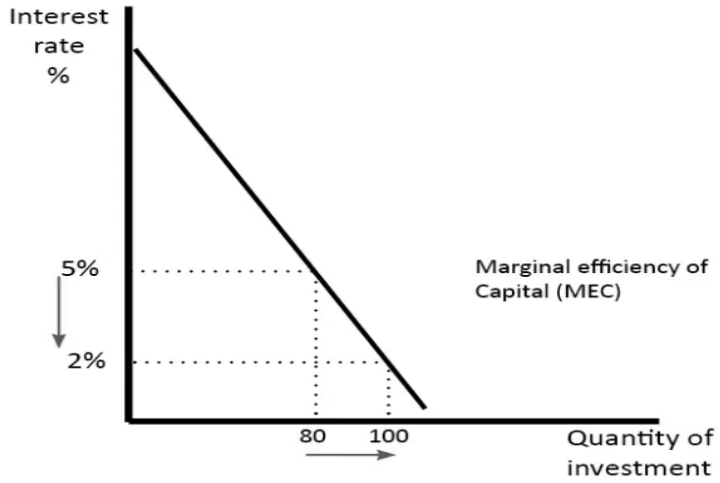


Fig 2.: Rate of Interest and Investment

The marginal efficiency of capital states that for investment to be worthwhile, it needs to give a higher rate of return than the interest rate. If interest rates are 5%, an investment project needs to give a rate of return of at least 5% or more. As interest rates rise, fewer investment projects will be profitable. If interest rates are cut, then more investment projects will be worthwhile.

2. ***The marginal efficiency of capital (or the yield):*** A profit-maximizing firm is interested in knowing how much money can be earned by selling the output produced by one extra unit of capital.

The marginal (physical) product of capital is the contribution made to the firm's output when the quantity of capital is increased by a single unit, other factors being held constant. The MRP is obtained by multiplying MPP by the market price of the output.

The marginal efficiency of capital, MEC, gives the monetary return on each extra rupee's worth of capital added. In short, MEC is the rate at which the value of stream of output of a marginal rupee's worth of capital has to be discounted to make it equal to 1. Since quantities of other factors are held constant the MEC tends to fall due to operation of the law of diminishing returns.

Prospective return explains only one aspect of profitability. The investment decision also involves the cost of acquiring the capital asset, or the supply price (the replacement cost) of the capital asset. Other things remaining same, the greater the supply price, the greater would be the disincentive to invest.

Calculation of prospective yield is based on uncertainty. Therefore, it is essential to estimate the present value of returns from capital, which is expected in the future lifetime of the capital (which may be 10 or 20 years). It is an asset expected to yield an income of 3000 a year for 3 years (i.e., 9000 during total lifetime), the present value (PV) of the capital asset can be found as:

$PV= Q_1/(1+i) + Q_2(1+i)^2 \ldots\ldots\ldots\ldots\ldots\ldots Q_3/(1+i)^n$

(PV is present value, Qn are prospective returns, I, current rate of interest)

PV= 3000/(1.05)+3000/(1.05)^2……+3000(1.05)^n= 8175

Obviously, the PV is less than the obsolete sum to be received in future. In the calculation of PV, the technique of discounting has been applied. The higher the rate of discount (interest), smaller will be the present value (PV). If PV of the asset exceeds the supply price of that capital asset, it may be considered worthwhile to undertake this investment. On the contrary, if the PV of asset is lower than supply price of asset, then investment cannot be undertaken, as it will lead to loss.

According to Keynes, MEC is the rate of discount which will equalize the supply price of capital with the prospective return of capital asset. Thus,

$Sp = Q_1/(1+i) + Q_2(1+i)^2 \ldots\ldots\ldots\ldots\ldots\ldots Q_3/(1+i)^n$

Where Sp, is supply price of capital Qn is annual returns, r = rate of discount which will bring the two sides into equality. Thus, r will be the MEC. It is not necessary that the returns are the same in every year. When yield is constant, then MEC = Y/P

Where, Y is annual yield and P is supply price of capital.

The MEC, in general, is the highest rate of return over the cost expected from an additional or marginal unit of that type of asset. Investment would be undertaken, other things remaining same, if the MEC is greater than rate of interest. As we know, MEC declines or shows diminishing returns with an increase in investment.

The major causes of decline in MEC are:

- Reduction in prospective yield
- Increase in supply price of capital.

The two most important determinants of investment are MEC and rate of interest. As long as, MEC exceeds rate of interest, investment will be forthcoming till such a time when these two variables are equal. This will determine the equilibrium volume of investment.

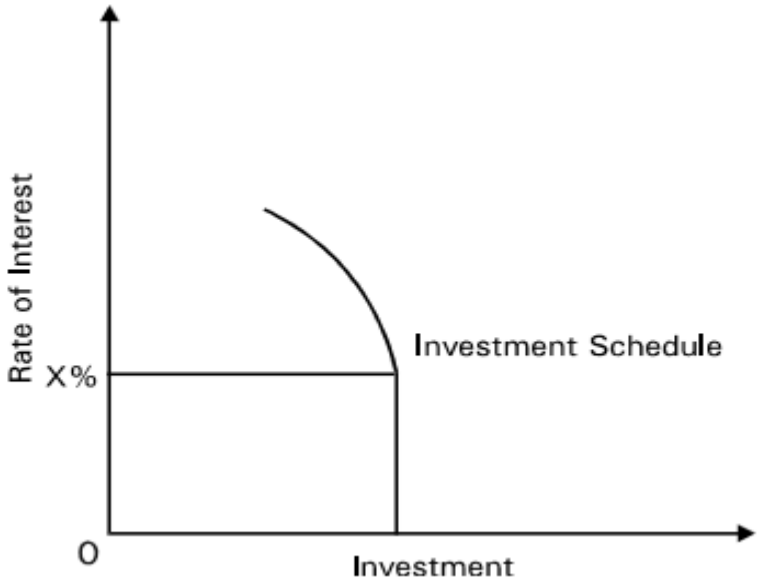


Fig 3: Marginal Efficiency of Capital (MEC)

The more elastic the MEC schedule, the greater will be the increase in investment in response to a given fall in the rate of interest. Keynes found that fluctuation in investment is mainly due to fluctuation in MEC. In the short run, the rate of interest is given, thus the more important determinant of investment is MEC. However, MEC is essentially dependent on future expectation regarding the prospective yield and life span of the capital asset. Since MEC is, to some extent, a psychological phenomenon, it is influenced by expectation.

Notes

In fact, the MEC curve can be taken to show the firm's demand curve for capital. It shows the amount of capital that a firm would choose to employ at different costs of employing, i.e., different rates of interest. The equilibrium amount of capital of a profit-making firm is that at which MEC is exactly equal to rate of interest. Similarly, by adding the MEC schedules of individual firms, we arrive at the MEC schedule of society or an economy. So, like the downward sloping MEC schedule of a firm the MEC schedule for the economy as a whole is also downward sloping

3. ***The Cost and Productivity of Capital Goods:*** Like the cost of funds needed for investment expenditure, the price and productivity of machines being purchased have an influence on the profitability of investment. A new process that reduces the price of capital goods will make any given line of investment more profitable because the interest costs involved will be reduced.

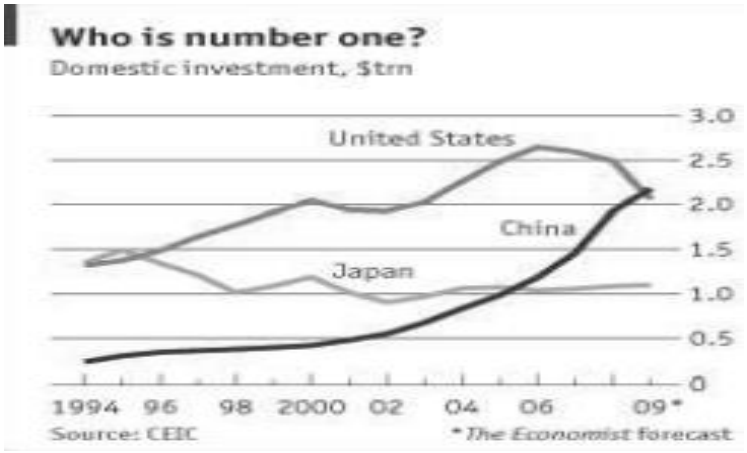
A duplicating machine of 120,000 will have an interest cost of 12,000 per year at a rate of 10%, but if the price falls to 80,000, its interest cost will be only 8,000.

Moreover, any new invention that makes capital equipment more productive will make investment more attractive, for example, if the replacement of typewriters by word-processors makes a given amount spent on office equipment more productive, this will lead to a burst of investment expenditure to obtain the new capital equipment.

Case Study

Investment Spending in China: Reap What You Sow

Despite falling exports, China's economic growth has remained relatively strong this year thanks to a surge in investment sparked by the government's stimulus measures. Official data show that fixed-asset investment leapt by an astonishing 39% in the year to May, or by a record 49% in real terms. Sowing more today should yield a bigger harvest tomorrow, but how wisely is this capital being used? Official figures almost certainly overstate the size of the spending boom: local bureaucrats may well be exaggerating investment in order to impress their masters in Beijing. More important, the government's figures misleadingly include land purchases and mergers and acquisitions. But even if measured on a national-accounts basis, like GDP, investment is probably growing at a still-impressive real annual rate of around 20%. This year China's domestic investment in dollar terms is likely to exceed that in America (see graph below).



There is widespread concern that this investment boom is adding to China's excess capacity. Investment amounted to 44% of GDP last year (compared with 18% in America), which many economists reckon was already too much. Worse still, as well as forcing state firms to invest, the government is directing state-owned banks to lend more, despite falling corporate profits. Many of those loans could turn sour. Like Japan in the 1980s, it is argued, an artificially low cost of capital causes chronic overinvestment and falling returns. If so it will end in tears. To assess that risk you need to ask two questions. How much excess capacity was there already? And where is the new investment going? There is certainly excess capacity in a few sectors (steel and some export industries, such as textiles). But the best measure of spare capacity for the economy as a whole-the difference between actual and potential GDP, or "output gap"-is probably only about 2% of GDP, compared with an average of almost 7% in the rich world. The large role played by state-owned banks is bound to have resulted in some misallocation of capital, but a recent study by Helen Qiao and Yu Song at Goldman Sachs argues that concerns about overinvestment are exaggerated. A successful developing economy should have a high ratio of investment to GDP. And a rising rate does not mean that the efficiency of capital is falling; capital-output ratios are supposed to increase as economies develop. America's capital stock is much larger relative to its GDP than China's, with 20 times more capital per person than in China. A better measure of capital efficiency is profitability. Profits have indeed slumped over the past year, but taking the past decade to adjust for the impact of the economic cycle, profit margins have not narrowed as one might expect if there were massive spare capacity. The argument that the average cost of capital is ludicrously low is also no longer true. China's real interest rate is now 7%, which is among the highest in the world. Where is the new investment going? There has been little new spending in industries with overcapacity, such as steel and computers. But the surge in state-directed investment has fuelled fears about its quality. In its latest China Quarterly Update, the World Bank calculates that government-influenced investment so far this year was 39% higher (on a nationalaccounts basis) than a year earlier, while "market-based" investment rose by a more modest 13%. This implies that government-influenced investment accounts for about three-fifths of the growth in investment this year, up from one-fifth last year. The usual assumption is that government investment is less efficient and will therefore harm long-term growth. But the fastest expansion in spending has been in railways (up by 111% this year). As a developing country, China still lacks decent infrastructure; railways, in particular, have long been an economic bottleneck. Investment in roads, the power grid and water should also yield high long-term

returns by allowing China to sustain rapid growth. And the government is focusing its infrastructure stimulus on less developed parts of the country where the benefits promise to be greatest. According to Paul Cavey at Macquarie Securities, fixed-asset investment in western provinces was 46% higher in the first four months of this year than in the same period of 2008, almost double the rise in richer eastern provinces. Some of the money being spent in China will inevitably be wasted, but it is wrong to denounce all government-directed investment as inefficient. In the short term it creates jobs, and better infrastructure will support future growth. It is certainly not a substitute for the structural reforms needed to lift consumer demand in the longer term, but it could help. After all, without running water and electricity, people will not buy a washing machine.

Question: Do you think that China's investment spending could soon be bigger than US? Justify.

4. ***Business Expectations:*** Since investment decisions take time to accomplish, they are characterized by a high degree of uncertainty. Thus, business expectations, i.e., what business people expect to happen in future is very important. If they are pessimistic about the future, even a low rate of interest will not encourage them to borrow and vice versa if they are pessimistic. A wide range of factors from a change in government to a change in weather may affect business expectation. Investment decisions are largely influenced by expectations of future demand conditions (of output produced) and future cost conditions (of machines, operating cost of machines, etc.)
5. ***Profits:*** Most investments are financed by borrowed funds. But small and medium-sized firms have little access to the capital market. Thus, a great deal of investment is also financed by firm's internal resources. Most companies do not distribute their entire profit after tax among the shareholders in the form of dividends. A certain portion is retained for reinvestment. Such reinvestment or ploughing back of profit is necessary for expansion and diversification. Thus, current profit appears to be an important determinant of investment expenditure. In a year of good business, profits are large. So, there is a large flow of funds that can be reinvested by the firms that made profits. If, on the other hand, there is no profit or even loss, as during recession, hardly any fund will be available within the firm to finance new investment expenditures.
6. ***Process Innovations:*** In this dynamic world, there is a growing competition and technological progress or industrial innovation. The use of such innovations requires investment.
7. ***Product Innovations:*** The production of an old product cheap as well as development of new products requires new investment in plant and equipment.
8. ***The Level of Income:*** High levels of income are often associated with high levels of investment. High income may be national income, high profit, etc.

 You or Your parents must have invested in shares, bonds or mutual funds at some point of time. What were the factors that influenced your investment decision at that time?

Summary:

- Investment refers to that part of current output which makes a new addition to the existing stock of capital. It is a flow variable because it is not the total stock of capital but the net addition made thereto, with respect to time.
- Like consumption, investment depends on many variables. For simplifying our analysis, we assume that investment is given independently of the level of income.
- Business firms make investment in order to make profits. These decisions are usually influenced by the following factors: the rate of investment, the marginal efficiency of capital (or the yield), the cost and productivity of capital goods, business expectations, profits, process innovations, product innovations and the level of income.

Keywords:

Autonomous Investment: It is the level of investment independent of National output.

Gross Investment: Total investment in an economy during a certain period.

Induced Investment: Business investment expenditures that depend on income or production (especially national income or gross national product).

Investment: It refers to that part of current output which makes a new addition to the existing stock of capital.

Marginal Efficiency of Capital: It is the annual percentage return on the last additional unit of capital.

Net Investment: A measure of a company's investment in capital, found by subtracting non-cash depreciation from capital expenditures.

Self -Assesment:

1. When GNP is rising rapidly then investment will be at a low level.
2. Aggregate expenditure function is the sum of consumption and investment function.
3. An investment function may shift upwards due to a rise in interest rate.
4. An investment function may shift downwards due to a fall in MEC.
5. Investment is a ..... variable.
   a. Stock
   b. Flow
   c. Stable
   d. Steady
6. ..... investment is the total addition to the capital stock.
   a. Gross
   b. Net
   c. Replacement Notes
   d. Induced
7. Net investment is gross investment minus ..... investment.
   a. Ex-ante
   b. Ex-post
   c. Replacement
   d. Induced
8. ..... investment is independent of national income or its rate of change.
   a. Induced
   b. Ex-ante
   c. Ex-post
   d. Autonomous
9. Induced investment depends on .....
   a. National income
   b. Autonomous investment
   c. Aggregate demand
   d. Inflation rate
10. What does the term Gross investment mean while denoting a nation's economy?

a) Gross investment= Net investment + Depreciation

b) Gross investment= Net investment - Depreciation

c) Gross investment= Depreciation - Net investment

d) None of the above

11. An increase in planned investment spending causes aggregate output to;

a) increase by an amount equal to the change in investment spending.

b) increase by an amount less than the change in investment spending.

c) increase by an amount greater than the change in investment spending.

d) decrease by an amount less than the change in investment

12. An increases in investment is most likely to be caused by

(a) Lower interest rates

(b) Expectations of lower national incomes

(c) A decrease in the marginal propensity to consume

(d) An increase in withdrawals.

13. A profit maximizing firm will invest up to the level of investment where

(a) The cost of borrowing equals marginal efficiency of capital

(b) The cost of borrowing is greater than marginal efficiency of capital

(c) The cost of borrowing is less than marginal efficiency of capital

(d) The cost of borrowing is equal to marginal propensity to consume.

14. The difference between gross investment and net investment is

(a) Depreciation

(b) Acceleration

(c) Deceleration

(d) Capital investment

15. Investment is

(a) An injection that increases aggregate demand

(b) An withdrawal that increases aggregate demand

(c) An injection that decreases aggregate demand

(d) An withdrawal that decreases aggregate demand

Review Questions:

1. What do you understand by investment function? Explain the factors that influence the level of investment in the economy.
2. Distinguish between autonomous investment and induced investment. Explain the factors that determine the level of investment in the economy
3. What is meant by marginal efficiency of capital? How is it calculated? What are the factors that determine marginal efficiency of capital in the economy?
4. What is marginal efficiency of investment? What role do expectations of entrepreneurs play in determining marginal efficiency of investment or capital?
5. How do changes in the rate of interest influence the decision to invest? Is investment interest elastic?
6. Illustrate with the help of an example, how rate of investment affects investment decisions.
7. Discuss the major factors that affect investment decisions, in brief.

Answers: Self-Assessment:

1. False
2. True
3. False
4. True
5. Flow
6. Gross
7. Replacement
8. Autonomous
9. National Income
10. Gross investment= Net investment + Depreciation
11. increase by an amount less than the change in investment spending.
12. Lower interest rates
13. The cost of borrowing equals marginal efficiency of capital
14. Depreciation
15. An injection that increases aggregate demand

Further Readings:

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5. http://www.amosweb.com/cgi-bin/awb_nav.pl?s=wpd&c=dsp&k=induced investment
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Unit 09: General Equilibrium of Economy

CONTENTS

Objectives

After studying this unit, you will be able to,

1. Understand IS Curve and Goods Market equilibrium.
2. Understand Extension of IS-LM to Government Sector.

Introduction

According to Prof. J. M. Keynes, national income is determined at the level where aggregate demand (i.e., aggregate expenditure) for consumption and investment goods (C + I) equals aggregate supply. Keynes in his simple analysis of equilibrium in the goods market, he considers that investment is determined by the rate of interest and marginal efficiency of capital and it is independent of the level of national income. According to Prof. Keynes, rate of interest is determined in the money market equilibrium by the demand for money and the supply of money. There is one flaw in this Keynesian model of money market equilibrium. In this model whereas the changes in the rate of interest in the money market affect investment and therefore the level of income and output in the goods market, there is seemingly no inverse influence of changes in goods market (investment and income) on the money market equilibrium.

It has been shown by J.R. Hicks and others that with greater insights into the Keynesian theory one finds that the changes in income caused by changes in investment or propensity to consume in the goods market also influence the determination of interest in the money market. According to him, the level of income which depends on the investment and consumption demand determines the transactions demand for money which affects the rate of interest. Hicks, Hansen, Lerner and Johnson have put forward a complete and integrated model based on the Keynesian framework wherein the variables such as investment, national income, rate of interest, demand for and supply of money are interrelated and mutually interdependent and can be represented by the two curves called the IS and LM curves. This extended Keynesian model is therefore known as IS-LM curve model. In this model they have shown how the level of national income and rate of interest are jointly determined by the simultaneous equilibrium in the two interdependent goods and money markets. Now, this IS-LM curve model has become a standard tool of macroeconomics and the effects of monetary and fiscal policies are discussed using this IS and LM curves model.

9.1 The Two Market Equilibrium:

The IS-LM model emphasizes the interaction between the goods and the financial markets. The Keynesian model looks at income determination by arguing that income affects spending, which, in its turn, determines output (GNP) and income (GNI). Hicks and Hansen add the effects of interest rates on spending, and thus income and the dependence of the financial markets on income. Higher income raises money demand and thus interest rates. Higher interest rates lower spending and thus income spending, interest rates and income are determined jointly by equilibrium in the goods and financial markets.

IS Curve and Its Derivation (Product Market Equilibrium)

The IS Curve shows that coincidence of interest rate and actual GDP which establishes the equality between saving (S) and investment (I). According to, Lipsey and Chrystal "The IS Curve is the focus of interest rate and actual GDP that are consistent with equality between desired spending and output, or what is the same thing, injection and leakages. It is drawn for given value of the government expenditure, exports, and automatic consumption as well as forgiven tax rates and a given price level." Therefore, the IS Curve or IS function indicates the commodity market equilibrium.

The IS-LM curve model emphasizes the interaction between the goods and money markets. The goods market is in equilibrium when aggregate demand is equal to income. The aggregate demand is determined by consumption demand and investment demand. With this introduction of interest as a determinant of investment, the latter now becomes an endogenous variable in the model. When the rate of interest falls the level of investment increases and vice versa. Thus, changes in the rate of interest affect aggregate demand or aggregate expenditure by causing changes in the investment demand. When the rate of interest falls, it lowers the cost of investment projects and thereby raises the profitability of investment. The businessmen will therefore undertake greater investment at a lower rate of interest. The increase in investment demand will bring about increase in aggregate demand which in turn will raise the equilibrium level of income. In the derivation of the IS curve we seek to find out the equilibrium level of national income as determined by the equilibrium in goods market by a level of investment determined by a given rate of interest. Thus, IS curve relating different equilibrium levels of national income with various rates of interest. As explained above, with a fall in the rate of interest, the planned investment will increase which will cause an upward shift in aggregate demand function (C + I) resulting in goods market equilibrium at a higher level of national income.

Thus, from the C+I approach, we have three equations to cover the product market.

$C = C(Y)$ (the consumption function) (1)

$I = I(r)$ (the investment function) (2)

$Y = C(Y) + I(r)$ (the equilibrium condition) (3)

From the saving-investment approach, the three equations covering the product market can be written as.

$S = S(Y)$ (the saving function) (4)

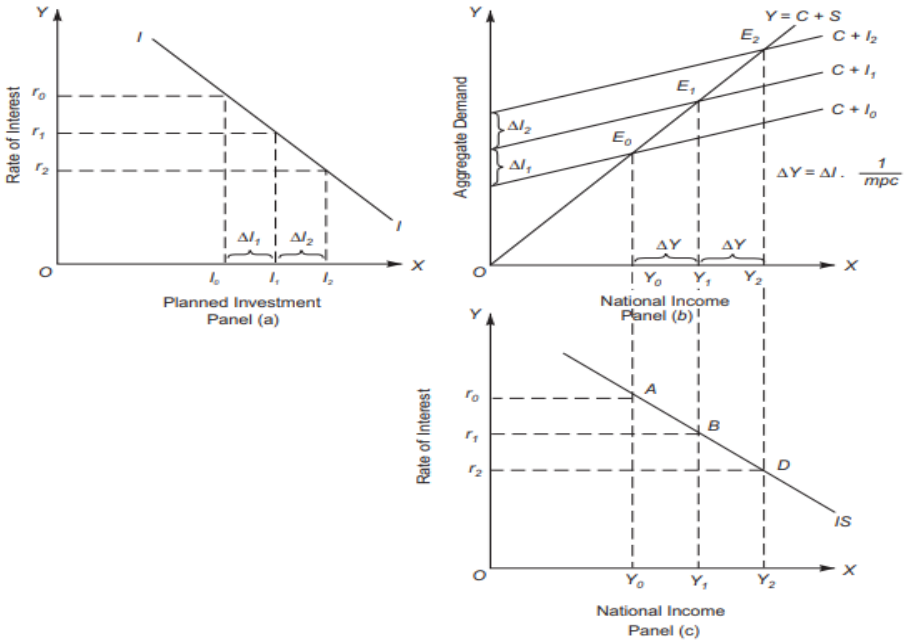
$I = I(r)$ (the invest function) (5)

$S(Y) = I(r)$ (the e.g. condition) (6)

The lower the rate of interest, the higher will be the equilibrium level of national income. Thus, the IS curve is the locus of those combinations of rate of interest and the level of national income at which goods market is in equilibrium. How the IS curve is derived is illustrated in Fig. 1. In panel (a) of Fig. 1 the relationship between rate of interest and planned investment is depicted by the investment demand curve II. It will be seen from panel (a) that at rate of interest Or_0 the planned investment is equal to OI_0. With OI_0 as the amount of planned investment, the aggregate demand curve is $C + I_0$ which, as will be seen in panel (b) of Fig. 1, equals aggregate output at OY0 level of national income. Therefore, in panel (c) at the bottom of Fig. 1, against rate of interest Or0, level of income equal to OY_0 has been plotted. Now, if the rate of interest falls to Or_1, the planned investment by businessmen increases from OI_0 to OI1 [see panel (a)]. With this increase in planned investment, the aggregate demand curve shifts upward to the new position $C + I_1$ in panel (b), and the goods market is in equilibrium at OY_1 level of national income. Thus, in panel (c) at the bottom of Fig. 1 the level of national income OY_1 is plotted against the rate of interest, Or_1. With further lowering of the rate of interest to Or_2, the planned investment increases to OI_2 [see panel (a)]. With this further rise in planned investment the aggregate demand curve in panel (b) shifts upward to

the new position C + I_2 corresponding to which goods market is in equilibrium at OY_2 level of income. Therefore, in panel (c) the equilibrium income OY_2 is shown against the interest rate Or_2. By joining points A, B, D representing various interest-income combinations at which goods market is in equilibrium we obtain the IS curve. It will be observed from Fig.1 that the IS curve is downward sloping (i.e., has a negative slope) which implies that when rate of interest declines, the equilibrium level of national income increases.

Fig.1 Derivation of IS curve (Product Market Equilibrium)

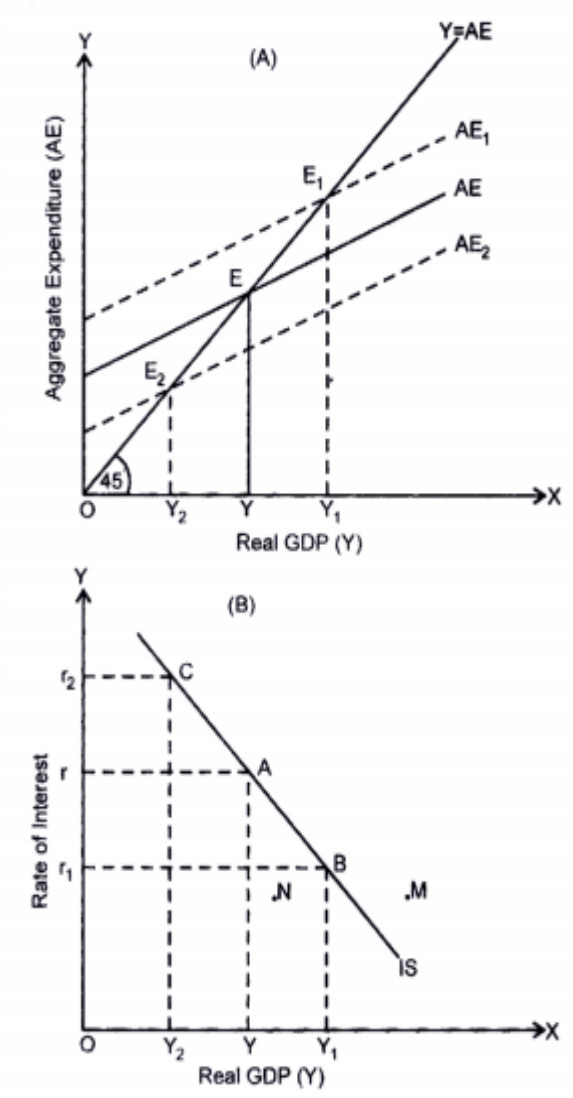


What accounts for the downward-sloping nature of the IS curve?

