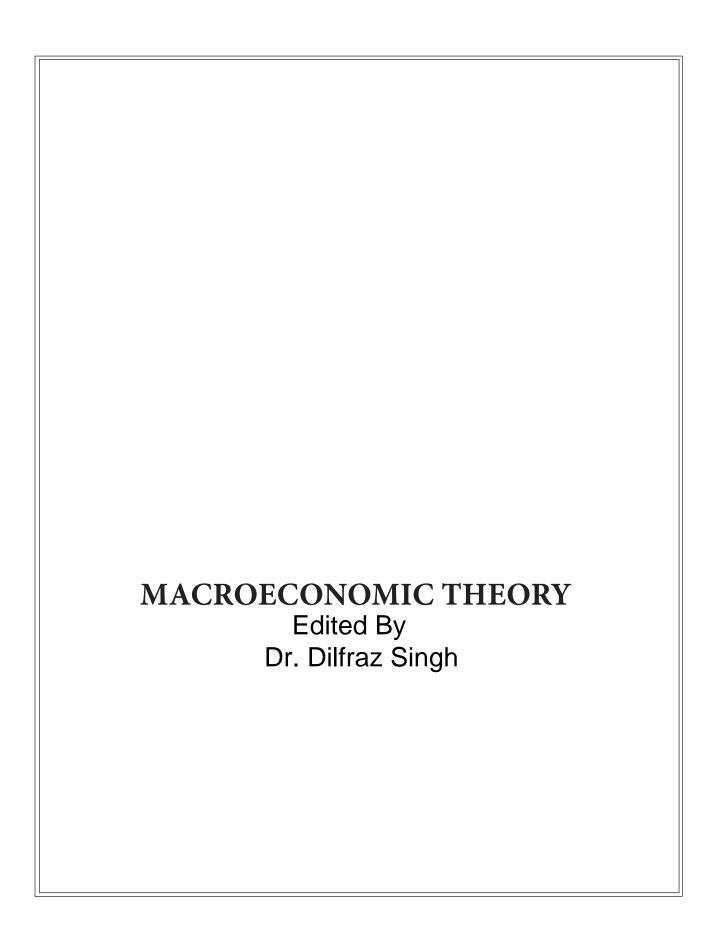
Macroeconomic Theory DECO402

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for

Lovely Professional University Phagwara

SYLLABUS

Macroeconomics Theory

Objectives

• To give the students an overview of contemporary macroeconomic theory and to make the students understand and analyze relationships among different macroeconomic variables such as national income, employment, consumption, inflation and the quantity of money. Student will be able to understand the role of government expenditure, taxation and monetary policy in an economy.

S.No.	Topics
1.	Introduction to Macroeconomics
2.	National Income: concepts of National Income
3.	GNP and Welfare
4.	Inter-temporal and international comparisons of National Income
5.	Classical theory of Income, output and employment
6.	Keynesian theory of income, output and employment.
7.	Consumption function: Absolute income hypothesis
8.	Relative income hypothesis
9.	Permanent income and life cycle hypothesis
10.	Investment function: Keynesian approach
11.	Accelerator theory
12.	Demand for Money: Quantity theory of money
13.	Keynesian approach
14.	Boumol's and Tobin's contribution
15.	Friedman's restatement of Quantity Theory of Money
16.	Supply of Money: Definition of Money and its importance in macro economics
17.	Money multiplier and credit creation by commercial banks
18.	Derivation, properties and shift in IS and LM curves.

19.	Simultaneous equilibrium in money and product markets
20.	Effects of monetary policies under different cases in IS-LM framework
21.	Effects of fiscal policies under different cases in IS-LM framework
22.	Inflation: Types and its effects
23.	Philips curve analysis
24.	Trade cycles: Meaning and types
25.	Accelerator - Multiplier Interaction model
26.	Kaldor's model of trade cycles
27.	Monetary and fiscal policy - Objective, conflicts
28.	Mudell Model
29.	Swan Model
30.	Rational Expectations and Economic Theory , New Keynesian Macro economics

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Unit-1: Introduction of Macroeconomics

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Introduction

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- 1.2 What do we Study in Macroeconomics
- 1.3 Major Macroeconomic Issues
- 1.4 Macroeconomic Targets and Instruments
- 1.5 Summary
- 1.6 Keywords
- 1.7 Review Questions
- 1.8 Further Readings

Objectives

After the study of this unit, student will be able to:

- · To know macroeconomics,
- To know macroeconomics targets and instruments.

Introduction

We can know the meaning of only after the origin of macro word. It has been taken from Greek word 'Macros, it means is that language is "Large". Hence macroseconomics means to analyze whole economy at wide level.

1.1 What is Macroeconomics?

Macroeconomics is not a new term for students in fact, you have been better understand the difference of terms "Micro" and "Macro" at senior secondary level. Repeating this difference, it can be said that in microeconomics, economic problems is 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.

- According to Shapiro "Macro economics 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 segments 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."

A Necessary Caution

Generally it is said that macroeconomics is the study of aggregates not of "individual units", which is studies in only microeconomics. To understands this difference caution is needed. Regarding this following two matters is needed to consider:

- (i) Marcoeconomics is the study of aggregates and that is only at whole economy level. Therefore, when we mention of demand in macroeconomics then our means to aggregate demand. Whose vested means all goods and services for whole economy's by all sector as (all families) all friends and government demand)
- (ii) There is no doubt in this that in microeconomics studies individual units, but it means not that in this related individual unit aggregates does not study.



Notes

In both micro and macro economics 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 is macro economics is added of all those goods and services' which is produced by an economy, whether it is cricket balls or hens or chicken.

When we talk about supply and demand of text books of economics then we means only market of economics text books, rather than in it total demand and total supply are included, whether this total demand of economics text books which students buys or, total economics text books which seller sells.

Salient points on the Difference between Microeconomics and macro economics

- 1. Degree of Aggregation: Microeconomics and macroeconomics 's economics factors' degree of aggregation gets difference. Microeconomics studies those economic problems which is 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.
- 2. Focus of Study: The focus of study of microeconomics theory related to optimum distribution of factors and study of problems and policies. Just its contrary macroeconomics focus of study employment status of resources tends in economy and resources development related theory, study of problems and policies.
- 3. Basic Parameters of Subject matter Difference: In microeconomics and macroeconomics explaining basic Parameter, Prof. G. Thimmah has said that the main determiner of microeconomics problem is price whether the main determiner of macroeconomics problems is income. In microeconomics consumer, producer, factor of production etc. economic units takes their prices it different -markak basis. Just its contrary in macroeconomics total investment, total savings etc. related decision are taken mainly income means rational income's basis.

- 4. Methods of Study: Microeconomics' theories Formation time we assume that "other things being equal". For example, in law of demand we study about, relation between price and quantity of demand. Other factor affecting demand, as a consumer's income, his habit, his interest, price of related goods etc. effects assume constant. This method of study is called Practical Equilibrium Analysis. Just its contrary in macroeconomics, economic factor are classified in important aggregates, as a total demand, total supply, total investment etc. interdependence of these factors is focus of study of macroeconomics. The meaning of this method of study is called Quasi General Equilibrium Analysis.
- 5. Set of Assumptions: Microeconomics and macroeconomics is based on group of various assumptions. In microeconomics generally it is assumed that in country full employment's condition. Total production and total expenditure's also assumes constant. On the basis of these assumptions, try to know it that how is optimum allocation of resources and how various economic units get equilibrium condition. Just its contrary, it is general assumption of macroeconomics that allocation of resources is optimum. On this assumption, try to know it that how national resources get full employment.

Micro - Macro Paradox

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 descructive 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 got a job, but if all labourer decrease their wages rate then their income will 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.

Prof. Boulding has clarified this difference of macro and micro economics by a tree and an forest example. According to his a forest is groups of a great many number of trees, similarly an economy is the combination of many people. The difference between a forest and a tree are as follows – (a) A tree can be died but forest always exists. (b) There is no tendency of caught fire a tree but wildfire is a common matter. (c) A single tree has no effect on climate but a forest effects climate. Such a difference are found in micro and macro economy. Therefore many times it seems that in one economic activity from individual point and view is changing but an aggregate point and view, stagnation founds in then. We should not draw conclusion by studying of difference of micro and macroeconomics that these two are the separate branch of economics, certainly not. In fact, studying of one, get knowledge of others. This is in fact different methods of studying different economic problems and issues. Many a time it become compliment to each other. Generally in the light of macroeconomics (as a income, employment and aggregate demand level) individual producer takes this decision that what and how much he produces. Similarly, generally in the background of micro level present allocation of resources, at macro level economy's future development related plans and projects are made.

Self Assessment

Fill in the blanks:

- 1. Macroeconomics is related to...... on whole programming.
- 2. Macroeconomics means at wide level whole economy's.....
- 3. Macroeconomics's relation are from whole economy or its major.....

Notes



Notes

In macroeconomics, economic problems are studied at the level of whole economy.

1.2 What do we study in Macroeconomics?

This question is related to scope of macroeconomics. The meaning of scope is dimensions. Means which economic problems and issues are included in macroeconomics. Its knowledge is essential to understand its contents. Widely in scope of macroeconomics' study following are included:

- 1. **Theory of National Income:** In macroeconomics studies, different concepts of national income, its different factors, methods to measure it and social accounting.
- **2. Theory of Employment:** In macroeconomics studies employment and unemployment related problems. Differents factors that determines level of employment as a effective demand, total supply, total investment total savings etc. are studied in this.
- **3. Theory of Money:** Changing in demand and supply of money effected employment level to a great extent. In macroeconomics function of money and that related theories are, studied. Banking system and other financial institutions are studied also in this context.
- **4.** Theory of General Price Level: The study of changing in general prime level is the main problem of macroeconomics. Inflation (general increment in price) and deflation (general decreasement in prices) are the main problems in this context.
- 5. Theory of Economic Growth: In macroeconomics economic growth means increment in real per capital income, related problems are studied. Under developed economies growth related problems are studied specially. Government's monetary and Financial Policies are studied in this also.
- **6. Theory of International Trade:** In macroeconomics trade between different countries are studied also. Theory of international trade, tariff, protection etc. are the most important topic of macroeconomics.

Self Assessment

Multiple	Choice	Question:
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4.	Macro word has taken from Greek's	·	
	(a) Macros	(b) Micros	
	(c) Origin	(d) Name of these	
5.	5. In micro and macro economics are added		
	(a) of demand	(b) of demand/supply	
	(c) of supply	(d) none of these	
6.	Maicro and macro economics economic facto	rsdegree is found	
	(a) aggregate	(b) cost	
	(c) curve	(d) none of these	

1.3 Major Macroeconomic Issues

Notes

Why we need macroeconomics? Is microeconomics is not sufficient to understand of economic problems and for their analysis and solution? Certainty not. We study in microeconomics, economic problem as a individual economic unit as a food industry, production of foods of cloths. But some problems may be such a type which is related to all industries or generally all production units, as a infrastructural facilities in which in much quantities electricity (or other means of energy) is needed, besides credit and other facilities, efficient communication and transport facilities are needed. These facilities are need to each industry. In fact these are the fundamental necessities of production process. The solution of these problems are sought at whole economy level. Invested is the compulsion of study of macroeconomics. Some macroeconomics related problems are mentioned ahead, it is cleared from that study of macroeconomics as a special branch is necessary.

(1) Growth and Development

Growth and development are the two important factors of macroeconomics or macroeconomics, related policies. 'Growth and development' have become the focus of study of macroeconomics of different countries economy in this age of globalization. The continuos growth of economics are essential and this growth (in the form of flow goods and services) should be seems in the form of increasing standard of living of common people or should be totally improvement of quality of life. Growth should be transformed in development. Its meaning is that the gaps between haves and have not should be reduced in course of time. In fact, the problem of growth and development has got much importance in recent past. Attainment of economic growth should not be done by (i) dozen fall of environment and (ii) natural resources (particularly non-renewable resources) excessive exploitation because by this future generations production potentiality may be reduced. Only in this context economist talks about 'sustainable development' and this is the rising problem of today's macroeconomics. In fact, planner and politicians are cautioned that they formulated such a type of macroeconomics related policy by them confirmed consistent economic growth (in the form of continuing availability of goods and services increasing) and social justice (means in the form of equal distribution of wealth and income) and neither decay of environment not future generations production potentiality less by any types.

(2) Employment

In the decade of 1930 whole world was in the grip of great depression. Economic activities had been down very slowly. The demand of goods and services had been fallen. As a result, massive fall in commercial benefit and investment cut down at large level and unemployment spreaded. If, in the production filled a large percentage of active population fakes unemployment then it becomes such a problems whose solution at the whole economy level become very essential. This is an important problem of macroeconomics. In India unemployment continues a dreadful problem. Unskilled labourer at great scale suffering from rural unemployment. In urban areas too in skilled artisians founds amazing unemployment and under employment. In our country unemployment problem is so vast and long term that government has subjected to give reservation in government jobs. This reservation are trying to implement in private sector also. In fact, why will be needed reservation if all those who are ready to work on given wages, in great number jobs should be created? It can be said certainly that our country is not developing at that rate on which whole man power of country can be employed.

Unemployment is not a characteristics of underdeveloped country as India. This is a serious problem of developed country like U.K. and U.S.A. In developed and underdeveloped countries only difference

found in nature of unemployment. In underdeveloped countries its nature is of chronic and its reason is shortage in production potentialities. Just its contrary in developed countries its nature is cyclical for that reason decrease in the demand of goods and services. Rather than an important problem of macroeconomics is unemployment and it is related to all economies of world.

(3) Business cycle

In economic activities always have fluctuations nature of changing occurred in this is not always steady. When economic activities go down then it is called stage of recession when it reaches to its lowest position then it is called stage of great depression. When in this being improvement then it called stage of recovery and when it reaches at its topmost position then it is called stage of boom. Recession and great depression is the stage of low profit. In this condition marginal firms are close, huge cut in quantity of investment and unemployment takes dreadful form. Just its contrary boom condition is such a condition where profit is increasing in which quantity of investment and means of production of demand increases continuously.

Business cycle is not limited to a special firm or a particular commercial activities. This is a macro phenomena which is taken in his grip all production units of country. In fact, at times it is become a global phenomena, as great depression 1930 decade. It is a matter of to pay attention that macroeconomics' a separate branch of study origin goes credit to 1930 decade great depression. During this period, capitalist economics of world, particularly in U.K. excessive employment has found. In U.K. economy unemployment level had reached at the rate of 25%. In such a time great economist of world Lord Keynes had propagated theory of income and employment and deficiency of aggregate demand, caused occurred problems of unemployment's global remedy.

In fact, an economy's cyclic circulation in it self a great macroeconomics related problem whose solution is sought no only producer, but also government. Producer follows such a strategy by which recession and boom's condition can be faked. Government is to formulate such a policies by which effect of business cycle can be minimal and economic growth's fixed path can be made certain.

(4) Inflation

Inflation is called such a condition in which at general price level (Average cost of all goods and services of economy) within a given period of time finds tendencies of continuously increasing. As a result value of money decreases and people's real purchase power is decreased. This is an also macroeconomics related problem, whose to understand and their solution is very necessary.

Normal increment in price is helpful in economic growth. It causes increment in investment and whole level of economic activities are initiates. But inflation sometimes takes the form of galloping inflation of hyper inflation. In the condition of hyper inflation, factors of production becomes dear. Specially in investments' interest rate got tendency of heavy increment. As a result of this cost of production increases much and business competitiveness is becoming less, specially in world market. When finds the tendency of decrease in demand and rise in production cost then in production process clearly occurs obstacles. In such a case economy move towards boom to recession and great depression.

Common people suffers seriously due to inflation. His purchasing power decreases and towards government his rage increases. General dissatisfaction finally takes the form of social restlessness, by that reason government stability in at stake. In fact, by price control doing charity has become a part of election manifesto India like countries. As a result in mostly welfare states has given most priority on inflation controlling strategies. In this time for government prevails major policy problem is growth without inflation.