As seen above, the decline in the rate of interest brings about an increase in the planned investment expenditure. The increase in investment spending causes the aggregate demand curve (i.e, C + I curve) to shift upward and therefore leads to the increase in the equilibrium level of national income. Thus, a lower rate of interest is associated with a higher level of national income and vice versa. This makes the IS curve, which relates the level of income with the rate of interest, to slope downward. Steepness of the IS curve depends on (1) the elasticity of the investment demand curve, and

(2) the size of the multiplier. The elasticity of investment demand signifies the degree of responsiveness of investment spending to the changes in the rate of interest. Suppose the investment demand is highly elastic or responsive to the changes in the rate of interest, then a given fall in the rate of interest will cause a large increase in investment demand which in turn will produce a large upward shift in the aggregate demand curve. A large upward shift in the aggregate demand curve will bring about a large expansion in the level of national income. Thus, when investment demand is more elastic to the changes in the rate of interest, the investment demand curve will be relatively flat (or less steep). Similarly, when investment demand is not much sensitive or is less elastic to the changes in the rate of interest, the IS curve will be relatively steeper. The steepness of the IS curve also depends on the magnitude of the multiplier. As has been explained in a previous chapter, the value of multiplier depends on the marginal propensity to consume (MPC). It may be noted that the higher the marginal propensity to consume, the aggregate demand (C + I) curve will be steeper and the magnitude of multiplier will therefore be large.

In case of a higher marginal propensity to consume (MPC) and therefore a higher value of multiplier, a given increment in investment demand caused by a given fall in the rate of interest will help to bring about a greater increase in equilibrium level of income. Thus, the higher the value of multiplier, the greater will be the rise in equilibrium income produced by a given fall in the rate of interest and this makes the IS curve flatter. On the other hand, the smaller the value of multiplier due to lower marginal propensity to consume, the smaller will be the increase in equilibrium level of income following a given increment in investment caused by a given fall in the rate of interest. Thus, in case of smaller size of multiplier the IS curve will be steeper.



9.2 Properties of the IS-curve

1. ***The Slope of the IS-curve:*** The IS-curve is negatively sloped because a higher level of interest rate reduces investment spending, thereby reducing aggregate demand and thus the equilibrium level of income. The steepness of the curve depends on the interest elasticity of investment (i.e., how sensitive investment spending is to changes in the interest rate) as also on the (investment) multiplier.

   The IS Curve is derived from the combination of actual GDP level and interest rate. Its slope is downward from left to right. It means that high interest rate decreases the actual GDP because of less investment expenditure and low interest rate increases the actual GDP because of high investment expenditure. Being the flatter or steeper IS Curve depends on this thing how sensitive investment from the change in interest rate and how much is the price of multiplier. If investment is more sensitive from specified change of interest rate then the IS Curve will be flatter. And if investment is less sensitive from a specified change of interest rate then the IS Curve will be steeper. The price of multiplier also determines to be steeper or flatter of IS Curve. In the situation of high multiplier price,

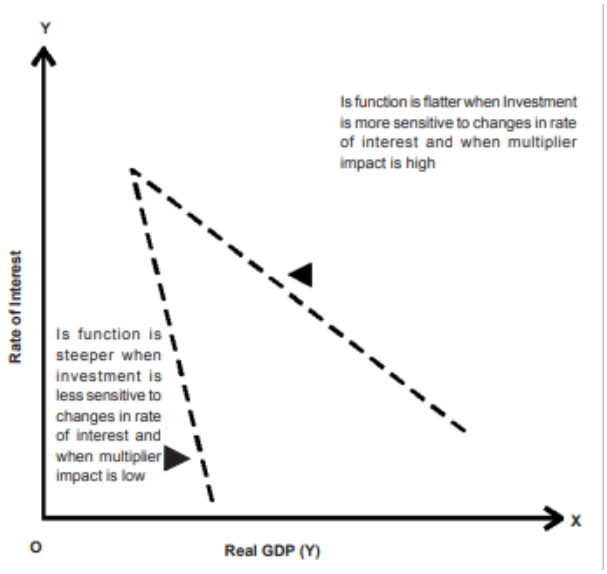
because of a specified change in investment, the sensitivity is larger (on a given interest rate). Because of this AE Curve is flatter which is responsible for being the IS Curve flatter. In the situation of being this multiplier price lesser, the AE Curve is steeper because of which the IS Curve is

Fig. 2 Slope of IS Curve

also respectively steeper. In Fig. 2, the IS Curve is shown as negative sloped. The IS Curve is flatter for the high price of multiplier or interest rate sensitive investment as IS_1. The IS Curve is steeper for the low price of multiplier or insensitive investment as IS_2.

Two parameters impacting slope of IS Curve

(i) Sensitivity of I to r: The sensitivity of I to r is as higher i.e., the responsiveness of investment towards the change in interest rate the IS Curve will be as flatter and vice-versa. ***(ii) Value of Multiplier:*** The value of multiplier is as higher i.e., because of rise in investment there is as rise in Aggregate Expenditure.



2. ***Shifts in the IS-curve:*** It is the autonomous expenditure which determines the position of the IS curve and changes in the autonomous expenditure causes a shift in it.

By autonomous expenditure we mean the expenditure (investment expenditure, government expenditure, consumption expenditure) which does not depend on the level of income and the rate of interest.

Fig. 3 Shift in IS Curve

The shift in IS Curve happens because of the change in any analogous component of total expenditure. In two-sided economy, it can happen because of change in analogous consumption expenditure and analogous investment expenditure. The rise in analogous investment expenditure shifts the IS Curve towards left. Its cause is easy. The rise in analogous investment expenditure shifts the AE Curve parallelly upward. The upward shift of AE Curve shifts the IS Curve towards right.

9.3 Money Market Equilibrium: Derivation Of Lm Curve

The LM curve can be derived from the Keynesian theory from its analysis of money market equilibrium. According to Keynes, demand for money to hold depends upon transactions motive and speculative motive. It is the money held for transactions motive which is a function of income. The greater the level of income, the greater the amount of money held for transactions motive and therefore higher the level of money demand curve.

The LM Curve shows the different combinations of actual GDP (Y) and interest rate (r) which establishes the equality between supply and demand of money. Hence, it shows the relationship between actual GDP and market rate of interest. According to Lipsey and Chrystal. "The LM Curve

plots combinations of GDP and the interest rate, for a given money supply and given price level, that are consistent with the equality of money demand and money supply."

The demand for money depends on the level of income because they have to finance their expenditure, that is, their transactions of buying goods and services. The demand for money also depends on the rate of interest which is the cost of holding money. This is because by holding money rather than lending it and buying other financial assets, one has to forgo interest. Thus, demand for money (Md) can be expressed as: Md = L (Y, r) where Md stands for demand for money, Y for real income and r for rate of interest.

In Keynesian theory, demand for money is split into two parts – the transactions demand (m1) and the speculative demand (m2). The transaction demand is assumed to be proportional to the level of income.

$$m_1 = kY$$

The speculative demand for money is assumed to be an inverse function of the rate of interest,

$$\text{i.e., } m_2 = h(i)$$

The total demand for money md is then given by

$$m_d = m_1 + m_2 \text{ or}$$

$$m_d = kY + h(i)$$

The supply of money m_s, is determined outside the model and is fixed by the monetary authorities– it is thus exogenous. Thus, the supply of money can be written as

$$m_s = m_a$$

Where, $m_a$is simply the amount of money that exists, an amount determined by monetaryauthorities. Since in equilibrium, demand for money is equal to supply of money, we get thefollowing three equations to cover the money market.

$$m_d = kY + h(i) \text{ (demand for money)}$$

$$m_s = m_a \text{ (supply of money)}$$

$$m_d = m_s \text{(equilibrium condition)}$$

The equilibrium condition $m_s = m_d$or $m_s = kY + h(i)$ gives the LM-curve.

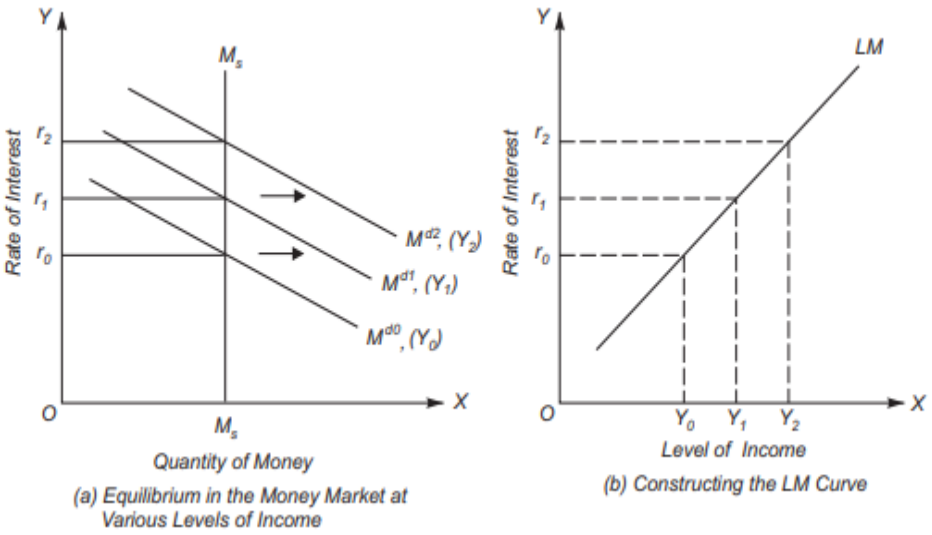


Fig.4 Derivation of LM Curve

Thus, we can draw a family of money demand curves at various levels of income. Now, the intersection of these various money demand curves corresponding to different income levels with the supply curve of money fixed by the monetary authority would give us the LM curve. The LM curve relates the level of income with the rate of interest which is determined by money market

equilibrium corresponding to different levels of demand for money. The LM curve tells what the various rates of interest will be (given the quantity of money and the family of demand curves for money) at different levels of income. But the money demand curve or what Keynes calls the liquidity preference curve alone cannot tell us what exactly the rate of interest will be. In Fig. 4 (a) and (b) we have derived the LM curve from a family of demand curves for money. As income increases, money demand curve shifts outward and therefore the rate of interest which equates supply of money with demand for money rises. In Fig. 4 (b) we measure income on the X-axis and plot the income levels corresponding to the various interest rates determined at those income levels through money market equilibrium by the equality of demand for and the supply of money in Fig. 4 (a). It is important to note that LM curve by itself does not determine either national income or the interest rate that will prevail in the economy. LM curve represents only the relationship between levels of national income and interest rates at which money market is in equilibrium. As we will explain below, LM and IS curves together determine equilibrium national income and rate of interest.

9.4 Properties of LM-curve

1. ***The Slope of LM-curve:*** The LM-curve is positively sloped. This means that an increase in the interest rate reduces the demand for money. To maintain the demand for money equal to the fixed supply, the level of income has to rise. Accordingly, money market equilibrium implies that an increase in the interest rate is accompanied by an increase in the level of income.

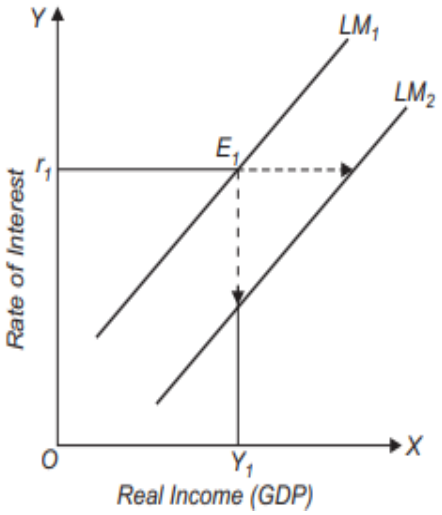
It will be noticed from Fig. 4 (b) that the LM curve slopes upward to the right. This is because with higher levels of income, demand curve for money (Md) is higher and consequently the money market equilibrium, that is, the equality of the given money supply with money demand curve occurs at a higher rate of interest. This implies that rate of interest varies directly with income. It is important to know the factors on which the slope of the LM curve depends. There are two factors on which the slope of the LM curve depends.

First, the responsiveness of demand for money (i.e., liquidity preference) to the changes in income. As the income increases, say from Y_0 to Y_1, the demand curve for money shifts from M0 d to M_1 d, that is, with an increase in income, demand for money would increase for being held for transactions motive, Md or $L_1 = f(Y)$. This extra demand for money would disturb the money market equilibrium and for the equilibrium to be restored the rate of interest will rise to the level where the given money supply curve intersects the new demand curve corresponding to the higher income level. It is worth noting that in the new equilibrium position, with the given stock of money supply, money held under the transactions motive will increase whereas the money held for speculative motive will decline. The greater the extent to which demand for money for transactions motive increases with the increase in income, the higher the rise in the rate of interest and consequently the steeper the LM curve. $r = f(M_1d, M_2d)$ where r is the rate of interest, M_1d is the stock of money available for transactions motive and M_2d is the money demand or liquidity preference for speculative motive.

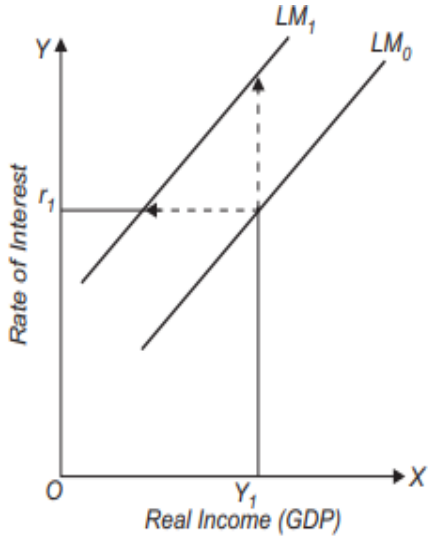
The second factor which determines the slope of the LM curve is the elasticity or responsiveness of demand for money to the changes in rate of interest. The lower the elasticity of demand for money for speculative motive with respect to the changes in the rate of interest, the steeper will be the LM curve. On the other hand, if the elasticity of money demand function to the changes in the rate of interest is high, the LM curve will be flatter or less steep.

2. **Shift in the LM Curve:** Another important thing to know about the IS-LM curve model is that what brings about shifts in the LM curve or, in other words, what determines the position of the LM curve. As seen from Fig. 5, a LM curve is drawn by keeping the stock of money supply fixed. Therefore, when the money supply increases, given the money demand function, it will lower the rate of interest at the given level of income. This is because, with income fixed, the rate of interest must fall so that demand for money for speculative and transactions motive increases to become equal to the greater money supply. This will cause the LM curve to shift to the right as shown in Fig. 5 (a). On the contrary, if money supply decreases, LM curve will shift to the left as shown in Fig. 5 (b) which shows that at each rate of interest, real income must be lower to attain money market equilibrium with smaller money supply, or alternatively for a given level of

income (GDP) rate of interest must be higher to achieve money market equilibrium with a smaller money supply.



a. Increase in Real Money Supply (M/P) Causes a rightward shift in LM Curve. (Shown by horizontal arrow mark)



b. Decrease in Real Money Supply causes a shift in LM Curve Upward or to the left

The other factor which causes a shift in the LM curve is the change in liquidity preference (i.e., money demand function) for a given level of income. If money demand function increases, given the stock of money, this will lead to the rise in the rate of interest for a given level of income and will therefore bring about a shift in the LM curve up and to the left. It therefore follows that increase in the money demand function causes the LM curve to shift to the left. On the contrary, if money demands function, with a given level of income declines, it will lower the rate of interest for a given level of income and will therefore shift the LM curve downward to the right.

9.5 Macro-Economic General Equilibrium

The IS and the LM curves relate the two variables: (a) income and (b) the rate of interest. Income and the rate of interest are therefore determined together at the point of intersection of these two curves, i.e., E in Fig. 6 The equilibrium rate of interest thus determined is Or_2 and the level of income determined is OY_2. At this point income and the rate of interest stand in relation to each other such that (1) the goods market is in equilibrium, that is, the aggregate demand equals the level of aggregate output, and (2) the demand for money is in equilibrium with the supply of money (i.e., the desired amount of money is equal to the actual supply of money). It should be noted that LM curve has been drawn by keeping the supply of money fixed. Thus, the IS-LM curve model is based on: (1) the investment-demand function, (2) the consumption function, (3) the money demand function, and (4) the quantity of money.

We see, therefore, that according to the IS-LM curve model both the real factors, namely, saving and investment, productivity of capital and propensity to consume and save, and the monetary factors, that is, the demand for money (liquidity preference) and supply of money play a part in the joint determination of the rate of interest and the level of income. Any change in these factors will cause a shift in IS or LM curve and will therefore change the equilibrium levels of the rate of interest and income.

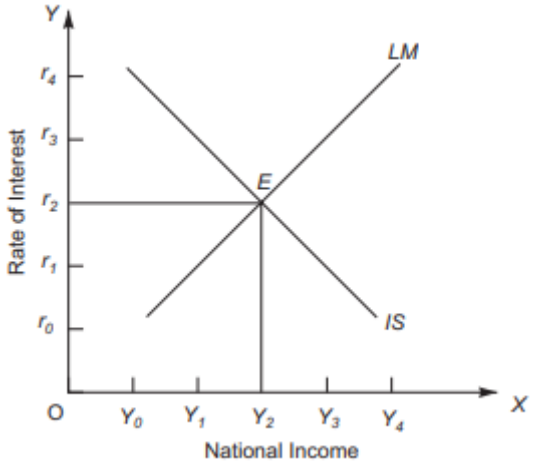


Fig. 6. The IS and LM Curves Combined: The Joint Determination of the Interest Rate and the Income Level

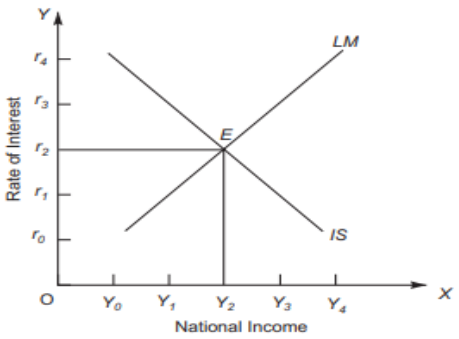
The IS-LM curve model explained above has succeeded in integrating the theory of money with the theory of income determination. And by doing so, as we shall see below, it has succeeded in synthesizing the monetary and fiscal policies. Further, with the IS-LM curve analysis, we are better able to explain the effect of changes in certain important economic variables such as desire to save, the supply of money, investment, demand for money on the rate of interest and level of income.

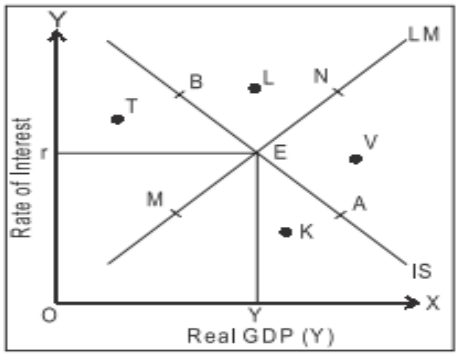
9.6 Disequilibrium

Except point E, not any point shows the equilibrium in product market or money market or both. All the points like A, B (except point E where IS = LM) on IS curve in Fig. 19.2 show the equilibrium in product market but disequilibrium in money market. All the points as A, B show those different coincidences of interest rates and actual GDP which equalize the total expenditure and total product or saving and investment. Similarly, the points as M, N (except point E where IS = LM) on LM curve in Fig. 19.2 show the equilibrium in money market but disequilibrium in product market. All the points on LM curve show those different coincidences of interest rates and actual GDP which equalize the demand for money and supply of money. Which are neither situated on LM Curve nor on IS Curve, they indicate the disequilibrium in both the product and money market. Assume, if we take point T, which is situated on the left of IS curve, this point T shows that one coincidence of actual GDP and interest rate in which total expenditure is more than total product, which means that the investment is more than saving (AE > Y, I > S). Therefore, any point on left of IS curve shows that AE > Y and I > S. The point on right of IS curve (as V) shows those coincidences of actual GDP and interest rate where total production is more that total expenditure or more than investment (Y > AE, ⇒ S > I). Therefore, any point on right of LM curve (as K) shows those coincidences of actual GDP and interest rate where money demand is more than money supply (L > M). Similarly, any point on left of LM

Fig. 7: Disequilibrium in Money and Goods Market

Curve (as L) shows those coincidences of actual GDP and interest rate where money supply is more than demand (M > L). Therefore, all those points which are not situated on IS or LM Curve, show the disequilibrium in either product market or money market or both



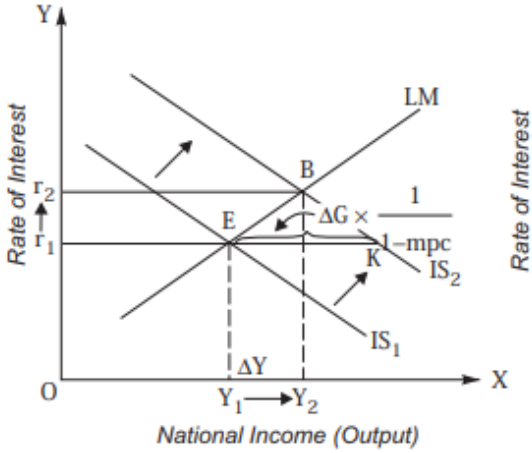


9.7 IS-LM curve Model: explaining roles of fiscal and monetary policies

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.

Role of Fiscal Policy

Increase in Government Expenditure: Let us first explain how IS-LM model shows the effect of increase in Government expenditure on level of income. This is illustrated in Fig. 8. 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 Fig. 8 where increase in Government expenditure leads to the shift in IS curve from IS1 to IS2. Note that the horizontal distance between the two IS curves is equal to ΔG× 1/1- MPC which shows the increase in income that occurs in Keynes's multiplier model. It will be seen from Fig. 8 that with the LM curve remaining unchanged, the new IS2 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 r1 to r2 and income level rises from Y1 to Y2. Thus, IS-LM model shows that expansionary fiscal policy of increase in Government expenditure raises both the level of income and rate of interest than EK which would occur in Keynes's model.



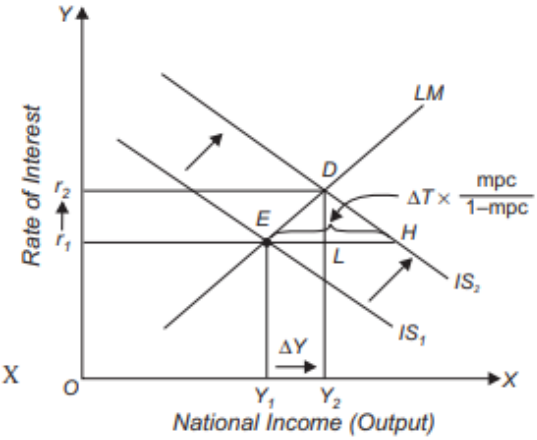


Fig. 9 a: Fiscal Policy: Impact of Increase in Government Expenditure on Interest Rate & Income

9 b: Effect of Cut in Taxes on Income and Interest rates

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, increase in Government expenditure crowds out some private investment. Therefore, in IS-LM model increase in national income is less than that under the simple Keynesian model.

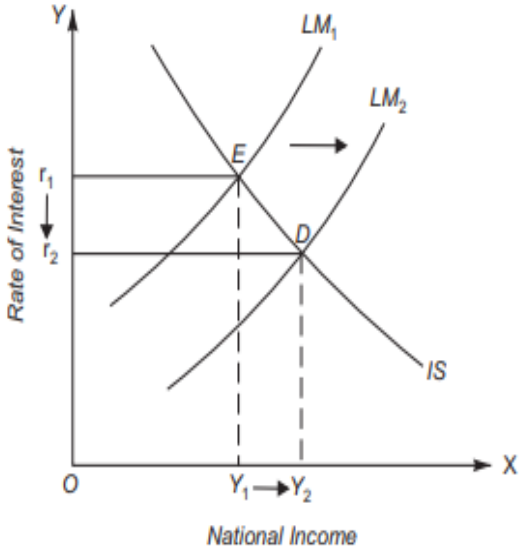
Reduction in Taxes.:

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 Fig. 8, from IS_1 to IS_2. It may however be noted that in the Keynesian multiplier model, the horizontal shift in the IS curve is determined by cut in taxes (ΔT) times the value of tax multiplier which is equal to ΔT *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 Fig. 8, rate of interest rises from r_1 to r_2 and level of income increases from Y_1 to Y_2. Due to the rise in rate of interest increase in national income as a reduction in tax is less than EH (=ΔT *MPC/(1- MPC) that would occur in the simple Keynesian model. Income equal to KH has been wiped out because of crowding-out effect of fiscal policy on private investment as a result of rise in interest rate.

On the other hand, if the Government intervenes in the economy to reduce inflationary pressures, it will raise 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.

Role of Monetary Policy

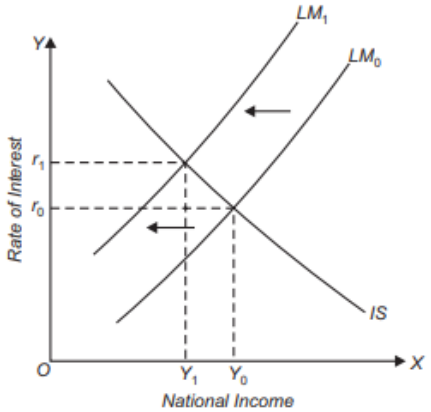
Through making appropriate changes in monetary policy the Government can influence the level of economic activity. Monetary policy may also be expansionary or contractionary depending on the prevailing economic situation. IS-LM model can be used to show the effect of expansionary and tight monetary policies. 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.



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 Fig. 10, 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, IS-LM curve model shows how 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

Fig. 10: Effect of Expansion in Monetary Supply on Interest Rate and Income

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 contractionary monetary policy. To control inflation the Central Bank of a country can reduce money supply through open market operations by selling bonds or government securities in the open market and in return gets currency funds from those who buy the bonds. In this way liquidity in the banking system can be reduced. To reduce money supply for fighting inflation, the Central Bank can also raise cash reserve ratio of the banks. The higher cash reserve ratio implies that the banks have to keep more cash reserve with the Central Bank. As a result, the cash reserves with the banks fall which force them to contract credit. With this money supply in the economy declines. In the IS–LM model reduction in money supply will cause a leftward shift in LM curve and will lead to the rise in interest rate and fall in the level of income.

Summary

- IS-LM stands for simultaneous equality of injections and leakages, and of demand for money and supply of money. Equality of injections and leakages determines national output, i.e., product market equilibrium. Equality of demand for money and supply of money determines money market equilibrium.
- The IS-curve is also a locus of points showing alternate combinations of interest rates and income (output) at which the commodity market clears. That is why the IS-curve is called the commodity market equilibrium schedule.
- The IS-curve is negatively sloped because a higher level of interest rate reduces investment spending, thereby reducing aggregate demand and thus the equilibrium level of income.
- The LM-curve is a line of points showing alternative combinations of the rate of interest and the level of income that bring about equilibrium in the money market.
- The LM-curve is positively sloped. This means that an increase in the interest rate reduces the demand for money.
- For general equilibrium, the interest rates and income levels have to be such that both the goods and money market are in equilibrium.
- The interest rate and level of output are determined by the interaction of money (LM) and commodity (IS) markets. The equilibrium levels increase and interest rates change when either the IS or LM-curve shifts.
- The reduction in money supply shifts LM Curve towards left side and it shifts the AD Curve towards left side on the definite price level. Undoubtedly, when AD shifts towards right then there is rise in actual GDP and when AD shifts towards left, then there is reduction in actual GDP.

Keywords

- ***Autonomous Spending:*** Spending that is considered necessary regardless of income level, such as government spending, basic living expenses and investing.
- ***Investment Goods:*** Goods that are purchased with the expectation of earning a favorable return.
- ***Investment Multiplier:*** The change in national income which would result from a unit change in investment.
- ***IS-curve:*** is also a locus of points showing alternate combinations of interest rates and income (output) at which the commodity market clears.
- ***LM-curve:*** It is a line of points showing alternative combinations of the rate of interest and the level of income that bring about equilibrium in the money market.
- ***Speculative Demand for Money:*** is the desire to have money for transactions other than those necessary for living.