(5) Budgetary Deficit and fiscal Policy

Notes

World's economies after privatisation and globalistation in development process direct participation of government(as an investor) is becoming continuously less. But due to the extension of welfare related work, government budget related expenditure is increasing. Specially defence to face the challenge of terrorism and to maintain law and order government expenditure is continually increasing. An another cause of increasing in government expenditure is giving subsidy to farmer. This matter is to pay attention that India like country a major part of government expenditure is expensing on nondevelopment activities. It means that government expenditure is more on consumption of goods and services and less in their production. India like countries mostly government as a means of income depends on borrowings. As a result of this fiscal deficit Borrowing by government in huge quantity is continuously increasing. As much increasing in borrowing by government, the central bank of India (Reserve bank of India) issuing note subjection as much increases. As a result of this fuel add to inflation like fine whose adverse effects on country's growth and its development. As a form of alternative, government for increasing his income, try to impose more tax. But, by government, money paid by taxpayer, expenses consumption related activities than production (that is also pleasing policy of common peoples) its causes social resentment, by that political instability occurs and for country's whole economic activities danger increases.

Budgetary deficit and fiscal policy related to that is a central problem of macroeconomics on which serious supervision is needed, so that in economy for investment a favourable environment can be made

(6) Interest Rates and Monetary policy

Monetary policy is related to those monetary measures by which government in economy (i) rate of interest and (ii) changes in supply of money, so that growth with stability can be promoted. High rate of interest means high cost of investment which is harmful to development process. India like underdeveloped countries high rates of interest is very sensitive, because due to this whole production cost is increased and in international market their competitiveness is become less. As a result these countries exports are affected and their import capacity is reduced; whether reality is that, for these countries economic development's acceleration fast, capital intensive goods import is necessary. On the other hand high interest rate is a great challenges for these economy, because it causes more inflation. These economies mostly agriculture intensive and on it season effects to a great extent, due to shortage of rain in these economies occurs much imbalance between supply and demands of food. This imbalance causes inflation. Inflation gradually takes whole economy in his grip. When general price level increases, then increase of interest rate and their adverse effects is inevitable.

In above section discuss of it that government's deficit budget and as a result of this taking borrowing by government has become a central problem of macroeconomics. Generally in economy due to borrowing, supply of money increases that become the immediate cause of inflation whose production capacity is very low.

Supply of money and rate of interest keeping in control for underdeveloped countries regarding macro-economies a great challenge because these countries become a victim of immediate inflationary factor pressure. But, it means not that there is no relevancy of monetary policy is developed countries. If underdeveloped economies due to low production capacity and high aggregate demand sensitive towards inflation-factor-pressure, then developed countries also due to comparision of total supply of goods and services, recurring deficiency of aggregate demand as much sensitive towards inflation factors pressure.

In inflation condition, investment initiative become very low, rather rate of interest is low. The purpose of monetary policy of such economies is to increase supply of money, so that expense on goods and services can be increased and in this way shortage of demand can be removed.

Exchange rate (in international market the value of one country's currency to other country's currency) is an another parameter of monetary policy by which all levels of economic activities is effected. Favourable exchange rate, with comparison to other countries increase in value of currency of own countries, is not a good sign. For those economies that wants to made his development process rapid by export promotion, this is certainly not right. The meaning of increasing in value of Indian currency that by one American dollar in Indian market will be purchased less goods and services form prior. In other words, now the demand of Indian goods in international market will be necessarily less.



Did You Know?

In macroeconomics, function of money and theories related to that is studied.

Self Assessment

State whether the following statements are True and False.

- 7. In macroeconomics studies trade among different countries also.
- 8. Changing of demand and supply of money effects employment level much.
- 9. In macroeconomics studies employment and unemployment related problems.
- 10. Growth and development are not the main factor of macroeconomics or macroeconomics related policies.

1.4 Macroeconomic Targets and Instruments

Above mentioned macroeconomics problems generally divided into (1) target of macro economics and (2) macroeconomics' policy. Growth and development, employment and economic stability etc. problems are the target of macroeconomics.

Each nations target is get high rate of growth and development for the improvement of standard of living of own countrymen. A nation tries to change growth process into development process so that in growth benefits can be distributed justificably. Its this endeavour also that development process made a sustainable process, so that future generation's development potentialities do not less by any means. The target of a country to maximize rate of participation, so that unemployment rate can be done minimal. Besides this, the target of each nation is to make rigid development process, means keep minimal economy inflationary and disinflationary pressure.

For the attainment of targets policy instrument in needed. These important policy instrument works as fiscal and monetary policies. These policy are formulated by government, however any type of political system may be. This is remarkable regarding this that macroeconomics related policies are compliment to each other, rather alternative to each other. Fiscal and monetary both instruments uses together. Macroeconomics fixed target attaing government determines the appropriate importance of fiscal and monetary instrument.

The macroeconomics policy problem is to choose appropriate values of policy instruments in order to achieve the best possible combination of the outcomes of the targets. This is a continually changing problem because the target are perpetually being affected by shocks from various parts of the world economy."



Task

Express your views on main problems of macroeconomics.

Notes

Limitations

Like other subjects macroeconomics is too limit. Regarding this following notes are of pay attention.

- 1. The Fallacy of Composition: Macroeconomics may conclusion based on simple combinations of individual units. But those facts are logical and right for an individual, it is not necessarily that those are right and logical for whole economy. Undoubtfully, saving is virtue for an individual, but if all persons will have been saving then total demand will be less, so that no initiative for investment and decrease in national income. Finally, as a result of this national savings will decreased also, rather will increased. Prof. Samulson called it the Fallacy of composition. According to him, excessive generalization tendency of macroeconomics, due to this personal experiences are applied to whole economy is not appropriate.
- 2. Heterogeneous Units: In the study field of aggregates may hetergeneus units are included. These units are measured by different types. These units express in uniform numbers or homogeneous measures are not possible. Prof. Boulding has explained it by following example).

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6 apples + 7 apples = 13 apples (This is a meaningful aggregate.
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6 apples + 7 oranges = 13 fruits (This is also on meaningful aggregates.)

6 apples + 7 houses = (This is a meaningless aggregates.)

It is clear from above example that generally heterogeneous units aggregates are vague. For heterogeneous units rather we use money as common denominator, but money value is not the true measures of its value in use.

- 3. The Composition of Structure of the Aggregate is more Important than Aggregate itself: In macroeconomics studies aggregates, but in fact any system is effected by more composition of the aggregates or its structure than aggregates itself. Suppose that in 2006 and 2007 A.D. Price level is constant, but its mean not completely that in 2007 there was no changing in prices. It is possible that in 2007 may be decrease in price and incre in industrial goods cost. As a result, general price level will be fixed. Therefore, to understand problems properly, study of structure of the aggregate is as necessary as aggregate itself. But in macroeconomics structural analysis of parameters are given importance seldom.
- 4. Diverse effects of Aggregates: Macroeconomics an another limit is that on various sectors of economies do not study the various effects of an aggregate. Macro Parameters do not uniform effects on all sector of economy. For example increment of price level has beneficial effects on businessmen and industrialist, but wage-earners suffer loss. In macroeconomics such a cross section studies are mentioned in very pre use.

In short, doing concentrated at collective analysis, macroeconomics generally, ignores such a micro Parameters importance which is the basic factor of contents.

Therefore, at the time of people's poverty or standard of living assessment we assume his per capital income and consumption as Parameters and ignore this fact that rather in course of time average parameter is continually increasing, since total number of people also increased that live below poverty line. Does macroeconomist that hue and cry over increment in per capita income in India, will pay attention to distribution of income? Will they think people died of starvation, particularly when supply of foods are more than its demand? yes, but only few.

Notes Key Points

- Macroeconomics It studies at whole economic level economic problems or issues, as a
 unemployment, rate of inflation, business cycle etc.
- Principal Points of Difference between Micro and Macro Economics (i) Microeconomics studies an individual economic unit as a single family or one firm related economic problems/ issue. Macro economics studies economy related economic problems/issues. (ii) Microeconomics is centred on optimum allocation of resources, whereas macroeconomic is centred on production and employment level. (iii) In the contents of microeconomics "price" is the main parameter, whether in macroeconomics it is "National Incom". (iv) Microeconomics based on "partial equilibrium" analysis whether macroeconomics on "quasi general equilibrium" analysis.
- Areas of Macroeconomic study (i) Theory of national income, (ii) Theory of employment, (iii) Theory of money, (iv) Theory of general price level (v) Theory of economic development (vi) Theory of international trade.
- Major Macroeconomic Issues (i) Growth and development (ii) Employment (iii) Business cycle (iv) Inflation (v) Budgetary deficit and fiscal policy (vi) Interest rates and monetary policy.
 Growth and development, issues of the employment and business cycles are considered to be target of macroeconomics.
- Limitations of Macroeconomics (i) The fallacy of the composition: Many conclusion of macro economics simply based on individual units' simple composition. (ii) Heterogeneous units: The aggregates of heterogeneous units generally gives false conclusion. (iii) The composition or structure of the aggregate is more important than aggregates itself, whereas study of macroeconomics generally ignores this aspect. (iv) On population's various classes, different effect of aggregates are given generally no impotance.

1.5 Summary

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 its meant not completly that in 2007 there was no changing in Prices. It is possible that in 2007 may be deereas 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 are given seldom equal importance.

1.6 Keywords

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

1.7 Review Questions

- 1. What is macroeconomics? Explained.
- 2. Explained main problems of the macroeconomics.
- 3. Write main points of macroeconomics.

Answers: Self Assessment

Notes

 1. Economy
 2. Analysis
 3. Areas
 4. (a)

 5. (b)
 6. (a)
 6. True
 8. True

9. True 10. False

1.8 Further Readings



Books

- 1. Macroeconomics Mohan Srivastava, DND Publications, 2010.
- **2. Macroeconomics** S. K. Chakravarti Himalaya Publishing House, 2010.
- **3. Macroeconomics:** *Theory and Policy H.L. Ahuja, S. Chand Publisher,* 2010.

Unit-2: National Income: Concept of National Income

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- 2.4 Components of National Disposable Income
- 2.5 Summary
- 2.6 Keywords
- 2.7 Review Questions
- 2.8 Further Readings

Objectives

After the study of this unit, students will be able to:

- · To know the concept of national income,
- To know the measurement of national income,
- · To know some related aggregates,
- To know components of national disposable income.

Introduction

A person will be considered to live in country, when he does not live outside the country, for one year, but student who go abroad for study or patient who for treatment, whom these terms and condition do not apply. If any person, suppose any Indian lives in foreign for more than one year then he will not considered normal dissident of India, rather he will be considered NRI – Non-Resident Indian.

2.1 Concept of National Income

The common factor between domestic income and national income is that in the range of both concepts only production factor's income is included, revenue means (to land), interest (to capital) profit (to entrepreneur) and wages to employees (to labour). Those factor which are not common to both concepts, they are as follows:

- (i) Whereas domestic income necessarily created in domestic border of the country, but national income can be created in any part of the world.
- (ii) Whereas national income is created by both dissidents of a country and NRI, national income is created only by dissidents of a country, whom are called the "Normal Residents" of a country.

Who are Normal Residents?

Notes

Normal residents of a country are those

- (i) Generally lives in that country, and
- (ii) Whose economic interest are centred to that country.

Living a person near by border, goes daily to earn livelihood, crossing border, but his centre of interest remain his own country, because he returns to his family daily. Such a person will be considered normal residents of own nation.

This matter should be understand through and through that, that person is citizen of a country, necessarily not that they are the normal residents of that country. For example, an Indian citizen resides in U.S.A for more than one year then he will be considered a normal residents of U.S.A, not of India, rather by birth he is an Indian. Similarly person like Sonia Gandhi, however by birth she is a citizen of Italy, rather than she will be considered a normal residents of India because generally she resides in India and her centre of interest is India also.

This matter is important also that "Normal resident" term, person and his rites are also included. State Bank of India like financial institutions branch may situated in London. That branch's economic interest will be associated to India. As much profit that branch will earn that profit will be considered a part of State Bank of India's whole part.

National Income is attributed to Normal Resident only

A country's national income's relationship is only to normal resident of that country. Its meaning is that in India resides all foreigner and institutions earn factor income will not considered a part of India's national income, if that person and institutions are not the normal resident of India. Repeating this fact, in India by non-residents earned income, rather a part of domestic income of India, but it is not considered a part of India's national income. Therefore, if resides rest of the world by our residents earns factor income added to domestic income and in India resides by non-residents earned income is subtracted from it, then domestic income will converted into national income. This relationship of domestic income and national income is explained by following equation.

Domestic income: [(Net Domestic Product at Factor cost (NDP $_{FC}$)] + (i) Factor income earned by our residents from rest of the world - (ii) Factor income earned by residents of rest of the world in our country

- = [National Income (Net National Product at Factor Cost)]
- (i) (ii) is called net factor income obtained from foreign: Accordingly, above equation can be written as follows.)

Domestic Income (Net Domestic Product at Factor Cost) + Net Factor Income obtained from Foreign

= National Income (Net National Product at Factor Cost)

Or

Net National Product at Factor Cost - Net Factor Income obtained from Foreign = Domestic Income



Notes

A country's national income relationship is only to normal residents of that country.

Notes Now we defines national Income by following terms

National income during a period of one financial year by normal residents of a country earned factor income's total addition. This income in form of emolument (as a rent, interest, profit and wages of employees) we get due to usages of own factor service.

Using the concept of value added, it can be defined by following type.

During a period of a financial year by normal residents of a country as a result of factor services total summation of value added is called national income. Keep in mind that value added and income generated are identical.

In Dernberg words, "National income is the factor income accurring to the residents of the country during a year. It is the sum of domestic factor income and net factor from abroad.

Gross and Net concepts of National Income

National income have gross and net concepts. "National income" term is a pure concept. Necessarily it is Net National Product at Factor Cost (NNP_{FC}). Rather changing (NNP_{FC}) in gross national product at factor cost in its depreciation or consumption of permanent capital is added.

Hence:

Net National Product at Factor Cost + depreciation = Gross National Product at Factor Cost

$$NNP_{FC}$$
 + Depreciation = GNP_{FC}

Or

Gross National Product at Factor Cost - depreciation = Net National Income at Factor cost

$$GNP_{FC}$$
 - Depreciation = NNP_{FC}

National Income at Basis Price (or Factor Cost) and National Income at Market Price.

The actual meaning of concept of national income is national income at factor cost. But if in its value of net indirect tax (indirect tat-subsidy) is added then it will be national income at market value.

By following equation this relationship can be expressed:

Net National product at Factor cost + Net Direct Tax (Indirect Tax – subsidy) = Net National Product at Market value.

Or

Net National Product at market value - Net Indirect Tax = Net National Product at Factor Cost.

National Income is Linked with the Level of Product Activity.

It is clear from above explanation that national income of country is linked with that country's production activities level. The high level of national income shows high production activities level of country and viceversa. Production meant "value added" and meaning of value added is "Generation of income". In on economy total sum of derived income due to value added is generally called national income. In developed countries the production level is high, consequently their national

income level is high also. Just its contrary, in under developed countries production level is low also. In the form of economic transition, development process means rising from "under developedness to developedness." In national income's level being sustained rise or finding in the long period of time in the production level of economy sustained rise. A nation's national income at different time related data is the indicator of their growth. Different countries such a group of data is helpful in international comparison of economic growth.

Notes

Why it is important to compute depreciation?

Due to use of, the value of permanent capital will occurred loss is called depreciation. It is called the consumption of fixed capital. At whole economy level it is called current replacement cost also.

In depreciation following three type of expenses are included---

- (i) Normal Wear and Tear: Its means from those expensed that is to do for the continuing use of fixed capital (as a machinery).
- (ii) Obsolescence: Its means from those expenditures that producer is to do become old of capital intensive machine (due to changing in technique or demand). Changing in technique or demand obsolescence is called expected obsolescence. This expected obsolescence is different from natural calamities as a flood, fire etc. Keep in mind that only expected obsolescence is included in depreciation computation.
- (iii) Sudden Damage: It means sudden out of order of machinery and plant.
- (iv) To fake these three types of depreciation a producer is to establish Depreciation Reserve Fund. It is necessary for replacement of depreciated capital otherwise in his production capacity (in the form of his fixed capital) will found decreasing tendency. At national level if not pay attention on current replacement then country's production capacity will be decreased and its means fall of flow of goods and services. Calculating of replacement cost we keep in mind only present production capacity (or capital stock). Depreciated capital stock's again replacement related expenses is called investment expenditure of replacement investment.