- ***Transaction Demand for Money:*** It results from the need for liquidity for day-to-day transactions in the near future.

Self-Assessment

1. ..... is also called the commodity market equilibrium schedule.

A. Investment schedule

B. Income schedule

C. IS-curve

D. LM-curve

2. An IS-curve has a ..... slope.

A. Positive

B. Negative

C. Concave

D. Convex

3. If autonomous spending increases, the IS-curve will .....

A. Shift to the right

B. Shift to the left

C. Not shift at all

D. Indefinitely

4. The position of the IS-curve depends on .....

A. Income

B. Interest rate

C. Government expenditure

D. Autonomous expenditure

5. The increase in autonomous spending increases the level of income.

6. With a fixed supply of money, the interest rate has to fall to ensure that the demand for money stays equal to the fixed supply.

7. The equilibrium between IS and LM curves shows the simultaneous ..... in Product and Money Market.

A. equilibrium

B. disequilibrium

C. profit

D. loss

8. If LM curve is given, then high equilibrium comes from the coincidence of actual GDP and interest rate because of right shift of IS Curve.

9. Because of right shift of LM Curve on given IS Curve, the actual GDP rise.

10. In Contractionary Fiscal Policy, the IS Curve shifts .....

A. backward
B. forward
C. upward
D. downward

11. Other things equal, a decrease in autonomous consumption shifts the _____ curve to the _____.

A. IS; right
B. IS; left
C. LM; left
D. LM; right

12. A decrease in fully autonomous investment, other things equal, shifts the _____ curve to the _____.

A. IS; right
B. IS; left
C. LM; left
D. LM; right

13. A decline in taxes _____ consumer expenditure and shifts the _____ curve shifts to the _____.

A. raises; LM; right
B. lowers; IS; left
C. raises; IS; right
D. lowers; LM; left

14. Factors that cause the IS curve to shift include

A. changes in autonomous consumer spending.
B. changes in government spending.
C. changes in investment spending related to business confidence.
D. all of the above.

15. An increase in the money supply, other things equal, shifts the _____ curve to the _____.

A. IS; right
B. IS; left
C. LM; left
D. LM; right

Answers Self-Assessment

1.	C	2.	B	3.	A	4.	D	5.	True
6.	False	7.	A	8.	True	9.	True	10.	A
11.	B	12.	B	13.	C	14.	D	15.	D

Review Questions

1. Describe an IS-curve. How is it derived?

2. Define the LM-curve and explain its derivation.

3. Explain the effect of an increase in investment on an IS-curve?

4. Explain how an equilibrium level of national income and an equilibrium rate of interest are determined simultaneously at the point of intersection of the IS and LM schedules.

5. An upward shift in the consumption function leads to a rightward shift in the IS schedule. Comment.

6. Using IS-LM curve model analyze the impact of an increase in the money supply on the equilibrium level of national income and the rate of interest.

7. What do the IS and LM curves signify? Under what conditions would the IS-LM model be

unstable?

Further Readings:

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Unit 10: Money

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand Investment and its various types.
- understand the factors affecting Investment.

Introduction

You all use money in your day-to-day life, but do you know that money is a very important instrument in Macro Economic policy. Money is defined anything that is generally accepted as a medium of exchange. Most economic transactions are held through money. Main examples are buying, selling, borrowing, lending, etc. This is the characteristic of a monetary economy. Various kinds of money are divided into two groups: commodity money and fiat money.

(a) Commodity Money: This refers to any commodity used as money. Historically gold, silver, animals, grains, etc. have been used as money. A commodity money also has an intrinsic value. It means that it can be used both as a commodity as well as money. For example, silver when used for ornaments, medicines, etc. is a commodity; and when used for exchange is a money.

(b) Fiat Money: Fiat means a decree, or a formal authoritative order. Fiat money is anything declared by the state to serve as a medium of exchange. It is also called "legal tender". Currency notes, coins are the main examples.

Unlike commodity money, flat money has virtually no intrinsic value.

Example:

A currency note is a mere piece of paper, and its intrinsic value is zero. Still the public accepts paper money (currency) because government has taken steps to ensure that it is accepted.

10.1 Meaning of Money

Money is any object or record that is generally accepted as payment for goods and services and repayment of debts in a given socio-economic context or country. The main functions of money are distinguished as: a medium of exchange; a unit of account; a store of value; and, occasionally in the past, a standard of deferred payment. Any kind of object or secure verifiable record that fulfills these functions can be considered money.

Money is historically an emergent market phenomenon establishing commodity money, but nearly all contemporary money systems are based on fiat money. Fiat money, like any check or note of debt, is without intrinsic value as a physical commodity. It derives its value by being declared by a government to be legal tender; that is, it must be accepted as a form of payment within the boundaries of the country, for "all debts, public and private". Such laws in practice cause fiat money to acquire the value of any of the goods and services that it may be traded for within the nation that issues it.

The money supply of a country consists of currency (banknotes and coins) and bank money (the balance held in checking accounts and savings accounts). Bank money, which consists only of records (mostly computerized in modern banking), forms by far the largest part of the money supply in developed nations.

10.2 Definition of Money

To give a precise definition of money is a difficult task. Various authors have given different definitions of money. Professor D.H. Robertson defines money as "anything which is widely accepted in payment for goods or in discharge of other kinds of business obligations".

According to Crowther,

"Money can be defined as anything that is generally acceptable as a means of exchange and that at the same time acts as a measure and a store of value".

Robertson defines "Money is anything which is widely accepted in payment for goods, or discharge of other kind of business obligations".

Two important things about money emerge from the above two definitions of money. First, Money has been defined in terms of the functions it performs. That is why some economists have said that money is what money does. That is, money is anything which performs the functions of money. Secondly, an essential requirement of any kind of money is that it must be generally acceptable to every member of the society. Money has a value for 'A' only when he thinks that 'B' will accept it in exchange for the goods. And money is useful for 'B' only when he is confident that 'C' will accept it in settlement of debts. But the general acceptability is not the physical quality possessed by a good. General acceptability is a social phenomenon and is conferred upon a good when the society by law or convention adopts it as a medium of exchange.

Problems of a Barter System:

The barter system has many disadvantages. The main four of these are as follows:

i) ***Lack of a common measure of value:*** There is no common measure of value in a barter system. All commodities do not possess equal value. Suppose 'A' has rice and 'B' has wheat. How to decide that so much of wheat is equal to so much of rice? As there is no common measure of value, the ratio will be fixed according to the intensity of reciprocal of demand by 'A' and 'B';

ii) ***Absolute insistence on double coincidence of demand:*** The functioning of barter system necessitates a double coincidence of demand on the part of those involved in exchange of goods and services. It is absolutely necessary for one party to want exactly what the other party is offering in exchange and vice versa. If this double coincidence of demand is not matched exactly, no exchange will take place. Suppose, for example a farmer wants to sell her wheat and wants to buy shoes; then he has to find a person who has surplus shoes to sell and wants to buy wheat in exchange;

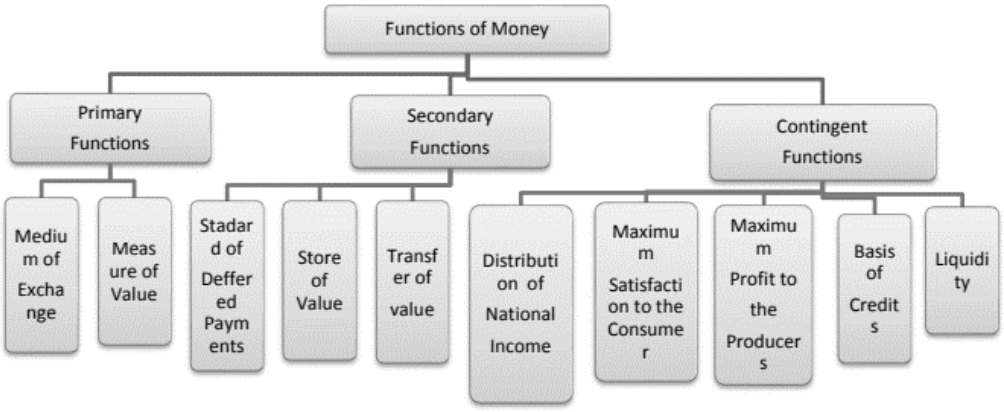
iii) Indivisibility of commodities: There are many goods, which cannot be divided. Suppose 'A' has a horse and 'B' has 1 kg of rice. Both of them agree to an exchange transaction. But according to the ratio of exchange arbitrarily fixed between them a portion of horse is equal to the value of 1 kg of rice. The transaction cannot take place because it is unthinkable to cut out a portion of living horse for exchange; and

iv) Difficulties in storing wealth: Another problem under the barter system is related to storing of wealth for future use. Most of the goods like wheat, horses, leather etc., lack sufficient durability and deteriorate with passage of time. Therefore, they cannot be conveniently stored for future use.

The barter system was compatible only with simple and primitive economies where the material needs of the people were few and everyone wore the same kind of clothes, the same kind of food and engaged in similar activities. But as the civilization advanced, wants multiplied and a certain degree of division of labour was achieved. In the changed economic scenario, the problems of barter system became highly pronounced. Such a feature encouraged some suitable alternative medium of

exchange, which would eliminate above-mentioned difficulties of barter system and facilitate transactions. This led to the innovation of 'Money'. Money is not needed for its own sake as one needs food, clothes and a house for living but to mediate transactions. It has purchasing power, which enables us to exchange goods and services. This feature makes money a unique commodity.

10.3 Functions of Money:



Primary Functions

There are two primary functions of money

I. Medium of Exchange

II. Measure of Value

I Medium of Exchange: Money solves the problems created by the barter system. First, money serves as a medium of exchange, which means that money acts as an intermediary between the buyer and the seller. Instead of exchanging accounting services for shoes, the accountant now exchanges accounting services for money. This money is then used to buy shoes. To serve as a medium of exchange, money must be very widely accepted as a method of payment in the markets for goods, labor, and financial capital.

II Measure of Value: Money as a standard of value or the unit of account plays a vital role in setting up of a common 'measuring rod/yardstick' for measuring any economic transactions. It helps us to set 'price' of goods and services vis-a-vis the other commodity. Under the barter system, this 'measurement' was extremely difficult and therefore at times people used to forgo the transaction without completing it. As a unit of account, it measures the value of all kinds of goods and services. If we pay Rs.50 for a fountain pen, we have a measure of value in terms of the basic unit of account, which is rupee. By reducing the value of all goods and services to a single unit of account, money has facilitated and simplified the system of exchange. Also, this function facilitates in preparation of books of accounts of a business, the budget for the economy, estimating inflation in an economy using index numbers, etc.

Secondary Functions of Money

There are three secondary functions of money

I. Standard of Deferred Payments

II. Store of Value

III. Transfer of Value

I. ***Standard of Deferred Payments (Future Payments):*** money must serve as a standard of deferred payment. This means that if money is usable today to make purchases, it must also be acceptable to make purchases today that will be paid in the future. Loans and future agreements are stated in monetary terms and the standard of deferred payment is what allows us to buy goods and services today and pay in the future. So money serves all of these functions— it is a medium of exchange, store of value, unit of account, and standard of deferred payment.

II. ***Store of Value:*** Money must serve as a store of value. In a barter system, we saw the example of the shoemaker trading shoes for accounting services. But she risks having her shoes go out of style, especially if she keeps them in a warehouse for future use— their value will decrease with each season. Shoes are not a good store of value. Holding money is a much easier way of storing value. You know that you do not need to spend it immediately because it will still hold its value the next day, or the next year. This function of money does not require that money is a perfect store of value. In an economy with inflation, money loses some buying power each year, but it remains money.

III. ***Transfer of Value:*** In this global listed world, various people or firms are carrying their assets to various other destinations in the form of foreign direct or indirect investment. This couldn't have been possible under the commodity-commodity exchange system. Students must have noticed the transfer of millions of dollars by one transnational company from one country to another.

IV. ***COTINGENT FUNCTIONS***

I. Distribution of National Income

II. Maximum Satisfaction to the Consumer

III. Maximum profit to the Producers

IV. Basis of Credit

V. Liquidity

I. Distribution of National Income: Money helps in optimum distribution of national income among different factors of production (land, labor, capital and enterprise). Total output of the country is jointly produced by these factors. So, the output should be distributed among them. Money helps in distribution of the national product in the form of rent, wage, interest and profit, which are expressed in money terms.

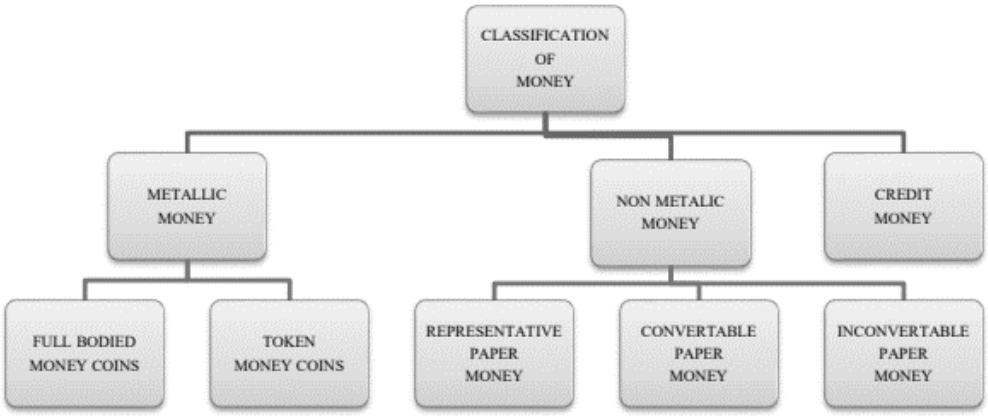
II. Maximum Satisfaction to the Consumer: Money helps the consumers and producers in maximizing their satisfaction. A consumer derives maximum satisfaction by equating the price (expressed in terms of money) of each commodity with its marginal utility (satisfaction). Similarly, a producer maximises his satisfaction (profit) by equating the marginal productivity of a factor with price of such factor.

III. Maximum profit to the Producers: A producer can maximize his profit if he so employs the various factors of production that the price of one unit of a factor is equal to the marginal productivity of that factor per unit.

IV. Basis of Credit: *Credit creation by commercial banks was not possible until money was introduced. Money as a store of value has encouraged savings by people in the form of demand deposits in banks. Such demand deposits are used by the commercial banks to create credit.*

V. Liquidity: Money is most liquid assets. Money is the most liquid of all assets. It can be easily converted into any type of asset without loss of value and time. Heterogeneous assets could be expressed in identical assets with the help of money.

Classification of money:



A. ***METALLIC MONEY:*** Money is made of some metal is called metallic money. Metals which were served as money were gold, silver, copper etc.

Metallic money further classified inti two parts full-bodied coins and token money coins

I. Full-Bodied Coins: It refers to money which is usually made of paper. The value of representative full-bodied money is much higher than its value as a commodity. It is accepted as money as it can be conveniently used for carrying out transactions. Such a type of paper money is 100% backed by metallic reserve of gold or silver and is redeemable at the option of the holder. For example, in case of convertible paper receipts, a person can exchange the amount stipulated on the paper receipt for equal value of gold.

II. Token Coins: These refer to small coins of various denominations, which are issued to facilitate day-to-day requirements of the people. All Indian coins, like those of Rs 10, 5, 2 or 1, are token coins since their value as money is more than value of metal contained in them.

B. PAPER MONEY

Money made of the paper is known as paper money or currency notes. Paper money further classified three categories:

I. Representative Paper Money: A representative paper money is fully backed by metallic content. Representative paper money is circulated by government after keeping the 100% valuable metals like gold and silver in its treasury.

II. Convertible Paper Money: For a long time, paper money remained a convertible paper money. Under this, money is convertible into standard coins made of gold or silver. Under it the paper currency issued by the Central Bank was fully backed by the reserves of gold and silver of equal value kept by it. Therefore, this paper currency system was called "Full Reserve System". But with the passage of time it was thought that a cent per cent reserve against paper currency issued was not needed and instead only proportion of 30 to 50 per cent was enough to convert the notes presented for conversion into gold. Therefore, proportional reserve system was adopted. According to this, the issuing authority was called upon to keep a 30 to 50% of the total amount of notes issued as gold reserves. A percentage of 30 to 50 was considered enough to honor the notes when they were presented for exchange into gold. It was based upon the fact that people found notes very convenient and they seldom thought of presenting them to the issuing authority. Therefore, full backing of gold was not required. In India, this proportional reserve system was adopted in 1927 and continued till 1957.

III. Inconvertible Paper Money: Thus, now-a-days paper money is of inconvertible type. Under the inconvertible paper money system, money is not convertible into gold or other precious metals. Thus, when paper money is inconvertible, the issuing authority is not responsible to convert the paper notes into gold or gold coins. The currency notes that are issued by Reserve Bank of India are 'fiat' paper. Money, that is, they are issued by the fiat i.e. order) of the Government. As they are legal tender, they are generally acceptable in exchange for goods and services and for payment of debt. It may be noted that 'promises to pay' written on the currency notes are not 'promises to pay'

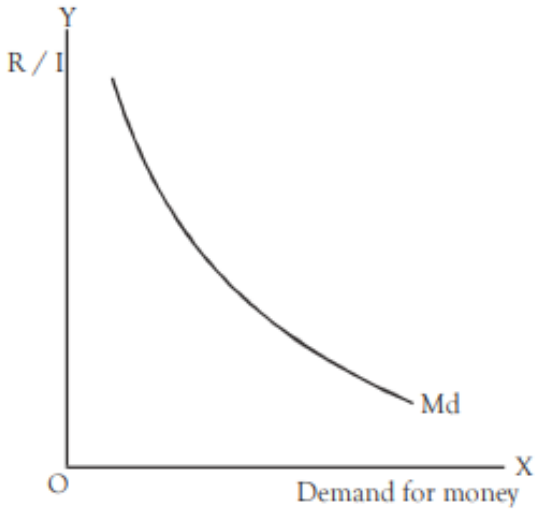
something else. For these notes, only other paper notes can be given whose value would be equal to the face value of the note you present for payment.

V. ***Credit Money (Or Bank Money):*** Demand deposits of banks are usually called bank money. Bank deposits are created when somebody deposits money with them. Banks also create deposits when they advance loans to the businessmen and traders. Today these demand deposits are the important constituent of the money supply in the country. It is important to note that bank deposits are generally divided in two categories: demand deposits and time deposits. Demand deposits are those deposits which are payable on demand through cheques and without any serving prior notice to the banks. On the other hand, time deposits are those deposits which have a fixed term of maturity and are not withdrawable on demand and also cheques cannot be drawn on them. Clearly, it is only the demand deposits which serve as a medium of exchange, for they can be transferred from one person to another through drawing a cheque on them as and when desired by them. However, since even time or fixed deposits can be withdrawn by foregoing some interest and can be used for making payments, they are included in the concept of broad money, generally called M3. It may be noted that latest addition to the forms of money are credit cards issued by the banks which are these days extensively used for making purchases.

10.4 Factors affecting Demand for Money

Demand means holding. People hold money to carry out transactions, like buying, selling, borrowing, lending, etc. The main factors that influence how much money people will hold (demand) are: rate of interest, GDP and price level. The money is held as cash and as deposits in chequable accounts.

1. ***Rate of interest (ROI):*** The alternative to holding money is lending money and earning interest. Thus, by holding money a person loses interest income. Interest is the opportunity cost of holding money. Higher the ROI (R/I in figures) higher the opportunity cost. Higher the opportunity cost, less the amount of money people will want to hold, and more the amount of money people will like to lend. This establishes inverse relation between ROI and demand for money. Graphically, it means downward sloping 'money demand curve' (Md curve). People hold money because money is useful for buying things; and because they want to take advantage of fluctuating prices of bonds.



2. ***GDP:*** People demand money to carry out transactions. The rupee value of transactions depends upon (i) total number of transactions and (ii) average rupee amount of each transaction. Out of these, number of transactions depends upon GDP mainly. Average

rupee amount of each transaction depends upon price level. A rise in GDP means there is more economic activity. It further means more transactions and more requirement of money to carry out transactions. Higher the GDP, more the demand for money.

3. ***Price Level:*** Price level determines average rupee amount of each transaction. If price level rises, firms and households would need more money balances to carry out day to day transactions. Higher the price level, higher the demand for money.
4. ***Changes in Banking Technology–*** Increased access to deposits means less demand to hold cash on hand. Changing technologies affect the quantity of money held. These include:
    - Daily interest checking deposits
    - Automatic transfers between checking and savings deposits
    - Automatic teller machines
    - Credit cards
5. ***Changes in Institutions–*** Changes in banking laws can increase/decrease demand for money.

Self-Assessment:

1. What is the defect of the barter system?

    a. Lack of double coincidence of wants
    b. Difficulty in the measurement of value
    c. Difficulty in store of value
    d. All of these

2. Which of the following is the feature of money?

    a. General acceptability
    b. Homogeneous unit
    c. Liquid asset
    d. All of these

3. Which is the correct order of money evolution?

    a. Commodity Money, Paper Money, Metal Money
    b. Commodity Money, Metal Money, Paper Money, Credit Money
    c. Credit Money, Metal Money, Paper Money
    d. None of the above

4. Which one is included in the primary function of money?

    a. Medium of Exchange
    b. Measure of Value
    c. Both (a) and (b)
    d. Store of Value

5. Which one is included in the secondary function of money?

    a. To make Deferred Payments
    b. Store of Value
    c. Transfer of Value
    d. All of these

6. Which of the following is not a function of money?

a. Medium of exchange
b. Price stability
c. Store of value
d. Unit of account

7. Because money serves as a medium of exchange, it eliminates

a. the need to write checks.
b. the need for specialization.
c. the use of commodities as money.
d. the need for a double coincidence of wants

8. Barter is an inefficient means of exchange because

a. barter transactions require a double coincidence of wants.
b. velocity is constantly changing.
c. demand will not necessarily equal supply.
d. in a barter transaction only one party needs to want what the other party has to sell

9. Money's function as a medium of exchange means that

a. money is a common denominator for expressing the value of goods and services.
b. money can be used to store wealth.
c. money serves as an acceptable means of payment.
d. money is a standard of deferred payment on exchange contracts extending into the future.

10. The distinguishing characteristic of commodity money is that

a. its value as a good equal its value as money.
b. its value as a good is greater than its value as money.
c. its value as a good is less than its value as money.
d. its value is always equal to the value of gold.

11. Which of the following would increase the demand for money, other factors constant?

a. A reduction in the nominal interest rate.
b. A decrease in real GDP.
c. An increase in the supply of money substitutes.
d. An increase in the price level.

12. Which of the following is correct? The demand for money

a. increases as the price level increases.
b. decreases as the price level increases.
c. depends on the supply of money.
d. is why checkable deposits are called demand deposits.

13. If everything is held constant, interest rates should increase if

a. the demand for money curve shifts to the left.
b. the supply of money increases.
c. the Fed injects reserves into the economy.
d. the demand for money curve shifts to the right.

14. One difficulty with using commodity monies is

a. that money is then not a stock variable.
b. that people may eat the money.
c. Gresham's law.
d. that gold and silver may be used as jewelry.

15. There is ..... relation between ROI and demand for money.

a. Direct
b. Inverse
c. No
d. Indirect

Summary:

- Money is defined anything that is generally accepted as a medium of exchange. Most economic transactions are held through money.
- "Medium of exchange" is the primary function of money. For anything to be called money. it must serve as a medium of exchange.
- Money has a central place in our society. Money is defined as something which is generally acceptable as a medium of exchange Money performs a number of functions and its importance lies in the fact of that it acts as a medium of exchange, as a unit of account, as standard of deferred payments and as a store of value.
- Money evolved itself over the ages and kept changing its form at different stages of its development starting from animal money to electronic money today; in sequence, the various phases of evolution of money are - commodity money, metallic money, paper money, super money and electronic money.

Keywords

- **Barter:** literally, trading one good or service for another, without using money.
- **Commodity money:** An item that is used as money, but which also has value from its use as something other than money.
- **Commodity-backed currencies:** are dollar bills or other currencies with values backed up by gold or another commodity.
- **Double coincidence of wants:** a situation in which two people each want some good or service that the other person can provide.
- **Fiat money:** has no intrinsic value, but is declared by a government to be the legal tender of a country.
- **Medium of exchange:** whatever is widely accepted as a method of payment
- **Money:** whatever serves society in four functions: as a medium of exchange, a store of value, a unit of account, and a standard of deferred payment.
- **Standard of deferred payment:** money must also be acceptable to make purchases today that will be paid in the future
- **Store of value:** something that serves as a way of preserving economic value that can be spent or consumed in the future
- **Unit of account:** the common way in which market values are measured in an economy

Review Questions:

1. In many casinos, a person buys chips to use for gambling. Within the walls of the casino, these chips can often be used to buy food and drink or even a hotel room. Do chips in a gambling casino serve all three functions of money?
2. Can you name some item that is a store of value, but does not serve the other functions of money?
3. What are the four functions served by money?
4. How does the existence of money simplify the process of buying and selling?
5. What is the double-coincidence of wants?
6. What is money? Show how it has removed the difficulties of barter system.
7. Define money. Describe its functions in a modern economy.
8. What is the necessary condition which makes something money? How is the store of value function of money derived from its function as a medium of exchange?
9. Money is what money does. Discuss 5. Define money. Explain its important functions.
10. Explain the following forms of money.
    (a) Demand Deposits
    (b) Paper money
    (c) Legal Tender money
    (d) Convertible and Inconvertible Money.
    (e) Fiat money

Answers: Self-Assessment

1.	D	2.	D	3.	B	4.	C	5.	D
6.	B	7.	D	8.	A	9.	C	10.	A
11.	D	12.	A	13.	A	14.	C	15.	B

Further Readings

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Unit 11: Money Supply

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand money supply and its measures.

Introduction

Money supply plays a crucial role in the determination of price level and interest rate. In the present chapter we shall explain what determines the money supply in an economy. In economic analysis it is generally presumed that money supply is determined by the policy of Central Bank of a country and the Government. However, this is not fully correct as in the determination of money supply, besides Central Bank and Government, the public and commercial banks also play an important role. There are various measures of money supply depending upon which types of deposits of banks and other financial institutions are included in it.

11.1 Importance of Money Supply

Growth of money supply is an important factor not only for acceleration of the process of economic development but also for the achievement of price stability in the economy. What constitutes the money supply and what factors cause variation and growth in money supply will be explained in the present chapter. There must be controlled expansion of money supply if the objective of development with stability is to be achieved. A healthy growth of an economy requires that there should be neither inflation nor deflation. Inflation is the greatest headache of a developing economy. A mild inflation arising out of the creation of money by deficit financing may stimulate investment by raising profit expectations and extracting forced savings. But a runaway inflation is highly detrimental to economic growth. The developing economies have to face the problem of inadequacy of resources in initial stages of development and it can make up this deficiency by deficit financing. But it has to be kept strictly within safe limits. Thus, increase in money supply affects vitally the rate of economic growth. In fact, it is now regarded as a legitimate instrument of economic growth. Kept within proper limits it can accelerate economic growth but exceeding of the limits will retard it. Thus, management of money supply is essential in the interest of steady economic growth.

11.2 Concept of Money Supply and its Measurement

The term money supply denotes the total quantity of money available to the people in an economy. The quantity of money at any point of time is a measurable concept. It is important to note two things about any measure of money supply:

I. The supply of money is a stock variable i.e. it refers to the total amount of money at any particular point of time. It is the change in the stock of money (say, increase or decrease per month or year,), which is a flow.

II. The stock of money always refers to the stock of money available to the 'public' as a means of payments and store of value. This is always smaller than the total stock of money that really exists in an economy.

The term 'public' is defined to include all economic units (households, firms and institutions) except the producers of money (i.e. the government and the banking system). The government, in this context, includes the central government and all state governments and local bodies; and the banking system means the Reserve Bank of India and all the banks that accept demand deposits (i.e. deposits from which money can be withdrawn by cheque mainly CASA deposits). The word 'public' is inclusive of all local authorities, non-banking financial institutions, and non-departmental public-sector undertakings, foreign central banks and governments and the International Monetary Fund which holds a part of Indian money in India in the form of deposits with the RBI. In other words, in the standard measures of money, interbank deposits and money held by the government and the banking system are not included.