Replacement investment is doing for only depreciation related damages, by that means there is no increment in capital stock of a country. Whom besides replacement investment, more investment does then rises in capital stock (or production potentialities) of nation and then it is called net investment (net investment = gross investment - depreciation).

By calculation of depreciation we explain following:

- (i) Importance of replacement cost
- (ii) Difference between gross and net investment
- (iii) Net investment's (extra investment besides replacement cost) capital stock (or nation's production capacity) rise related importance.

Key Points

- Gross Domestic Product: An economy's under domestic border, produced final goods and services flows measurement is called gross domestic product. In this deprecation is included also.
- Value Addition: Changing of input into production is called value addition.
- Final Goods: Final goods are called those goods which is crossed production's line and ready for final consumer.

- Intermediate Goods: Intermediate goods are those goods which is under production line in
 value addition is to be done. These goods are purchased by firms so that it can be used as raw
 material or it can be sold ahead.
- Domestic Territory: Under this besides political border, under country water region and for residents in different countries for earning operation of aeroplane and ships are also included.
- **Primary Inputs:** In its factors of inpurt are included land, labour, capital and entrepreneur.
- Secondary Inputs: Besides primary inputs, in production process used inputs as a raw material, fuel etc.
- **Normal Residents:** Normal residents of a country are those people that generally resides in that country, to his economic interest is centred to that country.
- Market Price and Bank Price: Market price is that price on which final goods are purchased by consumer. Basic price is called that price that is obtained by producer. Basic price = Market price - indirect tax + subsidy

Self Assessment

Fill in the blanks:

- 1. A nation's national income relationship is only that country's -----residents.
- 2. ----- generation of income is done only by residents of the country.
- 3. The normal residents of a country are those whose economic interest is centred to that------

2.2 Measurement of National Income

A country's national income or national product is measured at three different levels (1) Production Level (2) Income or Distribution Level and (3) Expenditure Level. Such is due to three aspects circular flow, as a production of goods and services, distribution of income in honours of factors of production and at purchase of final goods and services doing expenditure of income They are following:

Income's circular flow's three aspects accordingly, generally technique of measure to national income is called methods of measuring of national income.

- 1. Product or Value Added Method
- 2. Income Method
- 3. Expenditure Method

1. Product Method or Value Added Method

Product Method: It is called Value Added Method, Industrial Origin Method or Net Out Put Method also.

According to this method, in an economy in a financial year produced final goods and services adding the market value, national income is estimated. As far as on enterprise's relationship is, he assumes his sell as final sell. For example, a farmer produces one ton of wheat and sell it to a flour mill at ₹. 400. As far as farmer's relationship is for his sell of wheat is 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 production, but backeryman will assume it a intermediate goods and will use it for bread. Backeryman sells it to bread shopkeeper at ₹ 800. For backeryman double bread is a final goods but for shopkeeper it is a intermediate goods. Shopkeeper sells double bread to final consumer at, ₹ 900. As far as question of farmer, flour mill, backeryman and shopkeeper are, any person for estimation of final product will add ₹ 400, ₹ 600.₹ 800 and ₹ 900. Which will be ₹ 2700. But in economy by this methods GDP or total production is not estimated. In the above estimation of production, a producer / firms value of production is reflected in other producer's product value, because product of one's is used as inputs for others. Hence in value of flour 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 eacape from it is necessary.

Notes

Problem of Double Counting

In the estimation of national product, when the value of any goods is calculated more than once, then it is called mistaking of double counting. Clearly, due to this reason in country's Gross Domestic Product (GDP) is increased unnecessarily. In above example in the estimation GDP, value of wheat is added four times. First time, when is produced by farmer, second time when is converted to flour, third time when it is converted to bread and fourth time when it solds to final consumer. Only that time when bread is sold to final consumer, then in the form of bread it make a final goods. Before this it revolves from on producer to another producer as intermediate goods whose role in production process as and intermediate consumption. Double counting is exist when those goods which are using now as intermediate goods, included in the estimation of GDP.

Two ways of solving the problem of Double counting

By following tow methods, double counting problem can be solved. Firstly in the estimation of GDP we added only the value of final goods not of intermediate goods. We have given already the description of difference of final goods and intermediate goods in chapter repeat it again that:

- (i) The use of intermediate goods as raw material in production of other goods or by firm and producer, it can be sold again. Just its contrary the use of final goods does not as raw material in the production of other goods of by producer and firms its do not selling again.
- (ii) Intermediate goods is under the line of production. In these goods now the adding of value is remain. Just its contrary final goods are the outside of production line and in its no value is added.

We can safe from problem of double counting only keeping in mind. The value of final goods estimating the GDP, any goods value is not calculated two fold.

What is Value Addition?

Using in production process intermediate goods, cost, production's value is as much from that, that is called value addition.

In **Beckerman** words "The term value added implies, it is value added by each industry to the raw material or other goods and services that it bought from other industries before passing on the product to the nest link in whole chain of production." There, in previous given example farmer did ₹ 400 value added (assumption on that, that intermediate consumption is zero) flour mill ₹ 600 – ₹ 400 = ₹ 200 value added, and beckeryman making bread value added, ₹ 800 – ₹ 600 = ₹ 200. shopkeeper sellin bread ₹ 900 – ₹ 800 = ₹ 100 value added. Total value addition ₹ 400 + ₹ 200 + ₹ 200 + ₹ 100 = ₹ 900.

This is equal to the market value of bread, which is final product or sum of value addition of various stages of production. By using of value addition is saved from problem of double counting. Due to this properties of value addition, it can be used widely in dates of national income. To find out the value addition by a firm from total production value of that firm subtracted the cost of intermediate goods. Means

Value Addition = value of Production - cost of intermediate goods

Table 1 clarifies the concept of value addition

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, by farmer value addition is equal to his value of product means ₹ 400. flour mill buys wheat in ₹ 400 and making it flour, sell in ₹ 600. Flourman ₹ 600 – ₹ 400 = ₹ 200 value addition. Beckeryman bought flour in ₹ 600 and making it bread, sold it to shopkeeper in ₹ 800. backeryman value added ₹ 800 – ₹ 600 = ₹ 200 and sell bread to shopkeeper in ₹ 800. shopkeeper suld double bread to consumer in ₹ 900. Thus value addition by shopkeeper ₹ 900 – ₹ 800 = ₹ 100. Therefore total value addition is equal to ₹ 400 + ₹ 200 + ₹ 100 = ₹ 900. If in it 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 in followed.

GDP_{MP} IS estimated by adding up Value Addition by all the producing units in the economy. Thus $GDP_{MP} = \Sigma GVA_{MP}$

Generally value addition has been done by primary, secondary and tertiary sector of economy, we estimate separately. Therefore, such that in the whole context of economy these sectors relative importance can be found out.

After the estimation of GDP_{MP} we by following adjustment find out NNP_{FC} (National income)

 GDP_{MP} - Net Indirect Taxes = GDP_{FC} - Depreciation = NDP_{FC} + Net Factor Income from Abroad = NNP_{FC} or Nation Income.

(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 can not 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-organised sector (or non-corporation sector) where factor of production is self owned. Its service can not obtained from market on rent. Income method is called Distributed Share Method of Factor Payment Method.

Components of Factor Income

Notes

Components of factor income are as follows-

- 1. Wages and salaries or compensation of Employees. The income get from work is called compensation of employees also. According to Central Statistical Organisation, "Compensation of Employees means all payments by producer, of wages and salaries to their employees in cash and in kind and of contribution paid of imputed in respect of their employees to social security schemes and private pension, family allowance, causal insurance, life insurance and similar schemes", Thus, in employees compensation (i) wages and salaries, bonus, commission and deal allowance (ii) Inform 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 is 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 facility 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 income get from rent. People gets royalty from the right of copy right, 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 get from entrepreneurship is called profit. Here entrepreneur means corporation. An entrepreneur or corporation does not divide his total profit among his shareholders. He divided some parts of his profit. Profit's this divided part is called dividend. Companies keeps undistributed profit in his hand as corporate savings. Some part of profit goes to government as corporate profit tax. Hence corporate profit is divided into three parts means it has three following component:
 - (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 that of 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 are 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 service. 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.