By money supply we mean the total stock of monetary media of exchange available to a society for use in connection with the economic activity of the country. According to the standard concept of money supply, it is composed of the following two elements:

1. Currency with the public,

2. Demand deposits with the public.

First, the money supply refers to the total sum of money available to the public in the economy at a point of time. That is, money supply is a stock concept in sharp contrast to the national income which is a flow representing the value of goods and services produced per unit of time, usually taken as a year. Secondly, money supply always refers to the amount of money held by the public. In the term public are included households, firms and institutions other than banks and the government. The rationale behind considering money supply as held by the public is to separate the producers of money from those who use money to fulfill their various types of demand for money. Since the Government and the banks produce or create money for the use by the public, the money (cash reserves) held by them are not used for transaction and speculative purposes and are excluded from the standard measures of money supply. This separation of producers of money from the users of money is important from the viewpoint of both monetary theory and policy.

11.3 Currency with the Public

In order to arrive at the total currency with the public in India we add the following items:

1. Currency notes in circulation issued by the Reserve Bank of India.

2. The number of rupee notes and coins in circulation.

3. Small coins in circulation.

It is worth noting that cash a reserve with the banks has to be deducted from the value of the above three items of currency in order to arrive at the total currency with the public. This is because cash reserves with the banks must remain with them and cannot therefore be used for making payments for goods or by any commercial bank's transactions. It may further be noted that these days paper currency issued by Reserve Bank of India (RBI) are not fully backed by the reserves of gold and silver, nor it is considered necessary to do so. Full backing of paper currency by reserves of gold prevailed in the past when gold standard or silver standard type of monetary system existed. According to the modern economic thinking the magnitude of currency issued should be determined by the monetary needs of the economy and not by the available reserves of gold and silver. As mentioned in the last chapter, as in other developed countries, since 1957 Reserve Bank of India follows Minimum Reserve System of issuing currency. Under this system, minimum reserves of 200 crores of gold and other approved securities (such as dollars, pound sterling, etc.) have to be kept and against this any amount of currency can be issued depending on the monetary

requirements of the economy. As stated earlier, RBI is not bound to convert notes into equal value of gold or silver. In the present times currency is inconvertible. The words written on the note, say 100 rupee notes and signed by the governor of RBI that 'I promise to pay the bearer a sum of 100 rupees' are only a legacy of the past and do not imply its convertibility into gold or silver. Another important thing to note is that paper currency or coins are fiat money, which means that currency notes and metallic coins serve as money on the basis of the fiat (i.e. order) of the Government. In other words, on the authority of the Government, no one can refuse to accept them in payment for the transaction made. That is why they are called legal tender.

Demand Deposits with the Public

The other important component of money supply are demand deposits of the public with the banks. These demand deposits held by the public are also called bank money or deposit money. Deposits with the banks are broadly divided into two types: demand deposits and time deposits. Demand deposits in the banks are those deposits which can be withdrawn by drawing cheques on them. Through cheques these deposits can be transferred to others for making payments from whom goods and services have been purchased. Thus, cheques make these demand deposits as a medium of exchange and therefore make them to serve as money. It may be noted that demand deposits are fiduciary money proper. Fiduciary money is one which functions as money on the basis of trust of the persons who make payment rather than on the basis of the authority of Government. Thus, despite the fact that demand deposits and cheques through which they are operated are not legal tender, they function as money on the basis of the trust commanded by those who draw cheques on them. They are money as they are generally acceptable as medium of payment. Bank deposits are created when people deposit currency with them. But far more important is that banks themselves create deposits when they give advances to businessmen and others. On the basis of small cash reserves of currency, they are able to create a much larger amount of demand deposits through a system called fractional reserve system which will be explained later in detail. In the developed countries such as USA and Great Britain deposit money accounted for over 80 per cent of the total money supply, currency being a relatively small part of it. This is because banking system has greatly developed there and also people have developed banking habits.

On the other hand, in the developing countries banking has not developed sufficiently and also people have not acquired banking habits and they prefer to make transactions in currency. However, in India after 50 years of independence and economic development the proportion of bank deposits in the money supply has risen to about 50 per cent.

11.4 Four Measures of Money Supply

There is virtually a profusion of different types of money, especially credit money, and this makes measurement of money supply a difficult task. Different countries follow different practices in measuring money supply. The measures of money supply vary from country to country, from time to time and from purpose to purpose. Reference to such different measures is beyond the scope of this unit. Just as other countries do, a range of monetary and liquidity measures are compiled and published by the RBI. Money supply will change if the magnitude of any of its constituents' changes.

Since July 1935, the Reserve Bank of India has been compiling and disseminating monetary statistics. Till 1967-68, the RBI used to publish only a single 'narrow measure of money supply' (M1) defined as the sum of currency and demand deposits held by the public. From 1967-68, a 'broader' measure of money supply, called 'aggregate monetary resources' (AMR) was additionally published by the RBI. From April 1977, following the recommendations of the Second Working Group on Money Supply (SWG), the RBI has been publishing data on four alternative measures of money supply denoted by M1, M2, M3 and M4 besides the reserve money. The respective empirical definitions of these measures are given below:

1. Money Supply M1 or Narrow Money: This is the narrow measure of money supply and is composed of the following items:

M1 = C + DD + OD

where C = Currency with the public

DD = Demand deposits with the public in the commercial and cooperative banks.

OD = other deposits held by the public with Reserve Bank of India.

The money supply is the most liquid measure of money supply as the money included in it can be easily used as a medium of exchange, that is, as a means of making payments for transactions. Currency with the public (C) in the above measure of money supply consists of the following:

(i) Notes in circulation.

(ii) Circulation of rupee coins as well as small coins

(iii) Cash reserves on hand with all banks.

Note that in measuring demand deposits with the public in the banks (i.e., DD), inter-bank deposits, that is, deposits held by a bank in other banks are excluded from this measure.

In the other deposits with Reserve Bank of India (i.e., OD) deposits held by the Central and State Governments and a few others such as RBI Employees Pension and Provident Funds are excluded. However, these other deposits of Reserve Bank of India include the following items:

(i) Deposits of institutions such UTI, IDBI, IFCI, NABARD etc.

(ii) Demand deposits of foreign central banks and foreign Governments.

(iii) Demand deposits of IMF and World Bank.

It may be noted that other deposits of Reserve Bank of India constitute a very small proportion (less than one per cent).

2. Money Supply (M2)

M2 is a broader concept of money supply in India than M1. In addition to the three items of M1, the concept of money supply M2 includes savings deposits with the post office savings banks. Thus,

M 2 = M1 + Savings deposits with the post office savings banks.

The reason why money supply M2 has been distinguished from M1 is that saving deposits with post office savings banks are not as liquid as demand deposits with commercial and co-operative Banks as they are not chequable accounts. However, saving deposits with post offices are more liquid than time deposits with the banks.

3. Money Supply (M3) or Broad Money

Mtis a broad concept of money supply. In addition to the items of money supply included in measure M1, in money supply M3 time deposits with the banks are also included. Thus

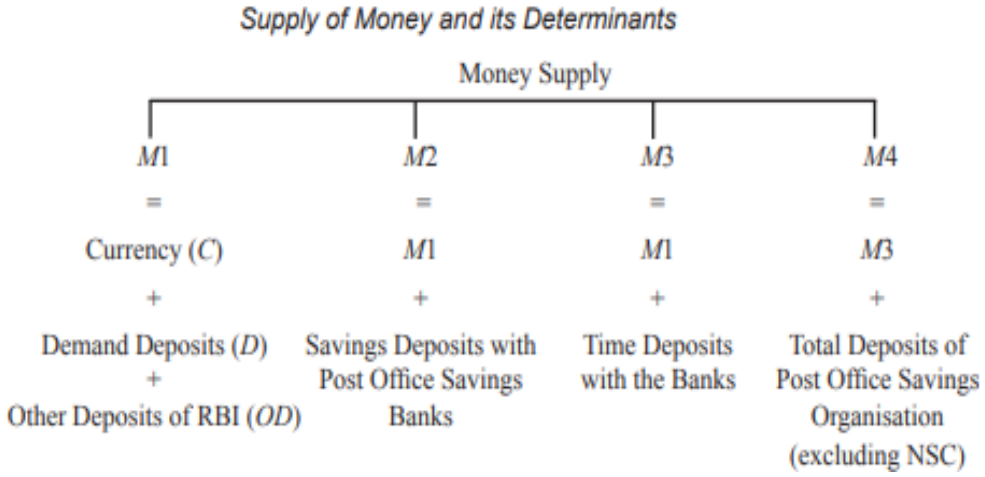
M3 = M1+ Time Deposits with the banks.

It is generally thought that time deposits serve as store of value and represent savings of the people and are not liquid as they cannot be withdrawn through drawing cheque on them. However, since loans from the banks can be easily obtained against these time deposits, they can be used if found necessary for transaction purposes in this way. Further, they can be withdrawn at any time by forgoing some interest earned on them.

It may be noted that recently M3 has become a popular measure of money supply. The working group on monetary reforms under the chairmanship of Late Prof. Sukhamoy Chakravarty recommended its use for monetary planning of the economy and setting target of the growth of money supply in terms of M3. Therefore, recently RBI in its analysis of growth of money supply and its effects on the economy has shifted to the use of M3 measure of money supply. In the terminology of money supply employed by the Reserve Bank of India till April 1977, this M3was called Aggregate Monetary Resources (AMR).

4. Money Supply (M4)

The measure M4 of money supply includes not only all the items of M3 described above but also the total deposits with the post office savings organization. However, this excludes contributions made by the public to the national saving certificates. Thus, M4 = M3 + Total Deposits with Post Office Savings Organization.



Following the recommendations of the Working Group on Money (1998), the RBI has started publishing a set of four new monetary aggregates on the basis of the balance sheet of the banking sector in conformity with the norms of progressive liquidity. The new monetary aggregates are:

Reserve Money = Currency in circulation + Bankers' deposits with the RBI + Other deposits with the RBI

= Net RBI credit to the Government + RBI credit to the Commercial sector + RBI's Claims on banks + RBI's net Foreign assets + Government's Currency liabilities to the public – RBI's net non - monetary Liabilities

NM1 = Currency with the public + Demand deposits with the banking system + 'Other' deposits with the RBI.

NM2 = NM1 + Short-term time deposits of residents (including and up to contractual maturity of one year).

NM3 = NM2 + Long-term time deposits of residents + Call/Term funding from financial institutions

In the monetary literature, money is usually defined in alternative ways ranging from narrow to broad money. Empirically the M1 (narrow money) is defined as the sum of currency held by the public, demand deposits of the banks and other deposits of RBI. Reserve money is comprised of the currency held by the public, cash reserves of banks and other deposits of RBI. On comparison, we find that the difference between M1 and reserve money is that the former includes the demand deposits while the latter includes the cash reserves of banks. Reserves are commercial banks' deposits with the central bank for maintaining cash reserve ratio (CRR) and as working funds for clearing adjustments.

Reserve money, also known as central bank money, base money or high-powered money, needs a special mention as it plays a critical role in the determination of the total supply of money. Reserve money determines the level of liquidity and price level in the economy and, therefore, its management is of crucial importance to stabilize liquidity, growth, and price level in an economy.

The central bank also measures macroeconomic liquidity by formulating various 'liquidity' aggregates in addition to the monetary aggregates. While the instruments issued by the banking system are included in 'money', instruments, those which are close substitutes of money but are issued by the non-banking financial institutions are also included in liquidity aggregates.

L1= NM3 + All deposits with the post office savings banks (excluding National Savings Certificates).

L2= L1 +Term deposits with term lending institutions and refinancing institutions (FIs) + Term borrowing by FIs + Certificates of deposit issued by FIs.

L3 = L2+ Public deposits of non-banking financial companies.

11.5 Determinants of Money Supply: Money Multiplier Theory

In order to explain the determinants of money supply in an economy we shall use M1 concept of money supply which is the most fundamental concept of money supply. We shall denote it simply by M rather than M1. As seen above this, concept of money supply is composed of currency held by the public (Cp) and demand deposits with the banks (D). Thus

M = Cp + D ...(1)

where M = Total money supply with the public

Cp = Currency with the public

D = Demand deposits held by the public

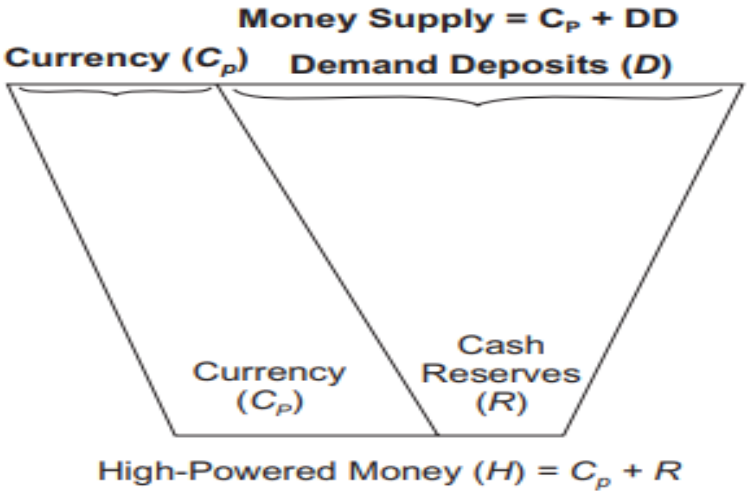
1. High-Powered Money (H): The high-powered money which we denote by H consists of the currency (notes and coins) issued by the Government and the Reserve Bank of India. A part of the currency issued is held by the public, which we designate as Cp and a part is held by the banks as reserves which we designate as R. A part of these currency reserves of the banks is held by them in their own cash vaults and a part is deposited in the Reserve Bank of India in the Reserve Accounts which banks hold with RBI. Accordingly, the high-powered money can be obtained as sum of currency held by the public and the part held by the banks as reserves. Thus

H = Cp + R …....(2)

where H = the amount of high-powered money

Cp = Currency held by the public

R = Cash Reserves of currency with the banks.



It is worth noting that Reserve Bank of India and Government are producers of the high-powered money and the commercial banks do not have any role in producing this high-powered money (H). However, commercial banks are producers of demand deposits which are also used as money like currency. But for producing demand deposits or credit, banks have to keep with themselves cash reserves of currency which have been denoted by R in equation (2) above. Since these cash reserves with the banks serve as a basis for the multiple creation of demand deposits which constitute an important part of total money supply in the economy, it provides high-poweredness to the currency issued by Reserve Bank and Government. A glance at equations (1) and (2) above will reveal that the difference in the two equations, one describing the total money supply and the other high- powered money is that whereas in the former, demand deposits (D) are added to the currency held by the public, in the latter it is cash reserves (R) of the banks that are added to the currency held by the public. In fact, it is against these cash reserves (R) that banks are able to create a multiple expansion of credit or demand deposits due to which there is large expansion in money supply in the economy.

(2) Proportion of Cash and Demand Deposits: This thing also affects the supply of money, what is the ratio of cash and demand deposits. People will want to keep however larger proportion of money in deposit form, as larger will be the power of banks on the basis of those deposits, to

create the credit. The quantity of credit creation depends on the size of credit multiplier. The size of credit multiplier is affected by Cash Reserve Ratio – CRR. The proportion of total deposits banks have to keep themselves as cash is called as Cash Reserve Ratio – CRR. The Cash Reserve Ratio will be as smaller, the power of credit creation of banks will be as larger and supply of money will also be increased as much. Therefore, if people would like to keep more part of total money as deposits then supply of money will increase.

(3) Velocity of Circulation: To estimate the supply of money, economists have two approaches:

(i) The Supply of Money at a Point of Time: The approach of economists of Cambridge University, like- Marshall, Pigou, Robertson and Keynes was that at a point of time the supply of money can be estimated by the sum of currency of people and demand deposit.

ii) The Supply of Money in a Period of Time: In the exponents of Quantity Theory of Money, Irving Fisher was interested in knowing that in how much amount of money is supplied in a special time period. In a special time period, the unit of money can be used many times. So that unit of money can work in more than one unit. Assume that a unit of money is used average 7 times in a year in India. This means that single unit of money has worked of 7 units. It would be said Transaction Velocity of Money i.e., V is 7. Therefore, this is the purport from the Transaction Velocity of Money that "Velocity of money is number of times a unit of money changes hands in the course of a year." Therefore, the Supply of Money in a definite time period can be estimated by multiplying the quantity of Money with circulation velocity. In other words

Supply of Money = MV

Money multiplier (m)=M/H=(1+k)/(r+k)

where r = Reserve ratio of the banks

k = Currency-deposit ratio of the public.

From above it follows that money supply is determined by the high-powered money (whichalso called reserve money) times the money multiplier which is equal to(1+k)/(r+k).

Thus the following factors determine money supply in the economy:

1. H, that is, the amount of high-powered money.

2. r, that is, cash reserve ratio of banks (i.e., ratio of currency reserves to deposits in the banks).

This cash reserve ratio of banks determines the magnitude of money multiplier. The smaller

the cash reserve ratio of the banks, the larger is the money multiplier.

3. k, that is, currency-deposit ratio of the public. The smaller the currency-deposit ratio of the

public, the larger is the size of money multiplier.

From equation

(4) expressing the determinants of money supply, it follows that money supply

will increase:

1. When the supply of high-powered money (i.e., reserve money) H increases;

2. When the currency-deposit ratio (k) of the public decreases; and

3. When the currency reserves-deposit ratio (i.e., cash reserve ratio) of the banks (r) falls

Conclusion:

Theory of determination of money supply explains how a given supply of high-powered money (which is also called monetary base or reserve money) leads to multiple expansion in money supply through the working of money multiplier. We have seen above how a small increase in reserves of currency with the banks leads to a multiple expansion in demand deposits by the banks through the process of deposit multiplier and thus causes growth of money supply in the economy. Deposit multiplier measures how much increase in demand deposits (or money supply) occurs as a result of a given increase in cash or currency, reserves with the banks depending on the required cash reserve ratio (r) if there are no cash drainage from the banking system. But in the real world drainage of currency does take place which reduces the extent of expansion of money supply following the increase in cash reserves with the banks. Therefore, the deposit multiplier exaggerates the actual increase in money supply from a given increase in cash reserves with the banks. In contrast, money multiplier takes into account these leakages of currency from the banking system

and therefore measures actual increase in money supply when the cash reserves with the banks increase. The money multiplier can be defined as increase in money supply for every rupee increase in cash reserves (or high-powered money), drainage of currency having been taken into account. Therefore, money multiplier is less than the deposit multiplier. It is worth noting that rapid growth in money supply in India has been due to the increase in high-powered money H, or what is also called Reserve Money by Reserve Bank of India, the money multiplier remaining almost constant. The money supply in a country can be changed by Reserve Bank of India by undertaking open market operations, changing minimum required currency reserve-deposit ratio, and by varying the bank rate. The main source of growth in money supply in India is creation of credit by RBI for Government for financing its budget deficit and thus creating high-powered money. Further, though the required currency reserve-deposit ratio of banks can be easily varied by RBI, the actual currency reserve-deposit ratio cannot be so easily varied as reserves maintained by banks not only depend on minimum required cash reserve ratio but also on their willingness to hold excess reserves.

Lastly, an important noteworthy point is that though money multiplier does not show much variation in the long run, it can change significantly in the short run causing large variations in money supply. This unpredictable variation in money multiplier in the short run affecting money supply in the economy prevents the Central Bank of a country from controlling exactly and precisely the money supply in the economy.

Summary:

- The measures of money supply vary from country to country, from time to time and from purpose to purpose.
- The high-powered money and the credit money broadly constitute the most common measure of money supply, or the total money stock of a country.
- High powered money is the source of all other forms of money. The second major source of money supply is the banking system of the country. Money created by the commercial banks is called 'credit money'.
- Measurement of money supply is essential from a monetary policy perspective because it enables a framework to evaluate whether the stock of money in the economy is consistent with the standards for price stability, to understand the nature of deviations from this standard and to study the causes of money growth.
- The stock of money always refers to the total amount of money at any particular point of time i.e. it is the stock of money available to the 'public' as a means of payments and store of value and does not include inter-bank deposits.
- The money multiplier approach showing relation between the money stock and moneysupply in terms of the monetary base or high-powered money, holds that total supply of nominal money in the economy is determined by the joint behaviour of the central bank, the commercial banks and the public.
- M= m X MB; Where M is the money supply, m is money multiplier and MB is the monetary base or high-powered money. It shows the relationship between the reserve money and the total money stock.
- The money multiplier is a function of the currency ratio which depends on the behaviour of the public, excess reserves ratio of the banks and the required reserve ratio set by the central bank.

Keywords

- Money Supply: Supply of Money.
- Creation of Credit: Secondary deposit.
- Outside Money: Creation of outside money.

Self Assessment:

1. Money should include all those things which are its close …….. .

A. substitutes

B. installation

C. are not

D. none of these

2. The two components of money supply are…….. .

A. currency and bank deposits
B. wealth and assets
C. house and shop
D. none of these

3. The purpose from currency is the coins and …….. in circulation.

A. wealth
B. notes
C. rupee
D. none of these

4. …….. are the important parts of money supply.

A. Banks
B. Currency Notes
C. Citizens
D. None of these

5. The monetary base is:

A. The sum of currency in circulation and commercial bank reserves.
B. The sum of currency in circulation and the currency held by commercial banks.
C. The sum of gold and foreign exchange held by the central bank
D. The sum of real assets of the banking sector plus its net worth.

6. M3 - M1 = ?

A. M2
B. Time deposits with unrestricted access + larger, fixed term deposits + accounts at non-bank institutions
C. Time deposits with unrestricted access + sight deposit accounts
D. M2 + accounts at non-bank institutions

7. Monetary aggregates (M1, M2, etc.) describe...

A. ...accumulating definitions of money with increasingly lower convertibility to reserves.
B. ...accumulating definitions of money with increasingly higher convertibility to reserves.
C. ...accumulating definitions of money with increasingly lower liquidity.
D. ...accumulating definitions of money with increasingly higher liquidity.

8. In which year does Reserve Bank of India introduced the concept of classification of money into M1, M2, M3 and so on?

A. 1956
B. 1961
C. 1977
D. 1998

9. Which out of the following is the correct formula for calculating the Broad money M3?

A. Currency with public + Demand deposits with the Banking system (current account, saving account) + Other deposits with RBI
B. M3 + All deposits with post office savings banks
C. M1 + Time deposits with the banking system
D. M1 + Savings deposits of post office savings banks

10. If commercials banks reduce their holdings of excess reserves

A. the monetary base increases
B. the monetary base falls
C. the monetary supply increases
D. the monetary supply falls

11. For a given level of monetary base, an increase in the currency ratio causes the money multiplier to …….. and the money supply to …….

A. Decrease; Increase
B. Increase; decrease
C. Decrease; Decrease
D. Increase; Increase

12. The ratio that relates the change in the money supply to a given change in the monetary base is called the

A. required reserve ratio
B. money multiplier
C. deposit ratio
D. discount ratio

13. The money multiplier and the money supply are

A. Positively related to the excess reserve's ratio e.
B. Negatively related to the excess reserves' ratio e.
C. Not related to the excess reserve's ratio e.
D. Proportional to the excess reserve's ratio e.

14. The currency ratio represents

A. the behavior of central bank in the issue of currency.
B. the behavior of central bank in respect of cash reserve ratio.
C. The behavior of the public
D. the behavior of commercial banks in the country.

15. ……. Tells us how much new money will be created by the banking system for a given increase in the high -powered money.

A. the currency ratio
B. the excess reserve ratio e
C. the credit multiplier
D. the currency ratio (c)

Answer for Self Assessment

1.	A	2.	A	3.	B	4.	B	5.	A
6.	B	7.	C	8.	C	9.	C	10.	C
11.	C	12.	B	13.	B	14.	C	15.	B

Review Questions:

1. Explain the concept of money supply. What are the factors responsible for the rapid increase in money supply ?
2. Explain how supply of money depends upon the high-powered money, the currency deposit ratio and cash reserve ratio.
3. Explain the nature of currency issue under minimum reserve system
4. Define 'credit money'.
5. List the components of M1
6. Distinguish between M1 and M2
7. What is the rationale behind incl money supply measurement?
8. Define 'Reserve Money'
9. Write a note on two major components Reserve money?
10. Describe the term 'cash reserve ratio' (CRR)
11. Write a note on the liquidity aggregates compiled by RBI
12. Define 'money multiplier'
13. What is the nature of relationship between money multiplier and the money supply?
14. What would be the effect on money multiplier if banks hold excess reserves?

Further Readings:

Necessity of Microeconomics— H. S. Nath, Cyber Tech Publications, 2012.

Macroeconomics— S. K. Chakravarti, Himalaya Publishing House, 2010.

Macroeconomics: Economic Growth, Fluctuations and Policy— Robert E. Hall and David H. Paipal,Vaina Books, 2010.

Macroeconomics: Theory and Policy— H. L. Ahuja, S. Chand Publishers, 2010.

Unit 12: Theories of Demand for money

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand Classical Theory of Demand For Money- Fisher's Version
- understand Classical Theory of Demand For money: Cambridge Version
- understand Keynes Theory Of Demand For Money
- understand Friedman's Demand for Money Function

Introduction

Value in economics means value-in-exchange. The value of a commodity means what it can be exchanged for or what it can buy. It means the purchasing power of a commodity. Similarly, the value of money means its purchasing power in terms of goods and services in general. The purchasing power of money obviously depends on the prevalent price level. If the prices are high, money will buy less and its value will be low. Conversely, if the price level is low, the value of money is high. The value of money is thus inversely proportional to the price level, or the value of money is the reciprocal of price level.

Value of Money = 1/ Price level (P)

12.1 Definition of Value of Money

As per Crowther, "The value of money is what it will buy." As much goods and services are received in exchange of one unit of money, it is its value.

As per Robertson, "By the value of money we mean the number of things in general which will be given in exchange for a unit of money."

12.2 Quantity Theory of Money

To be able to analyze the effects of changes in the stock of money, it is essential to study the equilibrium of the money market. Money is an asset for the holding public, therefore, the public must have a demand for it and a supply of it, and so also a market for it. The demand for money comes from the general public while its supply comes from the government and the banking system, whose liability the money is. The money market, then is, simply the market comprising these demanders and suppliers of money. In this unit, we shall assume that supply of money is autonomously given by the monetary authority.

Money is a stock variable. The stock of it refers to its quantity at a point of time. As an asset, the demand for it is the public's demand to hold money, whatever the reason (motive) for holding it and whatever length of the time period for which it is held. Holding cash in one's pocket for spending it is as much a part of the demand for money as burying currency notes in a pot. The several motives for holding money will be studied later in this unit as an explanation for various theories of demand for money.

The classical theory of demand for money, popularly known as the Quantity theory of Money (QTM), is basically is a theory of the price-level. However, under the influence of Keynes, the theory of demand for money became a theory of rate of interest, output and employment. Friedman later tried to rescue the quantity theory of money through his restatement. In his version of the theory of demand for money he completely neglected the Keynes' classification of motives for holding money and corresponding components of the demand for money. Instead of motives, he identified the key determinants of the demand for money.

As per J. S. Mill, "The value of money, other things being the same, varies inversely with its quantity; every increase of quantity lowers the value and every diminution raises it in a ratio exactly equivalent."

In the words of Prof. A. C. L. Dey, "The quantity theory of money states that the price level varies in direct proportion to the quantity of money. If the quantity of money doubles so will be the price level. Similarly, they will fall together."

In the words of Fisher, "Other things remain unchanged, as the quantity of money in circulation increases the price level increases in direct proportion and the value of money decreases and vice versa."

The essentials of his theory have been set out in format of the classical theory,and relatively much less in terms of Keynesian theory.

Theories of demand for money could be divided into three broad categories, viz.;

a) Classical theory of demand for money or the QTM;

b) Keynesian theory of demand for money; and

c) Friedman's restatement of Classical QTM.