❤ We get domestic income from total summation of rent, interest, profit, compensation of employees and self-employed person's mixed income. Hence, domestic income = compensation of employee +rent + interest + profit + mixed income of self-employed persons. To convert domestic income into national income net factor income from abroad is added this.

For the measurement of national income, following factor of incomes is keep in mind also.

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.

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

(Note: Total addition of rent, interest and profit are called obsolescence surplus.)

(3) Expenditure Method

Expenditure method is that method by which in a financial year at market cost measures final expenditure on gross domestic product. This method is called Income Disposable Method or Consumption Investment Method also. This method calculates final expenditure or expenditure on gross domestic product.

Component 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 ands service final selling, their total quantity is multiplied to retail price. In its by non-residents direct purchase in domestic market to subtracted and by residents households direct purchase in foreign 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 neighbour market uses cost. Similarly owner occupied houses imputed rent is also included domestic market's final consumption expenditure.
 - (ii) Government Final Consumption Expenditure: Government final consumption expenditure calculation 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 its):
 - (A) Gross Domestic Fixed Capital Formation.
 - a. Expenditure on Construction For the calculation of expenditure on construction, construction material as a 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) For self accounting, production of fixed capital, (ii) By consumer households purchasing of new building, (iii) At construction place going work and (iv) Capital repairs as doing 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 find out produced total quantity of machinery and equipment and it is multiplied by cost paid by buyers. By these two methods get equal sum. Producing for self accounting produced machines and equipments cost is add in that also.

(B) The Expenditure on change in Stock or Inventories: Calculating of expenditure on physical change in stock, quantity of physical change is multiplied with market value, we add in gross national product that goods and service production value which is production in on financial year, but does not sell.

3. Net Exports Finally calculated the value of net export (export-import) from abroad. The difference in value of export and import is called net export. Production of exports in done be factors of production of any country. Sells of exporting goods have no effects on the income of domestic factor of production. Due to this reason export values is considered a part of national income. The expenditure on imports on is deducted from national income, because this expenditure is not done on domestic produced goods.

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?

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

Self Assessment

Multiple Choice Questions:

4. National income can be created

(a) in any part of world

(b) only in own country

(c) only in abroad

(d) none of these

5. If on Indian resides in abroad for more than one year then he will be considered

(a) foreigner

(b) non-resident indian

(c) domestic residents

(d) none of these

6. In 'Normal Resident term, both person and rites are included.

(a) pioneer

(b) included

(c) separate

(d) none of these

2.3 Some Related Aggregates

We have studied already in chapter2, about domestic product and national income. We have known domestic product's gross and net concepts also. Besides this, at market cost and at factor cost / basic price, domestic product and national income's concepts have been described in short. In this chapter we will repeated measurement of concepts and other related aggregates.

(i) Gross Domestic Product at Market Price ($\mathrm{GDP}_{\mathrm{MP}}$)

Using value addition method, it can be measured by following type:

Notes

Gross domestic product at market price (GDP_{MP}) = During one financial year, under the domestic border of a country, total summation of value addition by all production units. = During a financial year under the domestic boundary of a country produced final goods and services value.

Using Income Method GDP_{MP} is measured by following type:

Gross Domestic Product at market price ($\mathrm{GDP}_{\mathrm{MP}}$) compensation of employees + Rent + Interest + Profit + Mixed income of self employed Net indirect tax + depreciation or consumption of permanent capital

Using Expenditure Method, Gross Domestic Product at Market Price is measured by following methods

Gross Domestic Product at Market Price (GDP_{MP}) = private final consumption expenditure + Government final consumption expenditure + Gross domestic permanent capital Formation + changing in producer's stock (Final stock – initial stock) + net export (export – import).

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

Attain of gross domestic product at factor cost, from Gross domestic product at market price, net indirect tax (indirect tax - subsidy) is deducted.

Gross Domestic Product at Factor cost = Gross Domestic Product at Market Price - Net Indirect Tax (Indirect Taxes - Subsidy)

$$GDP_{FC} = GDP_{MP}$$
 - Net Indirect Taxes (Indirect Tax - Subsidy)

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

Deducting depreciation from Gross Domestic product at Market Price (GDP_{MP}), Gross domestic product at market price (NDP_{MP}) is got. Therefore

Net Domestic Product at Market Price = Gross Domestic Product at Market Price - Depreciation (Consumption of Fixed Capital)

$$NDP_{MP} = GDP_{MP}$$
 - Depreciation (Consumption of fixed capital)

(iv) Net Domestic Product at Factor Cost (NDP $_{FC}$)

If from net domestic product at market price cost, net indirect taxes is deducted then we will get net domestic product at factor cost. Hence

Net Domestic Product at Factor Cost = Net Domestic Product at Market Price - Net Indirect Tax

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

Self Assessment

Stat whether the following statements are True or False:

- 7. The real meaning of concept of national income is national income at factor cost.
- 8. High level of national income shows low level of production of country.
- 9. 'National Income' word is pure concept.
- 10. 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.

Net Domestic Product at Factor Cost (NDP_{FC}) = Compensation of employees

- + Rent
- + Interest
- + Profit

+ Mixed income of selfemployed

= operating surplus

In this adding net indirect taxes, we will get Net Domestic Product at Market Price (NDP_{MP}) means

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

In this (NDP $_{\mathrm{MP}}$) adding depreciation, we will get Gross Domestic Product at Market Price (GNP $_{\mathrm{MP}}$) means

 $GDP_{MP} = NDP_{MP} + Depreciation$

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

Using value addition, it is in a financial year produced under domestic boundary final goods and services' market value, in which from abroad net factor income is included. Hence

Gross National Product at Market Price = Gross Domestic Product at Market Price + Net Factor Income from Abroad

 $GNP_{MP} = GDP_{MP} + Net factor income from abroad$

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

When net indirect taxes is deducted from gross national product at market prices, then we get gross national product at factor cost.

Gross National Product at Factor Cost = Gross National Product at Market Price - Net indirect taxes

 $GNP_{FC} = GNP_{MP}$ - Net indirect taxes

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

When depreciation is deducted from gross national product at market price, then we get net national product at market price.

Net National Product at Market Price = Gross National Product at Market Price - Depreciation

$$NNP_{MP} = GNP_{MP}$$
 - Depreciation

(viii) Net National Product at Factor cost (NNP_{FC})

When net indirect taxes is deducted from net national product at market price then we get net national product at factor cost.

Net National Product at Factor Cost = Net National Product at Market Price - Net indirect taxes

$$NNP_{EC} = NNP_{MP}$$
 - Net Indirect Taxes

Notes

Net national income at factor cost = National income = Compensation of employees

+ Rent
+ Interest
+ Profit
- Profit
+ Mixed income of self employed
+ Net factor income from abroad

In short

Net National Product at Factor Cost = Net Domestic Product at Factor Cost + Net Factor Income from Abroad

NNP_{FC} = NDP_{FC} = Net Factor Income from Abroad

(ix) Income from Net Domestic Product Accruing to Private Sector

Two sectors have found in each economy:

- (i) Private Sector In there all those corporate and non-corporate enterprises are included whose ownership and controlling are in the hands of private hands. The income of this sector is called income from net domestic product accruing to private sector.
- (ii) Government or Public Sector In this administrative departments, departmental enterprise (as a Railway and Postal department) and non-departmental enterprise (as a Air India, Indian Airlines) are included.

Income from domestic product to government (or public) are included, (1) Income from property and entrepreneurship accruing to administrative departments and, (2) Savings of non-departmental enterprises. Hence, the income form domestic product accruing to private sector is that income which only accruing to private sector.

In **Dernburg's** words, "Factor income from net domestic product accruing to private sector is that part of factor cost of net domestic product generated in the form of compensation of employees, operating surplus and mixed income which is accured to the private sector."

For the estimation of factor income from net domestic product accruing to private sector, from net domestic product at factor cost, (i) income accruing to government from departmental properties and entrepreneurship and, (ii) savings of non-departmental enterprises are deducted.

Factor income from net domestic product accruing to private sector = Net Domestic Product at Factor Cost - Income accruing from departmental enterprise's property and entrepreneurship - Savings of non-departmental enterprises.

(x) Private Income

Private income means that income which accruing to private sector from all sources, productive or others during a financial year. Private sector's factor income and transferable payment is included in this also.