12.3 Quantity Theory of Money: Fisher's Transactions Approach

We are now in a position to explain how the general level of prices is determined, that is, why at sometimes the general level of prices rises and sometimes it declines. Sometime back it was believed by the economists that the quantity of money in the economy is the prime cause of fluctuations in the price level. The theory that increase in the quantity of money leads to the rise in the general price was effectively put forward by Irving Fisher.

They believed that the greater the quantity of money, the higher the level of prices and vice versa. Therefore, the theory which linked prices with the quantity of money came to be known as quantity theory of money. In the following analysis we shall first critically examine the quantity theory of money and then explain the modern view about the relationship between money and prices and also the determination of general level of prices.

The quantity theory of money seeks to explain the value of money in terms of changes in its quantity. Stated in its simplest form, the quantity theory of money says that the level of prices varies directly with quantity of money. "Double the quantity of money, and other things being equal, prices will be twice as high as before, and the value of money one-half. Halve the quantity of money and, other things being equal, prices will be one-half of what they were before and the value of money double." The theory can also be stated in these words: The price level rises proportionately with a given increase in the quantity of money. Conversely, the price level falls proportionately with a given decrease in the quantity of money, other things remaining the same.

There are several forces that determine the value of money and the general price level. The general price level in a community is influenced by the following factors:

(a) the volume of trade or transactions;

(b) the quantity of money;

(c) velocity of circulation of money

The first factor, the volume of trade or transactions, depends upon the supply or amount of goods and services to be exchanged. The greater the amount or supply of goods in an economy, the larger the number of transactions and trade, and vice versa. But the classical and neoclassical economists who believed in the quantity theory of money assumed that full employment of all resources (including labour) prevailed in the economy. Resources being fully employed, the total output or supply of goods (and therefore the total trade or transactions) cannot increase. Therefore, those who believed in the quantity theory of money assumed that the total volume of trade or transactions remained the same.

The second factor in the determination of general level of prices is the quantity of money. It should be noted that the quantity of money in the economy consists of not only the notes and currency issued by the Government but also the amount of credit or deposits created by the banks.

The third factor influencing the price level is the velocity of circulation. A unit of money is used for exchange and transactions purposes not once but several times in a year. During several exchanges of goods and services, a unit of money passes from one hand to another. Thus, if a single rupee is used five times in a year for exchange of goods and services, the velocity of circulation is 5. Hence, the velocity of money is the number of times a unit of money changes hands during exchanges in a year. The work done by one rupee which is circulated five times in a year is equal to that done by the five rupees which change hands only once each.

Prof. Irving Fisher, in his book "The purchasing power of money", published in 1911 had demonstrated the transaction approach of theory of quantity of money. As per Fisher, "The quantity theory is correct in the sense that the level of price varies directly with the quantity of money in circulation provided the velocity of circulation of that money and volume of trade are not changed." Which shows that value of money (which is inverse of price level), changes inversely with the quantity of money. Generally, Fisher's theory of quantity of money is used in the form of below mentioned equation of exchange:

$$PY = MV + M'V'$$

$$P = (MV + M'V')/V$$

(Here, M: Quantity of currency or money in circulation; V: Velocity of quantity of currency or money in circulation; M': Quantity of bank money or credit money; V': Velocity of credit money; Y: Total quantity of goods or services which are exchanged through the medium of money. It shows the actual GDP. P: Price level)

From the equation it is known that by multiplying the quantity of money (M + M') with its velocity (V + V'), net supply of money in a definite period may be known and by multiplying the quantity of goods and services in a definite period of time (Y) with the price level (P), demand for money may be known.

As per Fisher, in a definite time period, M', V, V' and Y are constants, hence a direct relation establishes between quantity of money and price level. In other words, with an increase in quantity of money (M) there is also an increase in price level (P) and value of money decreases in the same proportion 1/P.

An American economist, Irving Fisher, expressed the relationship between the quantity of money and the price level in the form of an equation, which is called 'the equation of exchange'. It can be written in the following way as well.

$$PT = MV \ldots(1)$$

$$\text{or } P = MV/T \ldots \quad (2)$$

where,

P stands for the average price level:

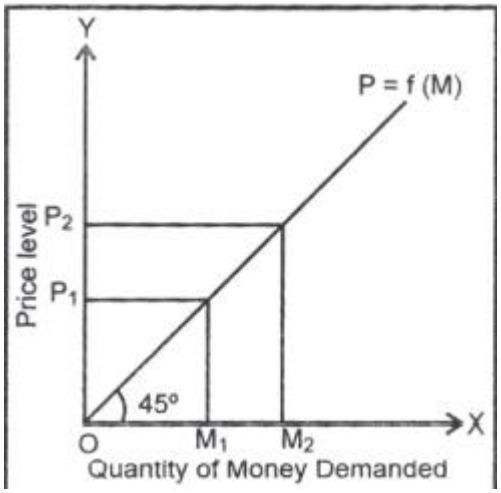
T stands for total amount of transactions (or total trade of amount of goods and services, raw materials, old goods etc.)

M stands for the quantity of money; and

V stands for the transaction's velocity of circulation of money

Let us illustrate the quantity theory of money. Suppose in a country there is only one good, wheat, which is to be exchanged. The total output of wheat is 2,000 quintals in a year. Further suppose that the government has issued money equal to 25,000 and no credit is issued by the banks. We further assume that one rupee is used four times in a year for exchange of wheat. That is, velocity of circulation of money is four. Under these circumstances, 2,000 quintals of wheat are to be exchanged for 1,00,000, (25,000 × 4 = 1,00,000). The price of wheat will be 1,00,000/2,000 = 50 per quintal. Suppose the quantity of money is doubled to 50,000, while the output of wheat remains at 2,000 quintals.

As a result of this increase in the quantity of money, the price of wheat will rise to 2,00,000/2,000= 100 per quintal. Thus, with doubling of the quantity of money, the price has doubled. If the quantity of money is further increased to 75,000, the amount of wheat remaining constant, the price level will rise to 3,00,000/2,000 = 150 per quintal. It is thus clear that if the volume of transactions, i.e., output to be exchanged remains constant, the price level rises with the increase in the quantity of money.



From the given example it is clear that by doubling the quantity of money, price level also doubles, i.e. from 4, it increases to 8 and value of money reduces to half from 1/4 to 1/8. From the given example, it is clear that when quantity of money doubles, then price level also doubles. It increases from 4 to 8 and value of money decreases from 1/4 to 1/8. Proportionate relation between quantity of money and Price level is shown in Fig. 1. straight line, P = f(M) moving upwards represents direct proportionate relation between the quantity of money on OX axis and price level on OY axis. Hence when quantity of Money M_1M_2 increases, price level P1 P2 increases in the same proportion. Percentage increase in quantity of money= M_1 M_2/OM_1 is equal to the percentage increase in price Level=P_1P_2/OP_1. In the same way when there is a decrease in quantity of money from OM_2 to OM_1, then in price level decrease from OP_2 to OP_1 happens in the same proportion.

12.4 Assumptions of Quantity Theory of Money

Quantity theory of money is based on the following assumptions:

1. Constant velocity of currency (V) and velocity of bank money (V'): It is assumed that velocity of currency (V) and velocity of bank money and credit money (V') remain constant.

2. Generally, in the economy situation of full employment is found.

3. Constant trade transactions: Due to the situation of full employment Fisher's assumption is also that in a specified time, quantity of trade transactions (Y) i.e. quantity of goods, services and securities remain constant.

4. Constant proportion between bank money (M) and currency (M'): This theory is based on the assumption that changes in quantity of bank money (M') happen in the proportion of quantity of currency (M). When quantity of currency is extended, then there is an extension in the bank money also in the same quantity. As opposed to this, when there is shrinkage in currency, then there is proportionate shrinkage in bank money also because people withdraw their bank deposits. As a result, there is a reduction on quantity of bank money.

Criticism:

This theory has been criticized on several grounds:

(i) ***Inoperative below Full Employment***: It is alleged that the quantity theory of money comes into its own only during period of full employment of resources. Assuming con-stancy in V, V', T, Y, etc., a change in money supply will bring about a change in price level. During the period of full employment, T or Y remains unchanged. During such a time, even if money supply rises, T or Y will not change. On the other hand, price level will rise. But, in reality, full employment of resources is a rare possibility. What we find in reality is unem-ployment or underemployment of resources. During underemployment an increase in money supply will tend to raise output level and, hence, T, but not P. So, quantity theory of money breaks down when resources remain at full employment.

(ii) ***V, T, etc., do not Remain Fixed***: Secondly, in a dynamic economy V, V', T, the ratio of M to M' never remain constant. In such an economy, a change in any of the variables may cause a change in price level, even if money supply does not change. In this sense, these are not independent variables, although the authors of this theory assumed quantity of money as independent of other elements of the equation.

(iii) ***It is Identity, that is, Always True***: Thirdly, Fisher's equation is an identity. MV and PT are always equal. In fact, the quantity theory of money is a hypothesis and not an identity which is always true.

(iv) ***Aggregate Demand/Expenditure, and not M, Influences Price Level***: Fourthly, Keynes argued that price level in an economy is not influenced by money supply. The im-portant determinant of money supply is the income level and the total expenditure of the country. According to Keynes, an increase in money supply is tantamount to an increase in effective demand. After attaining the stage of full employment, an increase in effective de-mand which is the sum of consumption ex-penditure, investment expenditure and gov-ernment expenditure (i.e., C + I + G) will raise the price level, but not proportionately.

(v) ***Too much Emphasis on Money Supply***: Fifthly, change in price level is caused by vari-ous factors, besides money supply. For exam-ple, an increase in cost of production has an important bearing on the price level. For in-stance, an increase in wage rate following a revision in the pay scale of employees or an increase in the price of raw materials (say, hike in the price of petroleum products) will definitely push the price level up, whether the economy stays on or below the full employ-ment level. The quantity theory attaches too much importance on money supply.

(vi) ***M Influences P via Interest Rate***: Sixthly, the classical theory establishes a direct and proportional relationship between money supply and price level. Critics say that the relationship is not a direct one. Fisher ignored the influence of the rate of interest on the price level. Supply of bank money or credit money is influenced largely by the interest rate.It is argued that the increase in money supply first affects the rate of interest which influences total output and price level in the ultimate analysis. The casual relationship is: Change in the stock of money → change in interest rate change in investment → change in in-come, employment and output → change in general prices.

Conclusion:

Despite these criticisms, the quantity theory of money has certain merits. Whenever money supply rose abnormally in the past in an economy, inflationary situation developed there. May not be the relationship a proportional one, but excessive increase in money supply leads to inflation. In the 1950s, Milton Friedman came out with a thesis that 'inflation is always and everywhere a mon-etary phenomenon'. This Friedmannian words are enough to establish the essence of quan-tity theory of money inflation is largely caused by the excessive growth of money supply and by nothing else.

12.5 Keynesian Theory of Money and Prices

The main thrust of Keynes's criticism of classical quantity theory of money was directed at its conclusion that (i) velocity of circulation is constant, and (ii) full employment of resources is the natural state of a free market economy. Keynes believed that velocity of circulation was volatile and there often existed underemployment of resources due to recessionary conditions in the economy.

Keynes presented a principle related to price and currency in his famous book "A Treatise on Money" and "The General Theory of Employment, Interest, and Money". In this, an effort has been made to establish the relation between money and price by bringing changes in the cost of production. According to the Quantity Theory of Money, there is a direct and proportional relationship between the change in quantity of money and price-level. However, according to

Keynes, the change in quantity of money indirectly affects the price-level. The fulfillment of currency only affects the rate of interest and cost of production to the level of price. To understand the idea of Keynes related to the currency and prices note the following observations

Keynes made the demand for money a function of 2 variables; namely,

i) money income, or Y; and

ii) rate of interest, or r.

In functional form:

$$Md = Md (Y, r)$$

Keynes retained the transactions approach (explained above) to the demand for

money under which demand for money is hypothesized to be a function of nominal income. But, according to him, this only explained the transaction demand for money and not the entire demand for money. The revolutionary insight of Keynes has been the speculative demand for money component. Through, it Keynes made this part of the demand for money a declining function of rate of interest, which is purely a monetary phenomenon and solely influenced by the monetary influences in the economy. The speculative demand for money arises from the speculative motives for holding money due to changes in the rate of interest in the market and uncertainty about them.

Transaction Demand for Money

Money is needed to carry out day-to-day transactions. There are discrepancies between receipts of income (say, once in a week or a month) and the expenditures of a person. A person may be assumed to incur expenditure almost daily throughout the week till her income is exhausted. Thus, while receipts of income are discrete, expenditure is almost continuous. Because of this discrepancy, it is necessary that individuals have cash at their disposal for meeting their current (or daily) expenditures. This demand for money is called the transaction demand for money. The level of income determines the control over goods and services in the market. Given the payments habit of the community, an individual has to have cash at her disposal to meet these expenditure requirements. An individual with higher level of income has a greater demand for goods and services (in general) than an individual with a lower level of income. It means that transactions are directly related to the level of income. In other words, more cash is needed by an individual with a higher level of income compared to one with lower level of income. Thus,

$$M^d_t = M^d_t(Y)$$

The classical economists, the Quantity Theorists, also considered the transaction demand for money, which emphasizes the role of money as medium of exchange. However, the precautionary and the 'speculative' demand for money are Keynes' additional sources of 'liquidity preference' (or, demand for money).For simplicity, we can say that transaction demand for money, is a constant proportion,

k, of the level of national income, Y

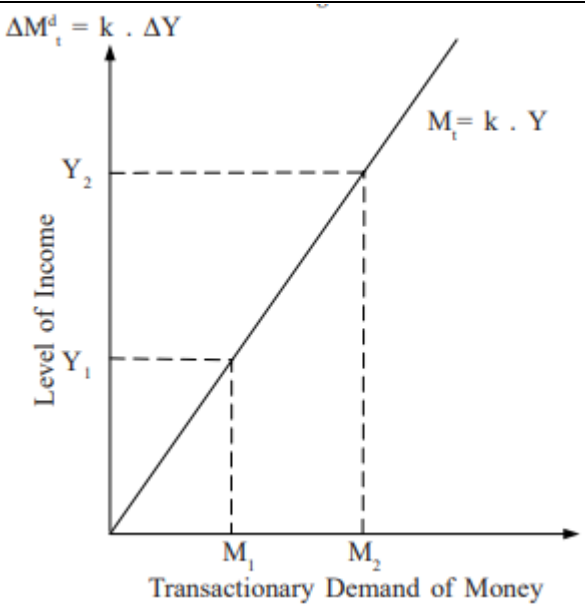
$$\text{i.e., } M^d_t = k.Y = k .P . \qquad 0<k<1$$

This equation says that if the level of income (nominal) is say, Rs. 800 crore and k = 2/5, then, the transaction demand for money in the economy would amount to Rs. 320 crore [800x(2/5) = 320]. This means that the economy would requires Rs. 320 crore of money in order to finance smoothly production and sale worth of goods and services of Rs. 800 crore. If the level of national income (nominal) goes up to Rs. 1000 crore and k remain at the same level of 2/5 then the transaction demand for money will be Rs. 400 crore.

We know that $M^d_t = k .Y$

it follows then,

Fig. 1: Depicts transitionary Demand for money as a proportion k of money income. As income rises by Y_2 -Y_1. The demand for money goes up by M_2 -M_1.



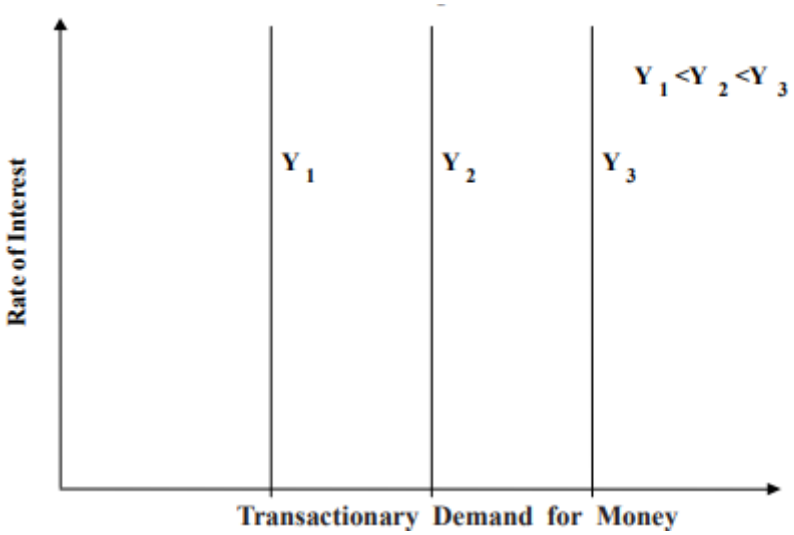
where

$\Delta M^d{}_t$ = change in the transaction demand for money

ΔY = change in the level of national income(nominal)

In case of a decline of Rs. 200 crore in the level of national income(nominal) there will be a decline in the transaction demand for money by Rs. 80 crore. The functional relationship between transaction demand for money (M^d_t) and the level of nominal national income (Y) is depicted in Figure 18.1. In this figure, the transaction demand for money is shown on X-axis and level of nominal national income (Y) is shown on the Y-axis, At OY_1 level of national income, OM_1 money will be demanded to meet transactions demand and at the OY_2 level, OM_2 amount will be demanded. This means that as the level of national income (nominal) increases from OY_1 to OY_2, the additional transaction demand for money would be $M_1 M_2 = OM_2 - OM_1$.

Fig. 2: This figure emphasizes the idea that rate of interest does not affect transitionary demand for money. Y_1, Y_2 and Y_3 represent different levels of income and money needed by people at these levels is constant, for each level, separately irrespective of the rate of interest.



According to transaction demand theory, the determinant of demand for money is the level of national income (nominal). The transaction demand for money is not affected by the rate of interest. Figure 2 shows three different level of National income(nominal) where Y_1.

Precautionary Demand for Money (M^d_p)

The Precautionary demand for money arises out of the need for any contingent payments/expenditures. Individuals and firms desire to hold cash balances for covering events of a more uncertain nature like accidents, prolonged illness, sudden change in technology forcing firms

to replace machinery to stay competitive. These are referred to as precautionary demand for money. Like the transaction demand for money, precautionary demand for money is also closely related to the level of income. At the higher level of income, individuals and firms may keep more cash balances for meet unforeseen situations. Thus, the precautionary demand for money is also a function of level of

$$Y: Md\ p = g(Y)$$

Keynes aggregated transaction and precautionary demands for money and pointed out that these two demands are a stable function of the level of national income(nominal). The rate of interest as an important determinant of demand for money enters through the third motive, the speculative demand for money.

Speculative Demand for Money, (M^d_{sp})

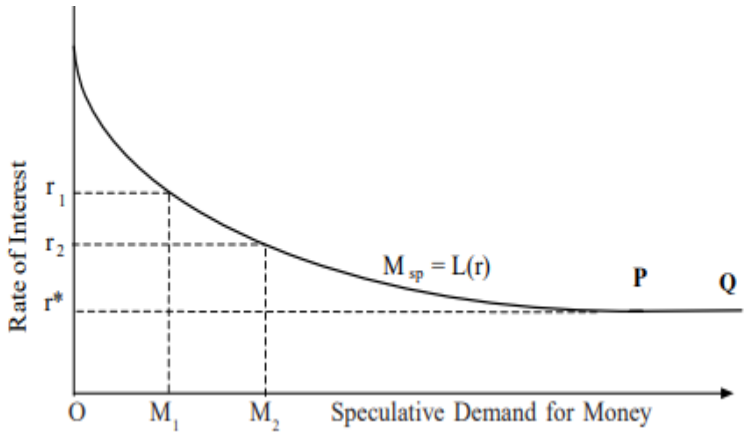
It is demand for money as 'store of wealth.' Wealth can be held (stored) in the form of landed property, bonds, money, bullion, etc. or the sake of simplicity, all forms of assets except money may be clubbed in a single category called bonds. Thus, according to Keynes there are two types of assets, i.e., money and bonds.

How to make best use of both considering if we deposit cash in saving bank account, we earn interest and if we purchase bonds, we get monetary return on it. People compare rate of return on bond with rate of interest on bank deposits. It is speculation about future changes (rise/fall) in interest rate and bond prices that the resulting demand for money is called 'speculative demand for money'. Clearly, the aim is to make money (monetary gain) out of money.

Relationship between Bond Price and Interest Rate:

Price of a bond is inversely related to market rate of interest. How? Suppose, Rs 1,000 bond yields fixed return of 10% per annum which means the bond has fixed annual Income of Rs 100. Let us assume that the rate of interest in saving bank account falls from Rs 10% to 8%. The question is how much money kept in bank will fetch interest of Rs 100 (equal to return from bond) after one year? Suppose, X is the amount, then the amount will be X × 8/100 = 100 or X = Rs1,250. Clearly, Rs 1,250 kept in saving bank account will give the same return (i.e., Rs 100) as Rs 1,000 invested in bond. Naturally, people will prefer to buy bond than to deposit cash in bank. Competition among buyers will push up the price of Rs 1,000 bond (face value) to 1,250. Hence, conclusion is obvious.

Fig.3: Speculative Demand for money is a function of rate of interest. At very low rate of interest, r*, the demand for money function becomes parallel to horizontal axis-the stretch PQ. This is known as liquidity trap.



(i) If market rate of interest is very high and everyone expects it to fall in the future (i.e., rise in price of bond) thereby anticipating capital gain from bond holding, people will convert their money into bonds. Thus, speculative demand for money is low.

(ii) On the contrary, if the rate of interest is low and people expect it to rise in future (i.e., fall in price of bond) anticipating capital loss from bond holding, people convert their bonds into money in order to avoid future capital loss. They hold up money balance thinking that income from non-monetary assets like bond will be low and so the cost of money holding will also be low.

With fall in the market rate of interest (i.e., bank deposit interest) price of bond rises and vice versa. In other words, price of bond is inversely related to market rate of interest. Mind, speculation about changes (rise/fall) in interest rate and bond prices gives rise to speculative demand for money. Speculative demand for money is inversely related to the rate of interest, i.e., higher the rate of Interest, smaller wall be speculative demand for money and vice versa. Therefore, curve of speculative demand for money is downward sloping to the right as shown in the following fig. 3.

In equation form, speculative demand for money is a function of rate of interest;

i.e., $M^d sp = L(r)$

We have noted earlier that the transaction and precautionary demands for money depend on the level of Y. Moreover, this relationship is proportional one given by the proportionality factor, k. We can now aggregate the demand for money, which is given by

$$Md = k.(P.y) + L(r)$$

i.e., the demand for money has two components - one depending on the level of nominal income and the other on the rate of interest. This demand for money function is shown in Fig.4

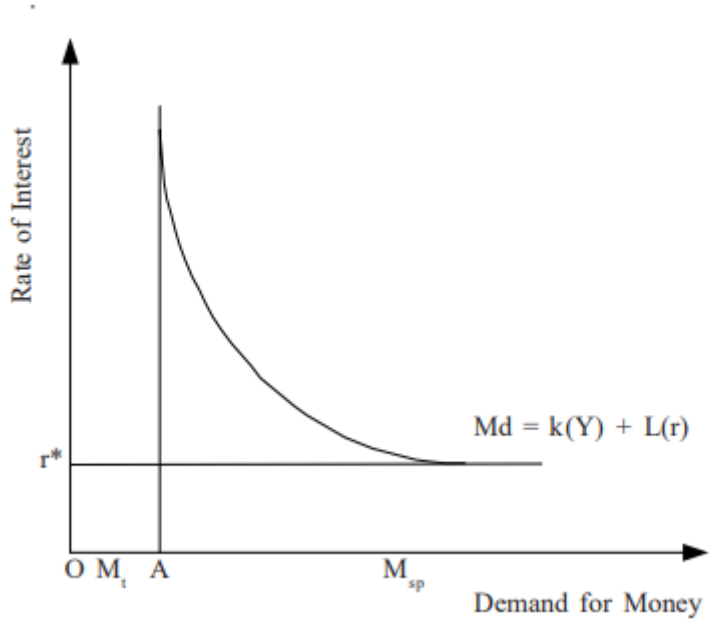


Fig. 4: Total demand for money depends on both, income and the rate of interest. It is shown on interest-money plane. For each level of money income Y, we will get one such schedule.

Note that OA=Transactions demand for money while rest of the segment represents speculative demand.

12.6 Restatement of Friedman's Quantity Theory of Money

After publishing Keynes book 'General Theory of Employment, Interest and Money' in 1936 AD, Economists cancelled the traditional Quantity Theory of Money. But in Chicago University "The Quantity Theory of Money was a central and strong part of verbal tradition in the decades of 1930 and 1940." Friedman, Simonz, Lloyd Mints, Frank Knight and Jacob Viner were teaching in Chicago University and they developed such subtle and relevant version of Quantity Theory of Money in theoretical form "In which Quantity Theory of Money was related and combined with General Price Theory." The very first explainer of the Chicago version of Quantity Theory of Money is Prof. Friedman who presented alleged Monetarist revolution. He made a special model of Modern Quantity Theory of Money in his essay titled as 'The Quantity Theory of Money: A Restatement'. Following analysis is shown of that model.

Friedman Theory

In the restatement of Quantity Theory of Money Friedman has forced that, "The Quantity Theory in the first instance is a theory of the demand for money. It is not a theory of output, or of money income, or of the price level." Money demand from the side of asset holders is formally equal with the demand of a consuming service. He considers the amount of actual cash remaining M/P as a

thing which is demanded, because it delivers the services to that person who holds it. Therefore, money is an asset or capital goods. So money demand is a part of capital or asset theory.

For final asset holders the actual demand of money can be possible as the function of main following

variables:

1. Total Asset: Total asset is identical of budget constraint. Total assets should be divided into different assets. Behaviorally, the estimations of total assets are available on some times. Except it, income works as an indicator of the asset. So according to Friedman, income is an agent of wealth.

2. Division of Assets between Human and Non-Human Forms: The main source of asset is the productive capacity of humans which is human asset. But the change of human asset into non-human assets or vice versa, is under institutional constraints. It can be done from buying non-human asset by present earnings or from the use of non-human asset for being the trained by financial management. So, the fraction of total assets in the form of non-human asset is a very important variable. Friedman calls the ratio of non-human to human asset or the ratio of assets to income as ω (Omega).

3. Expected Rates of Return on Money and Other Assets: These rates of returns are another form of the price of a commodity, its substitutes and its complementary in Consumer Demand Theory. The printed rate of return can be zero as generally, is on currency, or negative as it mostly on demand accounts on which net service taxes are payable, or positive as on those demand accounts on which interest is payable and generally on time accounts. Two parts are included in the rate of return printed on other assets: first, any presently payment receipt or cost as interest on bonds, dividend on shares and the storing cost of physical assets; and second, the change in the prices of these assets which become important in the recession or inflation situations.

4. Other Variables: Other variables except income can affect the importance of money related to services, which determine the actual liquidity. Except liquidity the interest and preference of assets holders are also variables. Another variable is the trade in present capital goods by the final assets' holders. These variables also determine the demand function of money along with the other types of securities. Friedman named these variables as μ (Mu).

12.7 Forms of Assets

According to Friedman, broadly all the sources of income or consumable services are included in assets. It is capitalized income. Friedman's meaning of income is 'Permanent income' which is the average expected yield of lifetime of assets. Assets can be acquired from the five different forms — Money, bonds, equities, physical commodities and human capital. Every form of assets has its own quality and these give different returns, which are described as follows:

1. Money: Money is taken in detailed mean in which currency, demand accounts and time accounts are included in which interest is given on deposits. So, money is a luxury commodity. It gives the actual return to holder in the form of facility, security etc. which are generally measured in price level (P).

2. Bonds: Bonds are defined as the form of claims of stream at the time of payment, which are constant in nominal units

3. Equities: Equities are defined as the form of claims of stream at the time of payment, which are constant in actual units.