According to **Central Statistical organisation**, "Private income is the total of factor income from all sources and current transfers from the government and rest of the world accruing to private sector."

In private income, factor income from net domestic product, net factor income from abroad, and transfers of payment are included to private sector. Consequently in private income factor income and transfers payment both are included.

Notes

Private Income = Factor Income from net domestic product accruing to private sector + Interest on National loan + Net factor income from abroad + Current transfers from government + Current transfers from rest of the world.

Or

Private Income = National income + Transfers payment from government + Current transfers from abroad + Interest on national loan - Government accruing income from property and entrepreneurship - Savings of non-departmental enterprises.

(xi) Personal Income

Personal income is the total of accruing from factor income from all sources and current transfers payment of residents and household of a country, during a financial year.

In peterson's words, "Personal income is the income actually receive by persons from all sources in the from of current transfer payments and factor income."

Personal income deals person's actually received from all sources income is included. Fro example, profit accruing by firms and corporates, some part of that is not distributed to persons. That undistributed profit which is called corporate saving in that form remain to firms.

It uses, (a) paid corporate tax and (b) for doing corporate saving (reserved fund). Therefore it is not included in personal income.

Personal Income = Private income - Corporate tax - Savings of corporates (less Foreign companies' paid income)

(xii) Personal Disposable Income

To get personal disposable income from personal income direct taxes and miscellaneous receipts of government administrative departments means fees, fines etc. are deducted. Households are free to expense or saving only this income. Personal disposable income is the indicator of household's purchasing power.

Personal Disposable Income = Consumption of households + Saving of family

According to **Peterson**, "Disposable income is the income available to persons from all sources and remaining with them after deduction of all taxes levied against their income and their property by the government."

Disposable Income = Personal income - Direct tax (income tax and wealth tax) - Miscellaneous receipt of government administrative departments (By person, paid to government fees and fine)

(xiii) National Disposable Income-Gross and Net Concepts

National disposable income is the income accruing from all sources (earned income and from abroad accruing transfers payment) that is available for a country's residents for consumption or saving during a year.

In gross national disposable income, current replacement cost is included whereas in net disposable income (in short disposable income), it is not included.

What is current Replacement cost?

This is by a country using in a year, property become useless their replacement cost. This is depreciation cost (or consumption of permanent capital) of whole economy.

Net National Disposable Income (in short, disposable income) = Gross national disposable income - Current replacement cost (which is depreciation at whole economy level)



Task

Express your views on total related aggregates.

2.4 Components of National Disposable Income

National disposable income is estimated by following types:

National disposable income = Net domestic product at factor cost (or domestic income) + net indirect tax + net factor income from abroad + receipts net current transfers from rest of the world

Difference between Personal Disposable Income and National Disposable Income

- (i) Personal disposable income relationship is only a nations's residents and households' disposable income, whereas national disposable income relationship is whole country's disposable income.
- (ii) For estimation of national disposable income, net domestic product at factor cost, net indirect tax, net factor income accuring from abroad, and net current transfer accruing from rest of the world is added. On the other hand in personal disposable income, a country's domestic consumption and domestic savings are added.

National Income and Related Aggregates - A Glance

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

 In a financial year, produced by all producer final goods and services market value in domestic boundary of a country.

 Gross National Product at Market PRICE (GNP_{MP})

 Net National Product at Market Price (NNP_{MP})
 Net Domestic Product at Market Price (NDP_{MP})
 Net Domestic Product at Market Price (NDP_{MP})
 Net Factor income from abroad (NDP_{MP})

5.	Net Domestic Product at Factor cost (NDP_{FC})	=	NDP_{MP} – Indirect tax + Subsidy or net domestic income
6.	Gross Domestic Product at Factor Cost $(\mathrm{GDP}_{\mathrm{FC}})$	=	NDP_{FC} + Depreciation
7.	Gross National Product at Factor Cost $(\mathrm{GNP}_{\mathrm{FC}})$	=	GDP _{FC} + Net factor Income from abroad
8.	Net National Product or National Income at Factor Cost (NNP $_{\rm FC}\!\!$)	=	GNP _{FC} - Depreciation
9.	Net National Disposable Income	=	Net domestic Income + Net factor income from abroad + Net indirect tax + Net current transfers from rest of the world
10.	Gross National Disposable Income	=	Net national disposable income + current replacement cost
11.	Factor income from net domestic product accruing to private sector	=	Net domestic product at factor cost – From departmental enterprises property and entrepreneurship accruing income – saving of non-departmental enterprises
12.	Private Income	=	Income from domestic product accruing to private sector + Net factor income accruing from abroad + Current transfers from government + Current transfer from rest of the world + Interest on national loan
13.	Personal Income	=	Private income – Corporate profit tax – Savings of enterprises
14.	Personal Disposable Income	=	Personal income – direct personal tax (or income tax) – Miscellaneous fees and fines paid by households

2.5 Summary

A country's national income relationship is only to normal residents of that country. Its means
that resides in India all foreigners and instituting earned factor income will be not considered,
a part of India's national income, if those persons and institution is not the normal residents of
India. Repeating this fact, earned income by non-residents of India, rather a part of domestic
income of India, but it is not considered a part of national income of India.

2.6 Keywords

- Economic Interest Interest related to wealth
- Obsolescence Out of operation
- Expenditure Method Process of expenses

2.7 Review Questions

- 1. What are the gross and net concept of national income?
- 2. What is meant for 'Measurement of National Income'?

- 3. What do you mean by "Total related Aggregates?
- 4. Explain components of national disposable income.

Answers: Self Assessment

1. normal	2. National	3. in country	4. (a)
5. (b)	6. (b)	7. True	8. False
9. True	10. True.		

2.8 Further Readings



Books

- **1. Macroeconomics : Economicgroth, Fluctuations and Policy -** *Report E. Hall and David H. Paipal, Vaina Books, 2010.*
- **2.** Macroeconomics: Theory and Policy H.L. Ahuja, S. Chand Publishers, 2010.
- **3. Necessity of Macroeconomics : H. S Nath,** *Cyber Tech Publication,* 2010.

Unit-3: Economic Welfare and National Income

Notes

Contents

Objectives

Introduction

- 3.1 What is Economic Welfare?
- 3.2 Relation between Economic Welfare and National Income
- 3.3 National Income as a Measure of Economic Welfare
- 3.4 Summary
- 3.5 Keywords
- 3.6 Review Questions
- 3.7 Further Readings

Objectives

After the study of this unit, student will be able to:

- · To know economic welfare,
- To study of national income,
- To know about factor affection social welfare.

Introduction

It is not right to differentiate between economic and non- economic welfare, on the basis of money **Pigou** accepts this matter also. According to him non- economic welfare can be corrected by two types. Firstly, by the method of earning of income. Excess working hour and bad condition will less non- economic welfare. Secondly, by the method of expenditure of income. It is assumed is economic, welfare that expenses on various consumption goods, gives equal satisfaction, but in fact, it is not happen as such, because when form purchased goods gets less satisfaction then non- economic Satisfaction is lass by that total welfare is less also,

3.1 What is Economic Welfare?

It is necessary to define economic welfare before to know the relationship between economic welfare and national income. 'Welfare' is a mental state which is indication of human happiness and satisfaction. In fact, welfare is a happy stage of human mental state. **Pigou** assumes personal welfare is total sum of satisfactions experiences by person end social welfare is the sum total of individual welfares. He divides welfare in economic welfare and non- economic welfare. Welfare is that part of social welfare which can be measured directly or indirectly in terms of money since welfare term is much wide; therefore **Pigou** gives importance to economic welfare. In his words''. Our limitation of test is limited to that part of social (general) welfare which can be directly or indirectly come together measurement of money''. Just its contrary non- economic welfare is that part of social welfare which can not be measured in terms of money, as a moral welfare.

But Pigou's this thought that such effects calculation is not possible. Since non-economic welfare's can not be measured by money, have economists should fallow this assumption that effects of economic factors that effects on economic welfare that will be applied to total welfare also. Therefore Pigou concluded that increasing of economic welfare increases total welfare also and vice-versa.