4. Physical goods or Non-human goods: These are inventories of consumer and durable consuming goods.

5. Human capital : Human-Capital is the production capacity of humans.

So every form of assets has its unique quality and different returns either in the form of explicit interest, dividend, labour, income etc. or in the form of services of money measured in explicit price level and inventories. The current price of present discounted price assets of these expected income flows is made from these five forms of assets, which can be expressed as following —

$$W = Y/r$$

Where W is the current price of total assets, Y is the total flow of expected incomes from five forms of assets, and r is the interest rate. This equation shows that asset is a capitalized income.

12.8 Demand Function of Money

Friedman demonstrates the demand function of money of a personal asset holder by the use of following symbols in his new experimental study 'Monetary Trends in the United States and the United Kingdom (1982)' somewhat different from his 1956 fundamental study:

M/P = f (Y W, Rm, Rb, Re, gp, μ)

Where W is the total stock of demanded money; P is the price level; Y is the actual income; W is the part of asset in the non-human form; Rm is the rate of expected money form; Rb is the rate of expected

rate of return on the bonds in which the expected change in their prices are included; Re is the rate of expected rate of return on the equities in which the expected change in their prices are included; gp = (1/P)(dP/dt) is the expected rate of the changes in prices of commodity and so is the rate of expected nominal return on physical assets; μ (Mu) is for other variables except income which can affect the importance related to services of money as interests, preferences etc.

The demand function of trade is approximately same. Though the division in total assets and human assets is not very beneficial, because one firm can sell and purchase in the market and give its human asset on rent on its own wish. But other components are important. The total demand function of money is the addition of personal demand functions in which M and Y respectively show the holding money per capita and income per capita and W shows the asset in non-human form.

The demand function of money reaches on this result that on increment in expected yields (Returns) of different assets, the demand of money of a holder decreases, and the demand of money increases on increment in assets. Income is adjusted with those cash remaining, which are the long-time expected levels of income, not the yielding current income. The empirical proof tells that the income flexibility of money-demand is more than unit, which means that the income velocity is falling down in long time. It means that the prolonged demand function of money is constant. In other words, the interest flexibility of prolonged demand function of money is negligible.

The money supply is independent from demand of money in the Friedman's Restatement of Quantity Theory of Money. The supply of money is temporary because of work of money holders. On the other side, the demand of money is constant. It means that money, which the people want to keep in the cash or bank deposits form, is related to their permanent income constantly. If central bank on purchasing the securities of money will increase the money supply, then those people who will sell their securities, will see that the holders of their money are increased in the proportion of their income. So, they will spend their excess holdings of money partially on assets and partially on consuming goods and services. Their remaining money will reduce from this expense and at the same time nominal income will be increased. On the other side, when central bank will reduce the money supply from selling the securities, the money holdings of securities buyers will be lesser in the proportion of their permanent income. So, they on partially selling the securities and spending their consumption partially on goods and services will increase their money holdings. The nominal income will start to reduce from it. Therefore, from both the ways, the demand of money is constant. According to Friedman, if there is a change in money stock, then there is the change in equal proportion in price level or in income or in both the income and price level. On giving the money demand, then it is possible to forecast the effects of changes in money supply on total expenditure or income. If an economy is on lower level from full employment then increment in money-supply on increasing total expenditure will make an increment in production and employment. But it is only possible in short time period. The Quantity Theory of Money of Friedman is shown by the Fig. 15.1, where income is measured on vertical axis and the supply and demand of money on horizontal axis. Mb is the demand curve of money which changes with income. MS is the money supply curve which is fully inflexible with the changes of income. Both the curves coincide each other on E and determine the balanced income OY. If money supply increases, then MS curve on shifting towards right becomes M1 S1. Consequently, money-supply becomes greater than demand of money which increases the total income until there is not established a new balance in Mb and M1 S1 on point E1 . Therefore, income on being increased becomes OY1.

12.9 Significance of Modern Quantity Theory of Money

Important implications of the modern quantity theory of money as propounded by Friedman are presented below:

1. ***Stable Demand Function***: The quantity theorists accept the empirical hypothesis that the demand for money is highly stable – even more stable than the functions like the consumption functions. According to Friedman, a stable function does not mean a constant velocity, but that the function is stable in terms of the variables which determine its value. Thus, an increase in velocity during inflation is consistent with functional stability.

2***. Key Role of Price Level***: Monetarists regard price level as the single most important variable in the demand function of money. Price level provides and explains the link between money and inflation. Price level, which is the reciprocal of the value of money, plays an important role in bringing the demand and supply of money into balance.

3***. Explanation of Changes in Income Velocity***: According to Friedman, cyclical movements in the income velocity are attributable to cyclical movements in current income relative to permanent income (i.e., expected trend of future income) and not the cyclical movements in interest as Keynesians believe. During prosperity, the demand for money rises proportionately with permanent income but less than proportionately with a rise in current income because permanent income rises less than current income in business expansion. This implies that income velocity rises in prosperity because income velocity is defined as a current income concept. Similarly, during depression, permanent income and the demand for money fall proportionately in relation to each other but less than proportionately in relation to current income and income velocity falls.

4. ***Importance of Expected Inflation***: Expected rate of inflation is another important variable affecting the demand for money (inversely) in cases of rapid inflation. The monetarists, under the influence of Friedman, have analysed hyperinflations and the stability of the monetary system based on the effects of expected inflation on demand for money.

5. ***Low Interest Elasticity of Demand for Money***: Friedman and the monetarists regard the rate of interest as having very little influence on the demand for money.

6. ***Role of Monetary Policy***: The recent debate between the monetarists and the Keynesians centers round the question of changing aggregate demand by monetary policy or fiscal policy. According to the monetarists, given the stability in the demand for money, the monetary authority can control the aggregate spending by controlling the money supply.The stabilization policy should concentrate on monetary policy. The Keynesians, on the contrary, point out those only fiscal policies can change the level of income by changing aggregate demand. The monetarist argument assumes interest-inelastic demand for money, whereas the Keynesians assume a very low interest elasticity of the investment function.

7. ***Factors Affecting Supply of Money***: The quantity theorists maintain that there are important factors affecting the supply of money and they do not affect the demand for money. The view that the supply of money expands or contracts according to the needs of trade is rejected by the quantity theorists.

Conclusion:

(a) Friedman can be viewed as being in the Cambridge tradition and as a formulator of a capital theory of demand for money,

(b) The difference between Friedman and the Keynesians regarding the demand for money shrinks considerably when we view the results of empirical studies. The studies have found permanent income and the actual rate of interest and not the rate of change in the price level, as explaining most of the variations in the demand for money,

(c) However, basic differences between the monetarists and the Keynesians, such as regarding the neutrality of money and the mechanism through which money affects the real variables still remains.

Summary:

- The Quantity Theory of Money states that, there is a direct and proportionate relation between quantity of money and general price-level and an inverse proportionate relation between quantity of money and value of money. As per this theory, by an increase in quantity of money price level increase in the same proportion and by a decrease in quantity of money, price level decreases in the same proportion.

- Keynes' Theory of demand for money is known as Liquidity preference Theory'. Liquidity Preference', is a term that was coined by John Maynard Keynes in his masterpiece. 'the General theory of Employment, interest and Money' (1936).
- According to Keynes, people hold money (M) in cash for three motives: the transactions, Precautionary and speculative money.
- Friedman presents Quantity Theory in the form of Demand of Money Theory and considers demand of money on assets prices or respective return and wealth or income. He shows that how demand of money becomes the theory of prices and production. The difference in nominal quantity of demanded money and nominal quantity of supplied money will be shown in the tried expense mainly. When the demand of money is changed in reaction of changes in its determiners, then in the resulting of it the sufficient change in prices or nominal incomes occurs because of changes in supply money always approximately

Keywords:

- Value of Money: The number of commodities or services got in exchange with a unit money, is called the Value of this unit of money.
- Value of Money and Price Level: Value of Money and Price-level are inversely related. i.e., Value of Money = 1/Price Level.
- Quantity Theory of Money: There is a directly proportional relation between Quantity of Money and General Price-level and there is an inversely proportional relation between Quantity of Money and Value of Money.
- Fisher's Equation: PY = MV + M'V'or P = MV M V
- Transaction Demand: The transactions motive gives rise to transaction demand for money, which refers to the demand for cash of the public for making current transactions of all kinds. This is basically the medium of exchange role of money.

Self-Assessment

1. The quantity theory of money is a theory of

A. how the money supply is determined.
B. how interest rates are determined.
C. how the nominal value of aggregate income is determined.
D. all of the above.

2. The average number of times that a dollar is spent in buying the total amount of final goods and services produced during a given time period is known as

A. gross national product.
B. the spending multiplier.
C. the money multiplier.
D. velocity.

3. The velocity of money is

A. the average number of times that a dollar is spent in buying the total amount of final goods and
B. services.
C. the ratio of the money stock to high-powered money.
D. the ratio of the money stock to interest rates.
E. none of the above.

4. If the money supply is 600 and nominal income is 3,000, the velocity of money is

A. 5.
B. 50.

C. 1/5.
D. undefined.

5. Velocity is defined as

A. P + M + Y.
B. (P × M)/Y.
C. (Y × M)/P.
D. (P × Y)/M.

6. The classical economists believed that if the quantity of money doubled,

A. output would double.
B. prices would fall.
C. prices would double.
D. prices would remain constant.

7. The Keynesian theory of money demand emphasizes the importance of

A. a constant velocity.
B. irrational behavior on the part of some economic agents.
C. interest rates on the demand for money.
D. all of the above.

8. Keynes's hypothesized that the precautionary component of money demand was primarily determined by the level of

A. interest rates.
B. velocity
C. income.
D. stock market prices.

9. Keynes's hypothesized that the speculative component of money demand was primarily determined by the level of

A. interest rates.
B. velocity
C. income.
D. stock market prices.

10. Because Keynes's assumed that the expected return on money was zero, he argued that

A. people would never hold money.
B. people would never hold money as a store of wealth.
C. people would hold money as a store of wealth when the expected return on bonds was negative.
D. people would hold money as a store of wealth only when forced to by government policy.

11. Keynes's theory of the demand for money implies

A. that velocity is not constant but fluctuates with movements in interest rates.
B. that velocity is not constant but fluctuates with movements in the price level.
C. that velocity is not constant but fluctuates with movements in the time of year.
D. that velocity is a constant.

12. According to Friedman's modern quantity theory approach, the return to money includes

A. the services provided by banks on checkable deposits.
B. the interest payments on money balances.
C. both of the above.
D. none of the above.

13. Friedman's argument that competition among banks will tend to keep the difference between the return on bonds and money relatively constant implies that

A. changes in interest rates will have a big impact on the demand for money.
B. changes in income will have a big impact on the demand for money.
C. changes in income will have little effect on the demand for money.
D. changes in interest rates will have little effect on the demand for money.

14. According to Milton Friedman, the demand for money is insensitive to interest rates because

A. the demand for money is insensitive to changes in the opportunity cost of holding money.
B. competition among banks keeps the opportunity cost of holding money relatively constant.
C. people base their investment decisions on expected profits, not interest rates.
D. transactions are not subject to scale economies as wealth increases.

15. In Friedman's modern quantity theory, velocity is procyclical because

A. money demand depends on permanent income, which is more stable than actual income.
B. money demand depends on actual income, which is more stable than permanent income.
C. velocity depends upon interest rates, which are stable over the business cycle.
D. velocity depends upon interest rates, which move procyclical.

Answer for Self Assessment

1.	C	2.	D	3.	A	4.	A	5.	D
6.	C	7.	C	8.	C	9.	A	10.	C
11.	A	12.	C	13.	D	14.	B	15.	A

Review Questions:

1. Explain the Quantity Theory of Money. Will a doubling of money supply always lead to a doubling of general price level?

2. Does increase in money supply always lead to a proportional increase in prices? Give reasons in support of your answer.

3. Critically examine the Quantity Theory of Money. Does an increase in money supply always lead to a proportionate increase in prices?

4. What do you understand by Friedman's Theory?

5. Explain the Keynesian theory of demand for money. What motives did Keynes ascribe to demand for money? Illustrate your answer.

6. To what extent does Friedman's Restatement of the quantity Theory explain the demand for money?

7. What factors determine demand for money in Friedman's modern quantity theory? How does each of the factors affect demand for money?

Further Readings

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Unit 13: Multiplier

CONTENTS

Objectives

After studying this unit, you will be able to,

- Understand Multiplier-importance, working and leakages.

Introduction

R F Kahn developed the concept of multiplier in his article, "The Relation of Home Investment to Unemployment" in the Economic Journal of June 1931. Kahn's multiplier was the employment multiplier. F.A. Kahn developed the concept of multiplier with reference to the increase in employment, direct as well as indirect, as a result of initial increase in investment and employment. Keynes, however, propounded the concept of multiplier with reference to the increase in total income, direct as well as indirect, as a result of initial increase in investment and income. Therefore, whereas Kahn's multiplier is known as 'employment multiplier'.

Keynes borrowed the idea from Kahn and formulated investment multiplier. Keynes considers his theory of multiplier as an important and integral part of his theory of employment. The multiplier, according to Keynes, establishes a precise relationship, given the propensity to consumer, between aggregate employment and income and the rate of investment. It tells us that when there is an increment of investment, income will increase by an amount which is K times the increment of investment. In the words of Hansen, Keynes' investment multiplier is the coefficient relating to an increment of investment to an increment of income.

13.1 Meaning of Multiplier

Multiplier coefficient refers to the multiple increases in the equilibrium level of income caused by a change in the level of aggregate spending. The investment part of the total spending is determined by the market mechanism ad is relatively more dynamic determinant of output, employment and income. The value of the multiplier is mainly determined by the value of marginal propensity to consume. Spending creates income. It leads to rise in income of those producers on whose goods and services the spending is made. The spending may be on capital goods (called investment), on

inputs, and on consumption. (It is assumed that there is no government expenditure and there are no net exports).

If the spending is done out of the increase income without any decrease in the existing income of the society, it has one impact on income creation. If the spending is done out of the increased income of one section of the society obtained by reducing the income of other section of the society, there is another impact.

The essence of multiplier is that total increase in income, output or employment is manifold the original increase in investment. For example, if investment equal to 100 crores is made, then the income will not rise by 100 crores only but by a multiple of it. If as a result of the investment of ` 100 crore the national income increases by 300 crores, multiplier is equal to 3. If as a result of investment of ` 100 crore total national income increases by 400 crores, multiplier is 4. The multiplier is, therefore, the ratio of increment in income to the increment in investment. If ΔI stands for increment in investment and ΔY stands for the resultant increase in income, then multiplier is equal to the ratio of increment in income (ΔY) to the increment in investment (ΔI).

Thus, k = ΔY/Δ I, where k stands for multiplier.

Now, the question is why the increase in income is many times more than the initial increase in investment. It is easy to explain this. Suppose Government undertakes investment expenditure equal to 100 crores on some public works, say, the construction of rural roads. For this Government will pay wages to the laborer's engaged, prices for the materials to the suppliers and remunerations to other factors who make contribution to the work of road-building. The total cost will amount to 100 crores. This will increase incomes of the people equal to 100 crores. But this is not all. The people who receive100 crore will spend a good part of them on consumer goods. Suppose marginal propensity to consume of the people is 4/5 or 0.8. Then out of 100 crore they will spend ` 80 crore on consumer goods, which would increase incomes of those people who supply consumer goods equal to 80 crores. But those who receive these 80 crores will also in turn spend these incomes, depending upon their marginal propensity to consume. If their marginal propensity to consume is also 4/5, then they will spend 64 crores on consumer goods. Thus, this will further increase incomes of some other people equal to 64 crores. In this way, the chain of consumption expenditure would continue and the income of the people will go on increasing. But every additional increase in income will be progressively less since a part of the income received will be saved. Thus, we see that the income will not increase by only 100 crores, which was initially invested in the construction of roads, but by many times more.

13.2 Multiplier Process

Suppose I rise. It means purchase of capital goods, etc. rises. This leads to rise in income of those from whom these goods are purchased. When income rises, people spend a proportion of this income (equal to MPC) on consumption. C rises. With rise in C, producers find their inventories falling. They produce more output, and purchase more inputs. Income of the input sellers rises. In this way with rise in income, cycle starts all over again.

I ↑Y ↑C ↑inventories↓ output↑ income↑

The cycle starting all over again does not mean that multiplier process goes on forever. It is because only a fraction of income is consumed in each round until equilibrium of national income is restored.

Size of the Multiplier

The size of multiplier depends upon MPC. A large MPC means a large increase in consumption spending, a large increase in income and, therefore, a large multiplier. The process of increase in income initiated by the change in investment reaches new equilibrium when change ininvestment becomes equal to change in saving. We can show that:

Multiplier = 1 / MPS=1/ 1– MPC

Given MPS=ΔS/ΔY

At new equilibrium since S &I, therefore,

MPS= ΔI/ ΔY

Or Δy=Δi/MPS=ΔI*1/MPS

It means that the change in income (ΔY) is ΔI times 1/MPS,

Multiplier = 1/MPS = 1/1–MPC

Algebraic derivation

Given C = a + bY .....(i) Consumption function

Y = C+ I .....(ii) Equilibrium

Substituting (i) in (ii), we get

Y = a + bY + I

Y–bY = a + I

Y (1–b) = a + I

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

Since Y equals (a+I) times 1 (1– b) with 'a' held constant, Y will change only with change in Y (ΔY), and it will be equal to:

Y = ΔI times 1/1–b Or

Y = Δ I (1/1–b)

Because b = MPC, the expression becomes

Δ Y = Δ I/1–MPC =

=Δ I *1/MPS

Multiplier = 1/ MPS

13.3 Calculating the Size or Value of Multiplier

The multiplier tells us how much increase in income occurs when autonomous investment increases by 1, that is, investment multiplier is ΔY/ΔI and its value is equal to 1/1−b where b stands for marginal propensity to consume (MPC). Thus, multiplier =ΔY/ΔI=1/1-b. Further, since 1-b equals marginal propensity to save (MPS), the value of investment multiplier is equal to 1/1- b =1/s where s stands for marginal propensity to save. In other words, the size of multiplier is equal to 1/ 1- MPC=1/ MPS. Thus, the value of multiplier can be obtained if we know either the value of MPC or MPS.

Now, the higher the marginal propensity to consume (b) [or the lower the value of marginal propensity to save (s)], the greater the value of multiplier. For example, if marginal propensity to consume (b) is 0.8, investment multiplier is

ΔY/ΔI = 1/ 1- 08 =1/0.2 =1*10/2=5

If MPC or b = 0.75, multiplier is

ΔY/ΔI = 1/1- 0.75 =1/0.25 = 100/25=4

As mentioned above, the size or value of multiplier can be calculated using either the value of marginal propensity to consume (MPC) or the value of marginal propensity to save (MPS or s). In fact, the value of multiplier is the reciprocal of marginal propensity to save [ΔY/ΔI=1/MPS or 1/s]. When marginal propensity to consume is 0.8, marginal propensity to save will be 1 – 0.8 = 0.2. The multiplier will be 1/ 0.2 or 1 /2 /10 = 5. Likewise, if marginal propensity to consume (b) is 0.75, marginal propensity to save will be 1 – 0.75 = 0.25 and multiplier will be 1/0.25=1/25/100=4.

Given the size of multiplier, we can find out the increase in income (ΔY) resulting from a certain

increase in investment (ΔI) by using the multiplier relationship. Thus

ΔY/ΔI=1/1-b

ΔY= ΔI.1/1-b

If marginal propensity to consume is equal to 0.8, with the increase in investment by 100 crores, the increase in income will be:

Δ=ΔI*1/1-b=100*1/1-0.8

100*1/0.2=100*5=500 crore

13.4 Two Limiting Cases of the Value of Multiplier

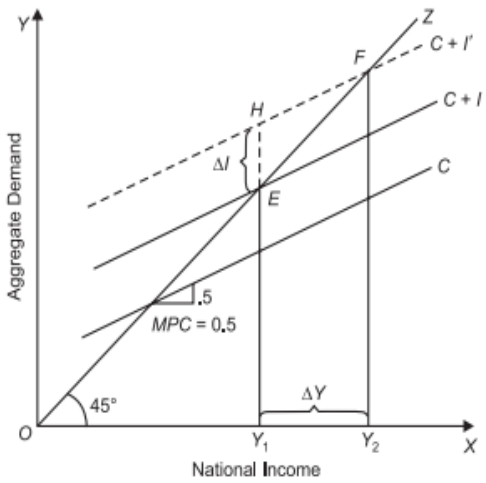
There are two limiting cases of the multiplier. One limiting case occurs when the marginal propensity to consume is equal to one, that is, when whole of the increment in income is consumed and nothing is saved. In this case, the size of multiplier will be equal to infinity, that is, a small increase in investment will bring about a very large increase in income and employment so that full employment is reached and even the process goes beyond that. "In such circumstances, the Government would need to employ only one road builder to raise income indefinitely, causing first full employment and then a limitless spiral of inflation." However, this is unlikely to occur since marginal propensity to consume in the real world is less than one. The other limiting case occurs when marginal propensity to consume is equal to zero, that is, when nothing out of the increment in income is consumed, and the whole increment in income is saved. In this case, the value of the multiplier will be equal to one. That is, in this case, the increment in income will be equal to the original increase in investment and not a multiple of it. But in actual practice the marginal propensity to consume is less than one but more than zero ($1 > \Delta C/\Delta Y > 0$). Therefore, the value of the multiplier is greater than one but less than infinity.

Assumptions:

- There is no change in the marginal propensity to consume during the adjustment process, which remains more or less constant.
- There is no induced investment (i.e., accelerator is not operating).
- The new higher level of investment is maintained long enough for the completion of the adjustment process.
- The output of consumer goods is responsive to effective demand for these.
- There is complete absence of government activity like taxation or expenditure.
- There is no time lag between the receipt of income and its expenditure.
- There is a closed economy.

Diagrammatically Illustrations of Multiplier:

We have already explained that the level of national income is determined by the equilibrium between aggregate demand and aggregate supply. In other words, the level of national income is determined at the level where C + I curve intersects the 45° income curve. With such a diagram we can explain the multiplier. The multiplier is illustrated in Fig. 1. In this figure the curve C represents consumption function. Marginal propensity to consume has been here assumed to be equal to 1 2, i.e., 0.5. Therefore, the slope of the curve C of marginal propensity to consume curve C has been taken to be equal to 0.5. C + I represent aggregate demand or expenditure curve. Itwill be seen from Fig. 9.1 that the aggregate demand curve C + I intersect the 45° line at point E so that the equilibrium level of income equal to OY_1 is determined. If investment increases by the amount EH, we can then find out how much increment in income occurs as a result of this. As a consequence of increase in investment by EH, the aggregate expenditure curve shifts upward to the new position C + I'. This new aggregate demand curve C + I' intersects the 45° income line at point F so that the equilibrium level of income increases to OY_2. Thus, as a result of increase in investment equal to EH, income has increased by Y_1Y_2. It will be seen from the figure that Y_1Y_2 is greater than EH. On measuring it will be found that Y_1Y_2 is twice the length of EH. This is as it is expected because the marginal propensity to consume is here equal to 1 /2 and therefore the size of multiplier will be equal to 2.



Leakages in the Multiplier Process

We have seen above that as a result of increase in investment, the level of income increases by a multiple of it. In our above analysis, saving is a leakage in the multiplier process. Had there been no saving and as a result marginal propensity to consume were equal to 1, the multiplier would have been equal to infinity. In that case as a result of some initial increase in investment, income would go on rising indefinitely. Since marginal propensity to consume is actually less than one, some saving does take place. Therefore, multiplier in actual practice is less than infinity. But besides saving, there are other leakages in the process of income generation which reduces the size of the multiplier. Therefore, the increase in income as a result of some increase in investment will be less than warranted by the size of the multiplier measured by the given marginal propensity to consume.

1. ***Paying off debts***: The first leakage in the multiplier process occurs in the form of payment of debts by the people, especially by business men. In the real world, all income received by the people as a result of some increase in investment is not consumed. A part of the increment in income is used for paying back the debts which the people have taken from money-lenders, banks or other financial institutions. The incomes used for paying back the debts do not get spent on consumer goods and services and therefore leak away from the income stream. This reduces the size of the multiplier. Of course, when incomes received by the money-lenders, banks or institutions are again lent back to the people, they come back to the income stream and enhance the size of multiplier. But this may or may not happen.
2. ***Holding of idle cash balances:*** If the people hold a part of their increment in income as idle cash balances and do not use it for consumption, they also constitute leakage in the multiplier process. As we have seen, people keep a part of their income for satisfying their precautionary and speculative motives, money kept for such purposes is not consumed and therefore does not appear in the successive rounds of consumption expenditure and therefore reduces the increments in total income and output.
3. ***Imports***: In our above analysis of working of the multiplier process we have taken the example of a closed economy, that is, an economy with no foreign trade. If it is an open economy as is usually the case, then a part of increment in income will also be spent on the imports of consumer goods. The proportion of increments in income spent on the imports of consumer goods will generate income in other countries and will not help in raising income and output in the domestic economy. Therefore, imports constitute another important leakage in the multiplier process. Suppose marginal propensity to save of an open economy is 0.25, i.e., marginal propensity to consume is 0.75. Suppose further that marginal propensity to import is 0.25, the size of the multiplier without imports will be equal to 4 but the size of the multiplier with the marginal propensity to import equal to 0.25 and the marginal propensity to consume equal to 0.75 will be smaller.
4. ***Taxation.*** Taxation is another important leakage in the multiplier process. The increments in income which the people receive as a result of increase in investment are also in part used for payment of taxes. Therefore, the money used for payment of taxes does not appear in the successive rounds of consumption expenditure in the multiplier process, and the multiplier is reduced to that extent. However, if the money raised through taxation is spent by the Government, the leakage through taxation will be offset by the increase in Government expenditure. But it is not necessary that all the money raised through taxation is spent by the Government as it happens when Government makes a surplus budget. No doubt, if the Government expenditure increases by an amount equal to the taxation, it would not have any adverse effect on the increases in income and investment and in this way, there would be no leakage in the multiplier process.

5. **Increase in Prices**: Price inflation constitutes another important leakage in the working of the multiplier process in real terms. As we have noted above, the multiplier works in real terms only when as a result of increase in money income and aggregate demand, output of consumer goods is also increased. When output of consumer goods cannot be easily increased, a part of the increases in the money income and aggregate demand raises prices of the goods rather than their output. Therefore, the multiplier is reduced to the extent of price inflation. In developing countries like India the extra incomes and demand are mostly spent on food grains whose output cannot be increased so easily. Therefore, the increments in demand raise the prices of goods to a greater extent than the increase in their output. Besides, in developing countries like India, there is not much excess capacity in many consumer goods industries, especially in agriculture and other wage-goods industries. Therefore, when income and demand increase as a result of increase in investment, it generally raises the prices of these goods rather than their output and therefore weakens the working of the multiplier in real terms.

The above various leakages reduce the multiplier effect of the investment undertaken. If these

leakages are plugged, the effect of change in investment on income and employment would be greater.

Government Spending Multiplier

Suppose government increases G by the amount of G. The multiple impact of G on equilibrium income is identical with the impact of change in investment. Just like the investment multiplier is 1/MPS, similarly

Government spending multiplier = 1/MPS

and change in total national income (**Δ**Y)is: **Δ**G.1/MPS

13.5 Tax Multiplier

Suppose government reduces T. This raises disposable income (Yd) of the households by an

equal amount. Rise in Yd raises consumption spending (C) but not by the amount of Yd but bythe amount of Yd MPC or T MPC. Since MPC is less than one the rise in C is less than

the fall in T.

Let government reduce T by 1. This raises Yd by 1. Suppose MPC is 0.8. Therefore, C rises by 0.80. (and not by 1). It means that the impact is not the same as that of 1 of government spending. The impact is smaller T leads to change in Yd. The change in Yd (Δ Yd) leads to change in C by (ΔYd. MPC). Change in Y on account of multiplier effects of Δ C is:

ΔY =Δ C = 1/MPS

= (ΔYd.MPC) 1/MPS (ΔC =ΔYd.MPC)

= (–ΔT.MPC)1/MPS(ΔYd=– ΔT)

= – T*MPC/MPS

We find that ΔT leads to (–MPC /MPS) times change in income. Therefore,

Tax multiplier = -(MPC/MPS)

13.6 Balanced Budget Multiplier

Given that government already has a balanced budget, i.e. G=T. Suppose government wants to increase G by imposing the same amount of T. It means ΔG= ΔT. ΔGraises aggregate spending (AE) by ΔG. ΔT reduces AE by the amount of (ΔT. MPC). Therefore, the net increase in AE (ΔAE) is

ΔAE= ΔG – (ΔT. MPC). The AE changes on account of G and T. According to the government spending multiplier ΔGleads to 1/MPS times change in income. And, according to the tax multiplier ΔT leads to (–MPC/MPS) times change in income. Thus, both G and T together lead to change in income by

1/MPS+(-MPC/MPS) times

The balanced budget multiplier thus is:

= 1/MPS+ (– MPC/MPS)

=(1/MPS)+ (– MPC/MPS)

= (1– MPC)/ MPS

= MPS/MPS (1-MPC=MPS)

=1

13.7 Foreign Trade Multiplier

In an open economy we can write the national income identity as

Y+M = C+I+X……. (1)

Total = Three ways in supply which total output can be used

Y = domestic supply

M = imports

C = consumption

I = investment

Y = exports

In a closed economy, we know that savings have to equal investments in equilibrium. In anopen economy we have to take into account that there can be a net inflow or outflow of capital.

In an open economy, thus the equilibrium condition is

S = I+X–M .....(2)

Or S+M = I+X ..... (3)

If there is a change in any of the four variables, the change in the left side of (3) must equal the change in the right side as a condition for reaching a new equilibrium.

Thus, **ΔS + ΔM = ΔI + ΔX …….. (4)**

Using the definitions of marginal propensity to save, and of marginal propensity to import, m, we can say

ΔS = &ΔY

ΔM = m ΔY

Much do about Multipliers

I t is the biggest peacetime fiscal expansion in history. Across the globe countries have countered the recession by cutting taxes and by boosting government spending. The G20 group of economies, whose leaders meet this week in Pittsburgh, have introduced stimulus packages worth an average of 2% of GDP this year and 1.6% of GDP in 2010. Coordinated action on this scale might suggest a consensus about the effects of fiscal stimulus. But economists are in fact deeply divided about how well, or indeed whether, such stimulus works. The debate hinges on the scale of the "fiscal multiplier". This measure, first formalised in 1931 by Richard Kahn, a student of John Maynard Keynes, captures how effectively tax cuts or increases in government spending stimulate output. A multiplier of one means that a $1 billion increase in government spending will increase a country's GDP by $1 billion. The size of the multiplier is bound to vary according to economic conditions. For an economy operating at full capacity, the fiscal multiplier should be zero. Since there are no spare resources, any increase in government demand would just replace spending elsewhere. But in a recession, when workers and factories lie idle, a fiscal boost can increase overall demand. And if the initial stimulus triggers a cascade of expenditure among consumers and businesses, the multiplier can be well above one.

The multiplier is also likely to vary according to the type of fiscal action. Government spending on building a bridge may have a bigger multiplier than a tax cut if consumers save a portion of their tax windfall. A tax cut targeted at poorer people may have a bigger impact on spending than one for the affluent, since poorer folk tend to spend a higher

share of their income.

Crucially, the overall size of the fiscal multiplier also depends on how people react to higher government borrowing. If the government's actions bolster confidence and revive animal spirits, the multiplier could rise as demand goes up and private investment is "crowded in". But if interest rates climb in response to government borrowing then some private investment that would otherwise have occurred could get "crowded out". And if consumers expect higher future taxes in order to finance new government borrowing, they could spend less today. All that would reduce the fiscal multiplier, potentially to below zero.

Different assumptions about the impact of higher government borrowing on interest rates and private spending explain wild variations in the estimates of multipliers from today's stimulus spending. Economists in the Obama administration, who assume that the federal funds rate stays constant for a four-year period, expect a multiplier of 1.6 for government purchases and 1.0 for tax cuts from America's fiscal stimulus. An alternative assessment by John Cogan, Tobias Cwik, John Taylor and Volker Wieland uses models in which interest rates and taxes rise more quickly in response to higher public borrowing. Their multipliers are much smaller. They think America's stimulus will boost GDP by only one-sixth as much as the Obama team expects.

When forward-looking models disagree so dramatically, careful analysis of previous fiscal stimuli ought to help settle the debate. Unfortunately, it is extremely tricky to isolate the impact of changes in fiscal policy. One approach is to use microeconomic case studies to examine consumer behavior in response to specific tax rebates and cuts. These studies, largely based on tax changes in America, find that permanent cuts have a bigger impact on consumer spending than temporary ones and that consumers who find it hard to borrow, such as those close to their credit-card limit, tend to spend more of their tax windfall. But case studies do not measure the overall impact of tax cuts or spending increases on output.

An alternative approach is to try to tease out the statistical impact of changes in government spending or tax cuts on GDP. The difficulty here is to isolate the effects of fiscal-stimulus measures from the rises in social-security spending and falls in tax revenues that naturally accompany recessions. This empirical approach has narrowed the range of estimates in some areas. It has also yielded interesting cross-country comparisons. Multipliers are bigger in closed economies than open ones (because less of the stimulus leaks abroad via imports). They have traditionally been bigger in rich countries than emerging ones (where investors tend to take fright more quickly, pushing interest rates up). But overall economists find as big a range of multipliers from empirical estimates as they do from theoretical models.

These times are different

To add to the confusion, the post-war experiences from which statistical analyses are drawn differ in vital respects from the current situation. Most of the evidence on multipliers for government spending is based on military outlays, but today's stimulus packages are heavily focused on infrastructure. Interest rates in many rich countries are now close to zero, which may increase the potency of, as well as the need for, fiscal stimulus. Because of the financial crisis relatively more people face borrowing constraints, which would increase the effectiveness of a tax cut. At the same time, highly indebted consumers may now be keen to cut their borrowing, leading to a lower multiplier. And investors today have more reason to be worried about rich countries' fiscal positions than those of emerging markets. Add all this together and the truth is that economists are flying blind. They can make relative judgments with some confidence. Temporary tax cuts pack less punch than permanent ones, for instance. Fiscal multipliers will probably be lower in heavily indebted economies than in prudent ones. But policymakers looking for precise estimates are deluding themselves.

Question: Why do you think study of multipliers is important?

Equation (4) can now be

(&+m) = **ΔJ + ΔX**…….....(5)

Hence, we get

ΔY = (ΔJ+ ΔX)*1/ s+m……..(6)

The changes in investment and exports can now be viewed as autonomous variables and the effects of change in, say, exports on the national income can be studied.

Equation (6) shows that the effect of change in exports on the national income equals the change in exports multiplied by the expression (1/s+m), which is the foreign trade multiplier or k_f. k_f works like the simple inverse multiplier. An increase in exports gives rise to an increase in income for exporters and those employed in export industries. They, in turn, spend more of their increased incomes. How much more they spend on domestic goods depends on two leakages: how much they saved and how much they spend on imports. The savings do not create any new incomes. An increase in import spendings does not create new incomes in the country itself, only in those foreign countries with which the first country trades.

It is now easy to see that the larger the marginal propensities to save and import, the smaller will be the value of the multiplier.

13.8 Static and Dynamic Multiplier

Depending on the purpose of analysis, sometimes a distinction is made between the static multiplier and the dynamic multiplier. The static multiplier is also called 'comparative static multiplier', 'simultaneous multiplier', 'logical multiplier,' 'timeless multiplier.' 'lag-less multiplier* and 'instant multiplier'.

The concept of static multiplier implies that change in investment causes change in income instantaneously. It means that there is no time lags between the chances in invest merit and the change in income. It implies that the moment a rupee is spent on investment projects, society's income increases by a multiple of 1. The concept of multiplier explained in the preceding section is that of static multiplier. Let us explain the concept of the dynamic multiplier also known as 'period' and 'sequence' multiplier.

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

Limitation of Multipliers

The limitations of Multipliers are as follows:

1. If the investment does not come up in sufficient quantity, the multiplier will not work.

2. The greater the time lag, the lower would be the value of the multiplier.

3. Multiplier will not work properly if consumers' goods are not available in plenty.

4. There must be the motive of profit maximization and autonomous investment. The investment must be net investment; otherwise, the value of the multiplier will be reduced.

5. The multiplier can work only if there is underemployment.

A Numerical Problem on Multiplier

Problem 1. Suppose the level of autonomous investment in an economy is200 croreand consumption function of the economy is:

C = 80 + 0.75Y

(a) What will be the equilibrium level of income?

(b) What will be the increase in national income if investment increases by ` 25 crore?

Solution. (a) For equilibrium level of income,

Y = C + I …(i)

where C = 80 + 0.75Y

I = 200 crore

Substituting the values of C and I in (i) we have

$$Y = 80 + 0.75Y + 200$$

$$(Y - 0.75Y) = 80 + 200 = 280$$

$$0.25\ Y = 280$$

$$Y = (100/25)^* 280 = 1120$$

Equilibrium level of income is therefore equal to 1120 crore.

(b) How much increase in income will occur as a result of increase in investment by 25 crore depends on the size of multiplier. The size of multiplier is determined by the value of marginal propensity to consume. In the given consumption function (C = 80 + 0.75Y) marginal propensity to consume is equal to 0.75 or 3/4 Thus,

multiplier = 1/(1-MPC) =1/(1-MPC) = 1/(1-3/4)=4

Thus, with increase in investment by 25 crore, national income will rise by 25 × 4 = 100 crore.

Problem 2. Suppose in a country investment increases by 100 and consumption is given by C = 10 + 0.6Y (where C = consumption and Y = income). How much increase will there take place in income?

Solution. Multiplier, $k = \Delta Y/\Delta I$

or $\Delta Y = k.\ \Delta I$ ……..(i)

Now, multiplier, k = 1/1 − MPC

In the given consumption function, MPC = 0.6

Multiplier, k = 1/1-0.6=1/0.4=1/4=1/2=2.5

Substituting the value of k = 2.5 and $\Delta I = 100$ in (i) above, we have

$\Delta Y + 2.5 \times 100 = 250$.

Problem 3. What increase in investment is needed to raise income by 4,000 crores, if MPC is 0.75? How much increase will there be in consumption and saving due to this increase in income?

Solution. How much increase in investment is required to raise income by 4,000 crore depends on the value of multiplier and the size of multiplier (k) depends on the marginal propensity to consume (MPC). Thus,

Multiplier k = 1/1-MPC

= 1/1-0.75=1/0.25=4

Now, $k = \Delta Y/\Delta I$

or $\Delta I = \Delta Y/k$……..…(i)

Substituting the value of ΔY and k in (i), we have

$\Delta I = 4000/4 = 1000$

Thus, investment should be increased by 1,000crores to achieve 4,000crores increase in income. Given MPC = 0.75, the increase in consumption will be 4000 × 0.75 = 3000 crore and increase in saving will be 4000 × 0.25 = 1000 crore.

Summary:

- Spending creates income. It leads to rise in income of those producers on whose goods and services the spending is made. The spending may be on capital goods (called investment),on inputs, and on consumption. (It is assumed that there is no government expenditure and there are no net exports).
- Multiplier is defined as the ratio of change in the equilibrium national income to change in an autonomous variable. A variable is autonomous when it is assumed not to beinfluenced by change in income.
- The term investment multiplier refers to the concept that any increase in public or private investment spending has a more than proportionate positive impact on aggregate income

and the general economy. The multiplier attempts to quantify the additional effects of a policy beyond those that are immediately measurable.

- Apart from investment multiplier, the other types of multipliers are tax multiplier, government spending multiplier, balanced budget multiplier, foreign trade multiplier, etc.
- Multiplier will not work properly if consumers' goods are not available in plenty. There must be the motive of profit maximization and autonomous investment. The investment must be net investment; otherwise, the value of the multiplier will be reduced.
- The concept of static multiplier implies that change in investment causes change in income instantaneously. It means that there are no time lags between the chance in invest merit and the change in income.
- The concept of dynamic multiplier recognizes the fact that the overall change in income as a result of the change in investment is not instantaneous. There is a gradual process by which income changes as a result of change in investment or other determinants of income.

Keywords

- Balanced Budget Multiplier: A measure of the change in aggregate production caused by equal changes in government purchases and taxes.
- Dynamic Multiplier: It recognizes the fact that the overall change in income as a result of the change in investment is not instantaneous.
- Foreign Trade Multiplier: The ratio of the resulting increase in domestic product to an addition to exports.
- Investment Multiplier: Refers to the concept that any increase in public or private investment spending has a more than proportionate positive impact on aggregate income and the general economy.
- Multiplier: A numerical coefficient showing the effect of a change in one economic variable on another.
- Static Multiplier: It implies that change in investment causes change in income instantaneously.
- Tax Multiplier: The ratio of the change in aggregate output (or gross domestic product) to an autonomous change in a tax.

Self Assessment:

1. The concept of multiplier was first developed by

A. J M Keynes
B. F A Khan
C. J D Clark
D. Samuelson

2. The formula for calculating simple multiplier is

A. a.1/1-MPC
B. b. 1/MPC=MPS
C. c. 1/1-MPS
D. d. 1/MPC+MPS

3. The balanced budget multiplier in the Keynesian Cross Model is

A. Equal to one.
B. greater than one.

C. less than one
D. None of these

4. The formula for calculating investment multiplier is

A. $\Delta Y / \Delta I$
B. $\Delta Y + \Delta I$
C. $\Delta I / \Delta Y$
D. $\Delta C + \Delta I$

5. Which among the following does not have the application of multiplier

A. Determination of income
B. Fiscal policy
C. Monetary policy
D. Foreign direct investment

6. The expenditure multiplier is the ratio of

A. the change in equilibrium output to a change in the monetary base.
B. the change in the money supply to a change in the monetary base.
C. the change in the money supply to a change in the autonomous expenditure.
D. the change in equilibrium output to a change in the autonomous expenditure.

7. The multiplier concept is important in the Keynesian model because

A. it explains why a large change in autonomous spending has such a small impact on equilibrium output.
B. it explains why a small change in autonomous spending can have a large impact on equilibrium output.
C. it is crucial to understanding why changes in investment spending are viewed as the root cause of business cycles fluctuations.
D. both (b) and (c) of the above.

8. The Foreign Trade Multiplier is the ratio of;

A. the change in equilibrium output to a change in import.
B. the change in the money supply to a change in the monetary base.
C. the change in the money supply to a change in the autonomous expenditure.
D. the change in equilibrium output to a change in the autonomous expenditure.

9. Multiplier is the ratio of

A. change in income to change in investment
B. change in investment to change in income
C. change in income to change in interest
D. None of the above

10. Given an MPC of 0.75, the value of the simple output multiplier is

A. 0

B. 1

C. 2

D. 4

11. The value of the output multiplier shrinks as proportional taxes rise.

A. True

B. False

12. A variable is ..... when it is assumed not to be influenced by change in income.

13. Investment multiplier is the ratio of change in ..... due to a given change in investment.

14. Static multiplier implies that change in income causes change in investment after a period of time.

A. True

B. False

15. Higher the value of MPC,

A. Lower will be the value of multiplier;

B. Higher will be the value of multiplier;

C. No effect will be on multiplier;

D. All is possible

Review Questions:

1. Distinguish between static multiplier and dynamic multiplier. Explain them through appropriate graphs.
2. Explain the concept of multiplier. How does it work?
3. "Multiplier does not work in real terms in developing countries". What prevents the multiplier to work in real terms in India?
4. Describe the concept of tax Multiplier.
5. Explain Balanced Budget Multiplier.
6. You are given the following information about an economy:
   Consumption function, C = 1000 + 0.5 (Y – T)
   Investment, I = 2,000 crores.
   Government expenditure = 1,000 crores
   Taxes = 1,000 crores
   (i) Calculate the tax multiplier.
   (ii) Explain the working of the tax multiplier intuitively.

Answers for Self Assessment

1.	B	2.	A	3.	A	4.	A	5.	C
6.	D	7.	D	8.	A	9.	A	10.	D
11.	A	12.	Autonomous	13.	Income	14.	B	15.	B

Further Readings:

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Edward Shapiro, H. B. Jovanovich, Macro Economic Analysis. R. L. Varshney, K. L. Maheshwari, Managerial Economics, Sultan Chand & Sons, New Delhi

Thomas F. Dernburg, Macro Economics, Mc Graw-Hill Book Co.

http://tutor2u.net/economics/content/topics/macroeconomy/multiplier.htm

http://www.econlib.org/library/Enc/KeynesianEconomics.html

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Unit 14: Balance of Payment

CONTENTS

Objectives

After studying this unit, you will be able to,

- understand Balance of payments and its components
- understand the reasons for disequilibrium in Balance of payments
- understand measures to correct disequilibrium in balance of payment.

Introduction

The BOP is a statistical account of the transactions between residents of one country and residents of the rest of the world for a period of one year or fraction thereof. It is a systematized procedure for measuring, summarizing and stating the effects of all financial and economic transactions. The BOP statistics reflect all the economic transactions of a country vis-à-vis rest of the world for which payment may or may not be involved. These transactions may include exchange of goods and services or there may be loan transactions, gifts and grants, or short-term, long-term and portfolio investments. For all these transactions, except gifts and grants, payment is involved in foreign currency. A transaction is recorded as being either a credit or a debit depending on the direction of the payment. If the transaction results in a cash outflow, it is recorded as a debit. Likewise, if the transaction results in a cash inflow it is recorded as a credit.

14.1 Meaning of Multiplier

In the modern world, there is hardly any country which is self-sufficient in the sense that it produces all the goods and services it needs. Every country import from other countries the goods that cannot be produced at all in the country or can be produced only at an unduly high cost as compared to the foreign supplies. Similarly, a country exports to other countries the commodities which those countries prefer to buy from abroad rather than produce at home.

"The balance of payments is a systematic record of economic transactions of the residents of a country with the rest of the world during a given period of time." The record is so prepared as to provide meaning and measure to the various components of a country's external economic transactions. Thus, the aim is to present an account of all receipts and payments on account of goods exported, services rendered and capital received by residents of a country, and goods imported, services received and capital transferred by residents of the country. The main purpose of keeping these records is to know the international economic position of the country and to help the Government in reaching decisions on monetary and fiscal policies on the one hand, and trade and payments questions on the other.

14.2 Balance of Trade and Balance of Payments

Balance of trade and balance of payments are two related terms but they should be carefully distinguished from each other because they do not have exactly the same meaning. Balance of trade

refers to the difference in value of imports and exports of commodities only, i.e., visible items only. Movement of goods between countries is known as visible trade because the movement is open and can be verified by the customs officials. During a given period of time, the exports and imports may be exactly equal, in which case, the balance of payments of trade is said to be balanced. But this is not necessary, for those who export and import are not necessarily the same persons. If the value of exports exceeds the value of imports, the country is said to experience an export surplus or a favorable balance of trade. If the value of its imports exceeds the value of its exports, the country is said to have a deficit or an adverse balance of trade.

The terms "favorable" and "unfavorable" are derived from the mercantilist writers of the 18th century. In those days, settlements of the foreign transactions were made in gold. If India had exported 100 crores worth of goods but had imported `80 crores worth of goods, India would receive 20 crores worth of gold from the foreign countries. As gold was regarded as wealth and as the receipts of gold made a country wealthy, the mercantilist writers regarded exports surplus as being favorable to the country.

On the other hand, if India had exported 100 crores worth of goods, but imported ` 150 crores worth of goods, it had to pay 50 crores in gold to the foreigners. India would be losing gold and would be poorer to that extent. Therefore, an import surplus was regarded by the mercantilist writers as adverse balance. But in these days, the international transactions are not settled in terms of gold. Even then, the terms "favorable" and "unfavorable" balance of trades have continued to be used till today. Exports and imports of a country are rarely equal. Balance of trade, in other words, will not balance. During any period, a country may experience a favorable or an adverse balance of trade.

14.3 Distinction between Current Account and Capital Account

The distinction between the current account and capital account may be noted. The current account deals with payment for currently produced goods and services; it includes also interest earned or paid on claims and also gifts and donations. The capital account, on the other hand, deals with payments of debts and claims. The current account of the balance of payments affects the level of national income directly. For instance, when India sells its currently produced goods and services to foreign countries, the producers of those goods get income. In other words, current account receipts have the effect of increasing the flow of income in the country. On the other hand, when India imports goods and services from foreign countries and pays for them, money which would have been used to demand goods and services within the country flows out to foreign countries. The current account payments to foreigners involve reduction of the flow of income within the country and constitute a leakage. Thus, the current account or trade account of the balance of payments has a direct effect on the level of income in a country. The capital account, however, does not have such a direct effect on the level of income; it influences the volume of assets which a country holds.

It may be further noted that when there is a deficit in the current account, it has to be financed either by using foreign exchange reserves with Reserve Bank of India, if any, or by capital inflows (in the form of foreign assistance, funds flowing through FDI and portfolio investment by FIIs, commercial borrowing from abroad, non-resident deposits.

14.4 Determinants of Balance of Payments

There are several variables which determine the balance of payments position of a country, viz., national income at home and abroad, exchange rate of national currency, the prices of goods and factors, international oil and commodity prices, the supply of money, the rate of interest, etc. all of which determine exports, imports, and demand and supply of foreign currency. At the back of these variables lie the supply factors, production function, the state of technology, tastes, distribution of

income, economic conditions, the state of expectations, etc. If there is a change in any of these variables and there are no appropriate changes in other variables, disequilibrium will be the result.

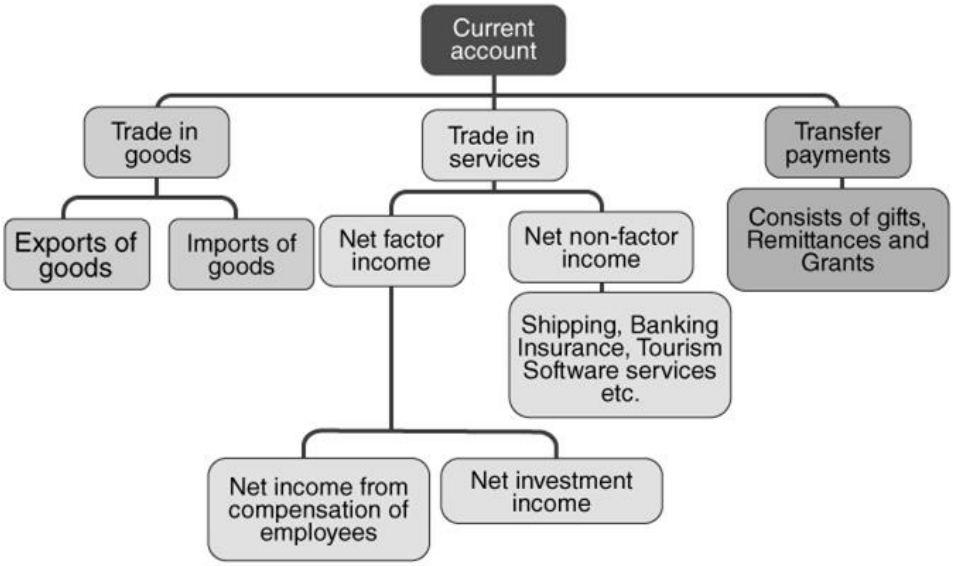
The main cause of disequilibrium in the balance of payments arises from imbalance between exports and imports of goods and services, that is, deficit or surplus in balance of trade. When for one reason or another exports of goods and services of a country are smaller than their imports, disequilibrium in the balance of payments is the likely result. Exports may be small due to the lack of exportable surplus which in turn results from low production or the exports may be small because of the high costs and prices of exportable goods and severe competition in the world markets. Important causes of small exports are the inflation or rising prices in the country or over-valued exchange rate. When the prices of goods are high in the country, its exports are discouraged and imports encouraged. If it is not matched by other items in the balance of payments, disequilibrium emerges.

Balance of Payments on Current Account

Current account refers to an account which records all the transactions relating to export and import of goods and services and unilateral transfers during a given period of time. Current account contains the receipts and payments relating to all the transactions of visible items, invisible items and unilateral transfers.

Components of Current Account:

The main components of Current Account are:



1. Export and Import of Goods (Merchandise Transactions or Visible Trade): A major part of transactions in foreign trade is in the form of export and import of goods (visible items). Payment for import of goods is written on the negative side (debit items) and receipt from exports is shown on the positive side (credit items). Balance of these visible exports and imports is known as balance of trade (or trade balance).

2. Export and Import of Services (Invisible Trade): It includes a large variety of non- factor services (known as invisible items) sold and purchased by the residents of a country, to and from the rest of the world. Payments are either received or made to the other countries for use of these services.

a. Shipping.

b. Banking.

c. Insurance.

Payments for these services are recorded on the negative side and receipts on the positive side.

3. Unilateral or Unrequited Transfers to and from abroad (One sided Transactions):

Unilateral transfers include gifts, donations, personal remittances and other 'one-way' transactions. These refer to those receipts and payments, which take place without any service in return. Receipt

of unilateral transfers from rest of the world is shown on the credit side and unilateral transfers to rest of the world on the debit side. Income receipts and payments to and from abroad: It includes investment income in the form of interest, rent and profits.

Current Account records all the actual transactions of goods and services which affect the income, output and employment of a country. So, it shows the net income generated in the foreign sector. Unilateral transfers include gifts, donations, personal remittances and other 'one-way' transactions. These refer to those receipts and payments, which take place without any service in return. Receipt of unilateral transfers from rest of the world is shown on the credit side and unilateral transfers to rest of the world on the debit side.

4. Income receipts and payments to and from abroad: It includes investment income in the form of interest, rent and profits.

Current Account records all the actual transactions of goods and services which affect the income, output and employment of a country. So, it shows the net income generated in the foreign sector. In the current account, receipts from export of goods, services and unilateral receipts are entered as credit or positive items and payments for import of goods, services and unilateral payments are entered as debit or negative items. The net value of credit and debit balances is the balance on current account.

1. Surplus in current account arises when credit items are more than debit items. It indicates net inflow of foreign exchange.

2. Deficit in current account arises when debit items are more than credit items. It indicates net outflow of foreign exchange.

S. No. Items	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
1. Exports	105.1	128.9	166.2	189.0	182.2	256.2	309.8	305.6
2. Imports	157.1	190.7	257.6	307.6	300.6	383.5	499.5	502.2
3. **Trade Balance**	–52.0	–61.8	–91.5	–118.6	–118.4	–127.3	–189.9	–195.7
	(–6.2)	(–6.5)	(–7.4)	(–9.8)	(–8.6)	(–7.8)	(–10.1)	(–10.0)
4. **Invisibles (Net)**	42.0	52.2	75.7	89.9	79.9	79.3	111.6	–
(*i*) Non-factor Services	23.2	29.5	38.9	49.6	35.7	44.1	64.1	–
(*ii*) Investment Income	–5.9	–7.2	–5.1	–4.0	–8.0	–17.9	–16.0	–
(*iii*) Private Transfers	24.5	29.8	41.7	44.6	52.3	53.1	63.5	–
5. **Goods and Services Balance**	–28.7	–32.3	–52.6	–69.0	–83.0	–83.2	–125.7	–130.7
6. **Current Account Balance (Net)**	**–10.0**	**– 9.6**	**–15.7**	**–28.7**	**–38.4**	**–48.1**	**–78.2**	**–87.8**
	(–1.2)	(–1.0)	(–1.3)	(–2.4)	(–2.8)	(–2.7)	(–4.2)	(–4.8)

It will be noted from Table 1 above that the most important item in the balance of payments on current account is balance of trade which refers to imports and exports of goods. In the Table 34.1 balance of trade does not balance and shows a deficit in all the seven years. In years 2011-12 and 2012-13 trade deficit substantially increased. Trade deficit was over 10 per cent of GDP in both these years. In fact, it is huge trade deficit in these two years that caused huge current account deficit of over 4% of GDP in these two years Economic slowdown in advanced countries and its spillover effects in Emerging Market Economies coupled with high crude oil and gold prices were responsible for sharp increase in trade deficit. Due to surplus in invisibles account, there was a surplus on current account during 2001-2002, 2002-03 and 2003-04. In India's balance of payments on current account from 2004-05 onwards there has been a deficit. Contrary to popular perception, deficit on current account is not always bad provided it is within reasonable limits and can be easily met by non-debt capital receipts. In fact, deficit on current account represents the extent of absorption of capital inflows in India during a year It may be noted that when there is deficit on the current account, it is financed either by using foreign exchange reserves held by Reserve Bank of India or by capital flows that come into the country in the form of foreign direct investment (FDI) and portfolio investment by FIIs, external commercial borrowing (ECB) from abraod and by NRI deposits in foreign exchange account in our banks. However, due to global financial crisis in 2008-09, there was first slowdown and then decrease

in exports. As a result, there was a large deficit of 2.4 per cent of GDP on current account which could not be met by capital inflows as they were quite meagre ($ 8.6 billion) as a result of global financial crisis. Therefore, to finance the deficit on current account in 2008-09 we had to withdraw US $ 20 billion from our foreign exchange reserves. Again, in the last two years 2011-12 and 2012-13 the current account deficit (CAD) has been quite high. It may be noted that high current deficit tends to weaken the rupee by raising the demand for US dollars. In 2011-12, current account deficit tended to weaken the rupee by raising the demand for US dollars. In 2011-12, the current account deficit was 4.2 per cent of GDP. Since capital inflows in this year were not adequate to finance the current account deficit, RBI had to withdraw 12.8 million US dollars from its foreign exchange reserves to meet the demand for US dollars (see Table 34.2). In the year 2012-13 the current account deficit has been estimated to be even higher at 4.8 per cent of GDP, capital inflows through portfolio investment by FIIs have picked up in the latter half of 2012-13 but capital inflows through FDI have fallen. Therefore, to meet the current account deficit some US dollars will have to be withdrawn from foreign exchange reserves held by RBI. Thus, current account deficit poses serious challenge to macroeconomic management of the economy. The dependence on volatile capital inflows through FIIs to meet the current account deficit is unsustainable as these capital flows go back when global situation worsens and thereby causes sharp depreciation in exchange rate of rupee and crash in stock market prices.

Since in the recent years, 2011-12 and 2012-13, current account deficit of India widened, this increased the balance of payments vulnerability to sudden reversal of capital flows, especially when sizable flows are comprised of debt and volatile portfolio investment by FIIs. The priority has therefore been to reduce current account deficit (CAD) through improving trade balance. Efforts have been made to promote exports by diversifying the export commodity basket and export destinations. One way to limit imports is to bring prices up to the international level so that users bear the full cost.

Accordingly, petrol has been decontrolled and diesel prices have been revised upward in Jan. 2013 to curtail subsidy on it. To discourage the imports of gold which has played a significant role in causing trade deficit, customs duty on its import has been raised from 4% to 6%. Further, to improve the current account deficit emphasis has been on facilitating remittances and encouraging software exports that have been responsible for surplus on the invisible account. In recent years this surplus has lowered the impact of widening trade deficit on current account deficit (CAD) significantly. The two components together met nearly two-thirds of the trade deficit that was more than 10 per cent of GDP in 2011-12 and 2012-13. Remittances particularly are known to exhibit resistance when the country is hit by external shock as was evident during the global crisis of 2008.

Balance of Payments on Capital Account

Capital account of BOP records all those transactions, between the residents of a country and the rest of the world, which cause a change in the assets or liabilities of the residents of the country or its government. It is related to claims and liabilities of financial nature.

Capital Account is used to:

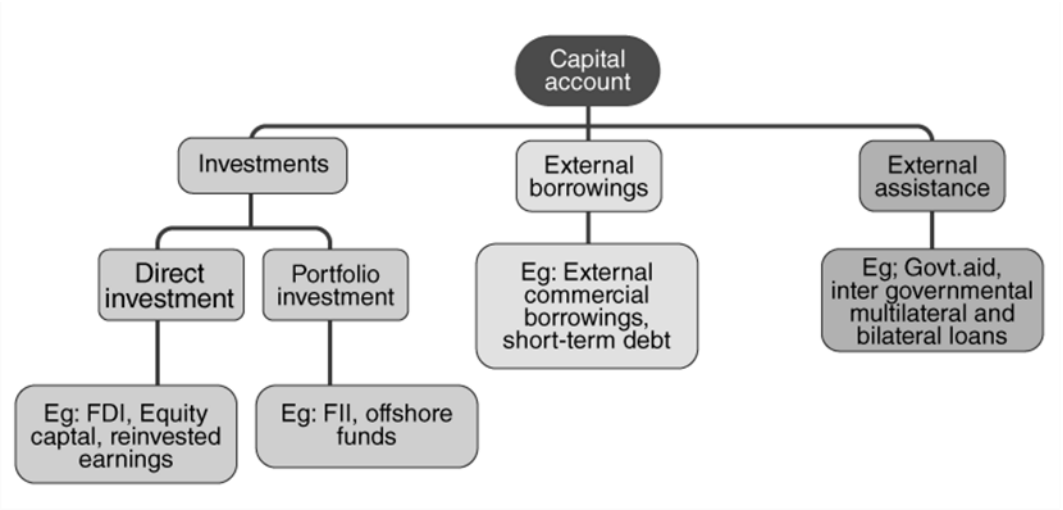
(i) Finance deficit in current account; or

(ii) Absorb surplus of current account.

Capital account is concerned with financial transfers. So, it does not have direct effect on income, output and employment of the country.

Components of Capital Account:

The main components of capital account are:



1. Borrowings and landings to and from abroad:

It includes:

A. All transactions relating to borrowings from abroad by private sector, government, etc. Receipts of such loans and repayment of loans by foreigners are recorded on the positive (credit) side.

B. All transactions of lending to abroad by private sector and government. Lending abroad and repayment of loans to abroad is recorded as negative or debit item.

2. Investments to and from abroad:

It includes:

A. Investments by rest of the world in shares of Indian companies, real estate in India, etc. Such investments from abroad are recorded on the positive (credit) side as they bring in foreign exchange

B. Investments by Indian residents in shares of foreign companies, real estate abroad, etc. Such investments to abroad be recorded on the negative (debit) side as they lead to outflow of foreign exchange.

3. Change in Foreign Exchange Reserves:

The foreign exchange reserves are the financial assets of the government held in the central bank. A change in reserves serves as the financing item in India's BOP. So, any withdrawal from the reserves is recorded on the positive (credit) side and any addition to these reserves is recorded on the negative (debit) side. It must be noted that 'change in reserves' is recorded in the BOP account and not reserves.

Balance on Capital Account:

The transactions, which lead to inflow of foreign exchange (like receipt of loan from abroad, sale of assets or shares in foreign countries, etc.), are recorded on the credit or positive side of capital account. Similarly, transactions, which lead to outflow of foreign exchange (like repayment of loans, purchase of assets or shares in foreign countries, etc.), are recorded on the debit or negative side. The net value of credit and debit balances is the balance on capital account.

A. Surplus in capital account arises when credit items are more than debit items. It indicates net inflow of capital.

B. Deficit in capital account arises when debit items are more than credit items. It indicates net outflow of capital.

In addition to current account and capital account, there is one more element in BOP, known as 'Errors and Omissions'. It is the balancing item, which reflects the inability to record all international transactions accurately.

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
External Assistance (Net)	1.7	1.8	2.1	2.6	2.9	4.94	2.3
Commercial Borrowing (Net)	2.5	16.1	22.6	7.0	2.8	12.16	10.3
Non-Resident Deposits (Net)	2.8	4.3	0.2	– 4.3	2.9	3.14	11.9
Foreign Investment (Net) of which	15.5	14.8	43.3	3.5	50.4	42.13	39.2
(*i*) FDI net	3.0	7.7	15.9	17.5	18.0	11.83	22.1
(*ii*) Portfolio Investment (Net)	12.5	7.1	27.4	–15.0	32.4	30.3	17.2
(*iii*) Other capital flows (Net)	2.4	9.2	39.7	–9.7	–13.1	–10.48	–7.0
Capital Account Total (Net)	**24.9**	**46.1**	**107.9**	**8.6**	**51.6**	**63.74**	67.8
Use of Exchange Reserves*	–15.0	–36.6	–92.2	+20.1*	–13.4*	(–13.1)*	(+12.8)*

Capital inflows in the capital account can be classified into debt creating and non-debt creating. Foreign investment (both direct and portfolio) represents non-debt creating capital inflows, whereas external assistance (i.e. concessional loans taken from abroad), external commercial borrowing (ECB) and non-resident deposits are debt-creating capital inflows. It will be seen from Table 34.2 that during 2007-08, there was net capital inflow of 43.3 billion US dollars on account of foreign investment (both direct and portfolio). Table 2 gives the position of India's balance of payments in capital account for seven years, 2005-06, 2006-07, 2007-08, 2008- 09 and 2009-10, 2010-11 and 2011-12. When all items of balance of payments on capital account are taken into account, we had a surplus of 107.9 billion US dollars in 2007-08. Taking into current account deficit of $ 15.7 billion in year 2007-08 there was accretion to our foreign exchange reserves by $ 92.2 billion in 2007-08. Global financial crisis affected our capital account balance as there was reversal of capital flows after Sept. 2008 with the result that we used $ 20.1 billion of our foreign exchange reserves in 2008-09 resulting in decrease of our foreign exchange reserves. That is, because we used our foreign exchange reserves equal to $ 20.1 billion, there was decline in our foreign exchange reserves by $ 20 billion in 2008-09. The situation improved in 2009-10 as foreign direct investment (FDI) and portfolio investment by FIIs picked up. As a result, there was net capital account surplus of $ 51.6 billion in 2009-10 and after meeting the current account deficit of $ 38 billion there was addition to our foreign exchange reserves by $ 13.4 billion in 2009-10. In 2010-11 also there was surplus on capital account of $ 63.74 billion and after meeting current deficit we added $ 13.1 billion in our foreign exchange reserves in 2010.11. However, in 2011-2012 and 2012-13 the situation regarding capital flows changed significantly and capital flows were not sufficient to meet the large current account deficit (CAD). Consequently, in 2011-12 withdrawal from foreign exchange reserves of 12.8 billion US dollars was made. In 2012- 13 also due to large deficit on current account the withdrawal from our foreign exchange reserves was made. Capital flows are driven by pull factors such as economic fundamentals of recipient countries and push factors such as policy stance of source countries. The capital flows have implications for exchange rate management, overall macroeconomic and financial stability including liquidity conditions. Capital account management therefore needs to emphasize promoting foreign direct investment (FDI) and reducing dependence on volatile portfolio capital. This would ensure that to the extent current account deficit is bridged through capital surplus it would be better if it is done through stable and growth enhancing foreign direct investment flows. In the present international financial situation, reserves are the first line of defense against the volatile capital flows. However, the decline in reserves as a percentage of GDP is a source of concern.

14.5 The Official Reserve Account (ORA)

The ORA measures changes in the holdings of foreign currency, SDRs and gold by the central bank of a nation. It takes into account the surplus or deficit resulting from the current account and capital account transactions.

Caution

In the accounting format, balances on individual accounts can be worked out as

follows:

(a) Trade balance (merchandise A/c) = Merchandise exports - merchandise imports (X - M).

(b) Current account (includes earnings and expenditure for services and "invisible" trade items).

= Balance on goods, services and income + Unrequired transfers (determined autonomously because of pricing, similar factors).

(c) Basic balance = Current A/c + long-term capital flows including FDI (autonomous).

(d) Overall balance/Official settlement balance

= Basic balance + Short-term capital movements + Errors and omissions.

The transactions in the current account, capital account and statistical discrepancies are treated as autonomous in BOP accounting format whereas, entries in the official settlement account are treated as compensatory items.

14.6 The Total Balance of Payments Notes

The BOP is just the sum of these three accounts and is calculated as follows: BOP = Current Account Balance + Capital Account Balance + Change in Official

Reserves Account

BOP = BCRA + CPA + ORA

The BOP must always equal 0, i.e., balance since it is an accounting identity in a fixed exchange rate system. If for some reason, the CRA and CPA do not sum to 0, then the government must take action by adjusting the ORA so that BOP equals 0. The government does this by buying or selling foreign currency and gold, depending on the situation, up to a total that equals the CRA and CPA.

14.7 Causes of Disequilibrium:

1. ***Temporary Changes (or Disequilibrium):*** There may be a temporary disequilibrium caused by random variations in trade, seasonal fluctuations, the effects of weather on agricultural production, etc. Deficits or surpluses arising from such temporary causes are expected to correct themselves within a short time.

2. ***Fundamental Disequilibrium:*** Fundamental disequilibrium refers to a persistent and long-run BOP disequilibrium of a country. It is a chronic BOP deficit, according to IMF. It is caused by such dynamic factors as:

(1) Changes in consumer tastes within the country or abroad which reduce the country's exports and increase its imports.

(2) Continuous fall in the country's foreign exchange reserves due to supply in-elasticities of exports and excessive demand for foreign goods and services.

(3) Excessive capital outflows due to massive imports of capital goods, raw materials, essential consumer goods, technology and external indebtedness.

(4) Low competitive strength in world markets which adversely affects exports.

(5) Inflationary pressures within the economy which make exports dearer.

3. ***Structural Changes (or Disequilibrium):*** Structural changes bring about disequilibrium in BOP over the long run.

They may result from the following factors:

(a) Technological changes in methods of production of products in domestic industries or in the industries of other countries. They lead to changes in costs, prices and quality of products.

(b) Import restrictions of all kinds bring about disequilibrium in BOP.

(c) Deficit in BOP also arises when a country suffers from deficiency of resources which it is required to import from other countries.

(d) Disequilibrium in BOP may also be caused by changes in the supply or direction of long-term capital flows. More and regular flow of long-term capital may lead to BOP surplus, while an irregular and short supply of capital brings BOP deficit.

4. Changes in Exchange Rates: Changes in foreign exchange rate in the form of overvaluation or undervaluation of foreign currency lead to BOP disequilibrium. When the value of currency is higher

in relation to other currencies, it is said to be overvalued. Opposite is the case of an undervalued currency. Overvaluation of the domestic currency makes foreign goods cheaper and exports dearer in foreign countries. As a result, the country imports more and exports less of goods. There is also outflow of capital. This leads to unfavorable BOP. On the contrary, undervaluation of the currency makes BOP favorable for the country by encouraging exports and inflow of capital and reducing imports.

5. Cyclical Fluctuations (or Disequilibrium): Cyclical fluctuations in business activity also lead to BOP disequilibrium. When there is depression in a country, volumes of both exports and imports fall drastically in relation to other countries. But the fall in exports may be more than that of imports due to decline in domestic production. Therefore, there is an adverse BOP situation. On the other hand, when there is boom in a country in relation to other countries, both exports and imports may increase. But there can be either a surplus or deficit in BOP situation depending upon whether the country exports more than imports or imports more than exports. In both the cases, there will be disequilibrium in BOP.

6. Changes in National Income: Another cause is the change in the country's national income. If the national income of a country increases, it will lead to an increase in imports thereby creating a deficit in its balance of payments, other things remaining the same. If the country is already at full employment level, an increase in income will lead to inflationary rise in prices which may increase its imports and thus bring disequilibrium in the balance of payments.

7. Price Changes: Inflation or deflation is another cause of disequilibrium in the balance of payments. If there is inflation in the country, prices of exports increase. As a result, exports fall. At the same time, the demand for imports increase. Thus, increase in export prices leading to decline in exports and rise in imports results in adverse balance of payments.

8. Stage of Economic Development: A country's balance of payments also depends on its stage of economic development. If a country is developing it will have a deficit in its balance of payments because it imports raw materials, machinery, capital equipment, and services associated with the development process and exports primary products. The country has to pay more for costly imports and gets less for its cheap exports. This leads to disequilibrium in its balance of payments.

9. Capital Movements: Borrowings and lending's or movements of capital by countries also result in disequilibrium in BOP. A country which gives loans and grants on a large scale to other countries has a deficit in its BOP on capital account. If it is also importing more, as is the case with the USA, it will have chronic deficit. On the other hand, a developing country borrowing large funds from other countries and international institutions may have a favorable BOP. But such a possibility is remote because these countries usually import huge quantity of food, raw materials, capital goods, etc. and export primary products. Such borrowings simply help in reducing BOP deficit.

10. Political Conditions: Political condition of a country is another cause of disequilibrium in BOP. Political instability in a country creates uncertainty among foreign investors which leads to the outflow of capital and retards its inflow. This causes disequilibrium in BOP of the country. Disequilibrium in BOP also occurs in the event of war or fear of war with some other country.

Implications of Disequilibrium:

A disequilibrium in the balance of payments whether a deficit or surplus has important implications for a country. A deficit in the combined current and capital accounts is regarded as undesirable for the country. This is because such a deficit has to be covered by borrowing from abroad or attracting foreign exchange or capital from abroad. This may require paying high interest rates. There is also the danger of withdrawing money by foreigners, as happened in the case of the Asian crisis in the late 1990s. An alternative may be to draw on the reserves of the country which may also lead to a financial crisis. Moreover, the reserves of a country being limited, they can be used to pay for BOP deficit up to a limit. But the above analysis of a combined current and capital account deficit is not correct in practice.

The reason being that a current account deficit is the same thing as a capital account surplus. However, it is beneficial for a country to have a current account deficit even if it equals capital account surplus in BOP. In the short-run, the country may benefit from a higher level of consumption through import of goods and consequently a higher standard of living. But the excess of imports over exports may be financed by foreign investments in the country. These may lead to increased production, employment and income in the country. In the long-run, foreign investors may purchase large assets

in the country and thus adversely affect domestic industry as is the case with MNCs (multinational corporations).

The current account deficit in BOP of a country may have either good or bad effects depending on the nature of an economy. Take a country where domestic industries are rapidly growing and it has current account BOP deficit. These industries offer a high rate of return on their investment. This would, in return, attract foreign investments. As a result, the country would have a capital account surplus due to the inflow of capital and a current account deficit. This current account deficit is good for the economy. No doubt, the external debt of the country increases, but this debt is being utilized to finance the rapid growth of the economy. The real burden of this debt will be very low because it can be repaid out of higher income in the future.

On the contrary, a country having an inefficient and unproductive domestic industry will be adversely affected by its current account BOP deficit. The country borrows from abroad to finance the excess of spending over consumption. To attract foreign borrowings, the country will have to pay high interest rates. These will increase the money burden of the debt. The real burden of the debt will also increase because of the low productive capacity of domestic industries. If the current consumption is being financed by foreign borrowings, the wealth of the economy will decline. This, in turn, will lead to either a reduction in domestic expenditure or a change in government policy so as to control the rising debt. On the other hand, if foreign borrowings are being used to finance real investment, the current account BOP deficit will be beneficial for the economy. A higher rate of return on real investment than the interest on foreign borrowings would increase the country's wealth over time through rise in its national income. Thus, a current account BOP deficit is not always undesirable for a country.

14.8 Correction of Disequilibrium (Adverse Balance of Payments)

The following are the principal methods for adjusting the adverse balance of payments:

1. Adjustment under Gold Standard: In the classical gold standard system, disequilibrium was corrected by price-specific flow mechanism. A deficit leads to outflow of gold and thereby to a reduction in money supply which reduces the price level and promotes exports and discourages imports. So, deficit is corrected.

2. Adjustment under Flexible Exchange Rate: Deficit is corrected automatically by a depreciation of its currency.

3. Income Adjustment Mechanism: If exports go up, national income goes up, purchasing power goes up and imports also go up.

4. ***Adjustment under Gold Exchange Standard (Fixed Exchange Rate):*** The gold exchange standard was set up after World War II and lasted until 1971. Under this, the exchange rate was fixed in terms of dollar or gold. The exchange rates were then allowed to vary 1 percent up or down. The deficit could be settled in gold or in dollar. Automatic adjustment is possible under this system.

If exports increase, income increases. Therefore, prices in the surplus country go up. This discourages exports and encourages imports.

The surplus nation's exchange rate may appreciate and it can get an inflow of reserves leading to greater money supply and lowering of rate of interest. All these may lead to increased imports, capital outflow and reduced exports. If permitted to operate, the above automatic adjustment mechanisms are likely to bring about adjustment in BOP. But nations may not permit them to operate for fear of unemployment and inflation. Therefore, some policies are necessary to complete the adjustment.

5. Expenditure Changing Policy: Expenditure adjusting policies are monetary and fiscal tools. A restrictive monetary policy leads to a reduction in investment and income, thus reducing imports. Therefore, a restrictive monetary policy by reducing expenditure corrects an external deficit.

However, under the policy of Operation Twist, short-term rate of interest is raised to attract short-term capital from abroad which will cure the balance of payment deficit and at the same time does not disturb economic growth and capital formation (long-term rate is kept constant).

Fiscal policy may be very helpful for reducing expenditure. Taxes may be raised and public expenditure may be reduced. Both, restrictive monetary and fiscal policies, will be deflationary in character and will stimulate exports and discourage imports.

6. Exchange Control: Exchange control refers to government regulation of exchange rate as well as restriction on the conversion of local currency into foreign currency. Under this system, all exporters are asked to surrender their foreign exchanges to the central bank. Then foreign exchanges are rationed out to licensed importers. The aim of exchange control is to bring about an equality between the demand for and the supply of foreign exchange through state intervention and control.

14.9 Direct Controls

Direct controls take the form of exchange control, capital control and commodity control. Imports and exports can be directly controlled by various measures.

1. ***Devaluation:*** The home currency may be deliberately deflated. In that case, prices will come down and exports would be promoted and imports restricted.
2. ***Import Restriction and Export Promotion:*** Imports may be restricted by tariff, quotas, duties, licenses and so on. Exports may be promoted by giving bounties, incentives, tax concessions, advertisement and publicity, cost reduction, quality improvement and the like.

In short, correction of disequilibrium calls for a judicious combination of the following methods:

(i) Monetary and fiscal changes affecting income and prices in the country;

(ii) Exchange rate adjustment, i.e., depreciation or appreciation of the home currency;

(iii) Trade restrictions, i.e., tariffs, quotas, etc.;

(iv) Capital movement, i.e., borrowing or lending abroad; and

(v) Exchange control.

No reliance can be placed on any single tool. There is room for more than one approach and for more than one device. But the application of the tools depends on the nature of the disequilibrium. There are, we have said, three types of disequilibrium: (1) cyclical disequilibrium, (2) secular disequilibrium, (3) structural disequilibrium (at the goods and the factor level). It is more appropriate that fiscal measures should be used to correct cyclical disequilibrium in the balance of payments. To correct structural disequilibrium adjustment in exchange rate should be avoided. Capital movements are needed to offset deep-seated forces in secular disequilibrium.

The main methods of desirable adjustment are, therefore, monetary and fiscal policies which directly affect income, and exchange depreciation (that is, devaluation) which affects prices in the first instance. Devaluation or depreciation of exchange rate can also have income effect through price effects. Monetary and fiscal policies affect relative prices also.

Summary

- The BOP is a statistical account of the transactions between residents of one country and residents of the rest of the world for a period of one year or fraction thereof.
- BOP is divided into 3 accounts: capital account, current account and Official Reserves Account. The current account records the net flow of goods, services and unilateral transfers;
- The capital account records the net flow of FDI in plant, equipment and long-term, short-term portfolio (debt and equity) investment; and The ORA measures changes in the holdings of foreign currency, SDRs and gold by the central bank of a nation.
- The BOP must always equal 0, i.e., balance since it is an accounting identity in a fixed exchange rate system.
- When payments are larger than receipts in international transactions, it is called deficit balance of payments, but when receipts are larger than payments, it is called surplus balance of payments.

- Short-term disturbances like floods, crop failures, drought and so on may raise imports and reduce exports, and Increase in income may lead to more imports and less exports lead to an imbalance in BOP.
- The currency will, therefore, depreciate against other currencies and, in consequence, demand for exports will increase (because they have become cheaper abroad) while demand for imports will fall (because they have become more expensive in the domestic economy).
- The current account balance is the sum of the balance of merchandise trade, services and net transfers received from the rest of the world. The capital account balance is equal to capital flows from the rest of the world, minus capital flows to the rest of the world.

Keywords:

- Balance of Payments: Record of all transactions made between one particular country and all other countries during a specified period of time.
- Deficit Balance of Payments: When payments are larger than receipts in international transactions.
- Devaluation: It means an official reduction in the external value of a currency vis-à-vis gold or other currencies.
- Exchange Control: It refers to government regulation of exchange rate as well as restriction on the conversion of local currency into foreign currency.
- Expenditure Switching Policies: It involves policies that cause domestic spending to switch away from imports to home produced goods

Self-Assessment

1. Which of these is not included in the current account of BOP?

(a) Expenditure on tourism

(b) Expenditure on defense

(c) Investment income

(d) Government lending's

2. Visible goods are recorded in this part of balance of payments account:

A. Current account

B. Capital account

C. Govt. account

D. Official account

3. BOP must always be equal to:

(a) 0

(b) 1

(c) GDP

(d) Government spending

4. .....balance includes the basic balance plus the short-term private non-liquid capital balance.

(a) Current account

(b) Basic

(c) Net liquidity

(d) Official settlement

5. ..... disequilibrium is caused by persistent deep-rooted dynamic that slowly takes place in the economy over a long period of time.

(a) Cyclical

(b) Secular

(c) Structural

(d) Fundamental

6. Balance in capital account refer to the

a) Nation's net exports of goods and services

b) Nation's net exports of financial claims

c) Nation's net exports of international official reserve assets

d) Nation's sum of net exports of goods, services and financial claims

7. Which of the following are the components of balance of payments?

1. Financial capital transfer

2. External loan and investment

3. Foreign institutional investment

4. Issuing of external bonds

5. Export and imports of goods and services

Select the correct answer using the codes given below:

a) 1, 2, and 3 only

b) 2, 3, and 4 only

c) 1, 4, and 5 only

d) 1, 2, 3, 4, and 5

8. Invisible items in balance of payments include:

A. Foreign remittances

B. Income from tourists

C. Internet charges

D. All the three

9. Which of the following must always balance:

A. Balance of visible trade

B. Balance of invisible trade

C. Balance on the current account

D. Balance of payments

10. Corrective measures to current account deficit may be:

a. Monetary

b. Non-monetary

c. Both A&B

d. None

11. What is a current account deficit?

a. Running a deficit means that there is a net outflow of demand versus the income that comes into a country.

b. This can be thought of as a country "not paying their way".

c. The current account isn't required to balance, because the capital account can run a surplus.

d. All of the above

12. If a country has a balance of payments deficit, this is probably owing to them importing more goods and services than it exports. It will therefore need to borrow from another country to pay for the imports.

- True
- False

13. Non-Monetary measures corrective measures to current account deficit include:

a. Tariffs: These are duties placed upon imports.

b. Quotas: A government may fix a permanent amount of a good that may be imported into a country.

c. Export promotion

d. import substitution

e. All of the above

14. Monetary measures corrective measures to current account deficit include:

a. Exchange rate depreciation

b. Deflation

c. Exchange control

d. All of the above

15. Which of the following statements is true?

a. The BOP record is maintained in a single-entry book-keeping method.

b. The BOP record is maintained in a double-entry book-keeping method.

c. The BOP record is maintained in a multiple-entry book-keeping method.

d. The BOP record is not maintained systematically.

Self-Assessment Answer

1.	D	2.	A	3.	A	4.	C	5.	B
6.	B	7.	D	8.	D	9.	D	10.	C
11.	D	12.	True	13.	D	14.	D	15.	B

Review Questions:

1. Differentiate between balance of trade and current account balance.

2. What are official reserve transactions? Explain their importance in the balance of payments.

3.Explain the following: (a) The current account, (b) The capital account and, (c) The official reserve account.

4. Distinguish between balance of trade and balance of payments. What information would you get about the economic position of a country from its BOP?

5. Describe the term disequilibrium in balance of payments. State various conscious policy measures to correct this disequilibrium.

6. Support the statement: "It is best to offset a capital account surplus with a current account deficit".

7. 'Technological changes are a major cause of disequilibrium in the balance of payments.' Do you agree? Give suitable arguments to justify your answer.

8. Explain the various measures that can be adopted to correct disequilibrium.

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