But it is not possible always, be comes that factor which increases economic welfare they are less than non-economic welfare. So increase in total welfare can be less than guess. As a increment in income both increases economic welfare as well as total welfare and vice- versa. But lives is slam areas and suffocated environment then his economic welfare may increase but can not be considered to increase in total welfare, if they expense on drinking, cigarette etc harmful things of their increased income. Therefore economic welfare can not be indicator of total welfare.

Self Assessment

Fill is the blanks:

- 1. 'Welfare' is mental state that is indicator of human happiness and
- 2. Welfare is a state of human mental state.
- 3. Pigou assumes individual welfare experience by all satisfactions

3.2 Relation between Economic Welfare and National Income

Economic welfare and national income both due to measures in money, Pigou establishes close connection between there. When national income increases then economic welfare increases and decreasing in national income decrease is economic welfare also. National income effects on economic welfare can be studied by two types: **firstly** changing the size of national income; **secondly**, changing in distribution of national income.

Changing is size of national income can be positive or negative. Positive changing in national
income increases in size so that people consumption more goods and services. Negative
changing in national income its sizes decreases then people gets less goods and services for
consumptions so that economic welfare becomes less. But this relationship depends upon a
number of matters.

Is changing is national income real or monetary? If changing in national income due to changing prices then real changing in economic welfare tough to measure. For example price rising comes increases national income then increases is economic welfare is not possible, because it is possible that there is no increment in production of goods and services. The possibility of less economic welfare less due to price rises. In national income real increase only then economic welfare increases.

Secondly, how has been increased is national income. If increase is national income doing exploitation of laborers then it can not said increases is economic welfare. As a laborer to increase production by doing excess hour, paid them less salary then minimum wages, so that they have to subject their children and wives to do work, they do not provide convenience for coming going to factory and lodging and residing is slum areas. If such a conditions national income increases then there will be no increases is economic welfare.

Thirdly, If percapita income was not considered then national income is not a reliable index of economic welfare. It may be possible with increment of national income population rate increas also and percapita income has not increases. In situation increament in national income no increase in economic welfare. But from this it should not be concluded that welfare and less of per capita income comes less economic welfare.

It is possible that due to increase in national income, per capita income also increases but if increase is national income due to capital goods and short of consumer goods due to less production of that then increment is both national and per capita income, there will be no increment is economic welfare because people's economic welfare depends upon consumptions of goods, not on capital goods. Similarly in war time when national and per capita income is much increases, nevertheless economic welfare do not increase because in war period all production of a country employed in war material and seems less is consumer goods so that people's standard of living deteriorated and economic welfare become less.

Generally increasing is national and per capita income, economic welfare is less than before. It is happen then increase in national income, rich class income rise and poor do not get any benefit of that. Means increasing in national income rich become richer and poor become more poor. This when the welfare of riches increases, pours decrease because poor is more in number than rich, hence total economic welfare falls.

Finally, increasing is national income whatever effects an economic welfare that depends upon that matter how people expenses? If people expenses increasing income on efficiency growing needs as milk, ghee, fans etc. then economic welfare will be increased. But just contrary expenses on harmful goods as a drinking, gambling etc. then economic welfare will be decreased. In fact, increment is national income, increasing and decreasing in economic welfare depends upon changing is interest of people. If changing in fashion and tastes towards consumption of good things then economic welfare increase, otherwise consumption of bad things decrease economic welfare.

It is cleared from above discussion that although there is a close connection between national income and economic welfare, rather than it can not be said surely that increasing is national and per capita income will be increased is economic welfare. Increasing is national income, increase or decrease of economic welfare depends upon a number of factors as a population's increment rate, methods of income earning, conditions of works, types of expenses, fashion, tastes etc.

2. 'Changing' in the distribution of national income is of two types. Firstly, transfers of wealth from poor to rich. Secondly, from rich to poor. When increasing to national income transfers of wealth is of first type then economic welfare is decreased. When it happen so, government is benefited to rich classes and is imposed regressive tax on poor.

The actual relationship between distribution of national income and economic welfare is of second types of transfers, when wealth floes from rich to poor. National income's redistribution in favour of poor's can be done by decreasing the wealth of rich increasing the income of poor's. The income of rich class can be less through a number of methods as a impure progressive tax on income and wealth, controlling on monopoly, national siation of social services and impose tax an dear and luminous goods used by riches. Just its opposite, income of poor can be increased by a number of methods as fixing of minimal wages, increasing the production of goods used by poor, fix the price of such a goods, giving financial aid to producer, distribution of goods by cooperative stores and giving free education, social security and lodging facility at low rent by aforesaid measures when distribution of national income in favour of pours, then economic welfare increases. Pigou has expressed this thought in this words, "Any one cause, which increases areas income's major part is favour of poor, if from any point of view does not less the size of national dividend, then generally will increase economic welfare".

But it is not necessary that equal distribution of national income increases economic welfare. Just its contrary if policies following towards riches are not rational then it is much possibility of decreasing is economic welfare. Imposing high rate of progressive tax capital investment, so that national income falls. Similarly by government efforts when poor's income increases, but if spends this increased income on wine and gambling etc. on bad things or their population

Notes

is in creased then economic welfare decreases, but there two matter is not real, only a phobia because when government is imposed many types of progressive tax an riches then take special care of this matter that it has not adverse effect on production and investment. On the other hand when any poor income increas then his endeavour is that he provides good education for his children and high standard of living. There for we conclude that increasing in national income, increase economic welfare also, provided that poor's income not less rather increase and he improves his standard of living and in same way rich's income less that production capacity, investment and capital formation did not reduce.



Notes

Non- economic welfare is that part of social welfare which can not be measured terms of money as a moral welfare.

Self Assessment

Multiple choice questions:

4. Economic welfare is that part of social welfare which can be measured directly or indirectly—

(a) in money
(b) is goods
(c) is person
(d) is society

5. Excess working hour and bad Condition will less ____ welfare.(a) in money (b) non- economic

(c) social (d) none of these

6. Economic welfare can not be ___ of total welfare.(a) indicater (b) instructor(c) investor (d) none of there

3.3 National Income as a Measure of Economic Welfare

GNP is not satisfactory measure of economic welfare becomes is the estimation of national income some services and production activities are not included which affects welfare. Some such a factors are explain below which effects human welfare, but GNP is not included is estimation.

Leisure - Leisure is an important factor of welfare of society, but it is not inclined is GNP. For instance excess working hour can less happiness because their leisure is less. Just its contrary, less working hours per weak increases leisure and makes people happy. Taking more or less leisure, total production of economy is affected. But in the estimation of national income value of leisure is not taken.

Quality of life - In the estimation of GNP quality of life is not included which reflects society's welfare. Life is full of tension in excessive rowdy cities. Much traffic on road which kills time. Accident occurred daily that make people disabled or courses death life becomes complicated and quality of life falls. On the other hand such a place where there is no crowd and people enjoy fresh air and nature's beauty there quality of life increases. But it is not reflected is GNP also.

Non-market Transactions - Some non-market transactions increases welfare but they are not included in the estimation of national income. House wife's service is house and social activities as a religious

festival affects people's welfare, but they are not included is the estimation of GNP became providing such a services, there is no market transaction Door knobs

Notes



Did You Know?

If national income increment by exploiting of labours then it cannot be said increment is economic welfare.

Externalities – Similarly externalities have propensity to increase or less welfare but they are not included is GNP estimation. A externalities as a result of personal production and consumption is cost or profit on someone, but as externalities' cost or profit can not be measured by money but it is not included market activities. Examples of external advantage, a man get enjoy by seeing neighbour's best garden. Former have the tendency of increase is welfare later is less since externalities without any monetary, transaction, therefore they are not included is the estimation of national income.

Nature of Production - In the estimation of GNP by different goods do not reflects the capacity of giving different satisfaction level of society. Doing equal expenditure on an atom bomb or a dam on river, do equal inverses in national income but it give different level of satisfaction to society. A bomb does not increase welfare whereas a dam does.

Standard of living - In the estimation of GNP does not express standard of living. If most part of national expenditure, expend of war and capital goods less and part on consumption goods building then it does not seem in the estimation of International income. But less in the production of consumer goods have the nature to less people's welfare, whereas expenditure of war's equipment and capital goods does not increase welfare of present.

From above related point of view, GNP can not be used as a measure of welfare. Rather than some economists have tried to define GNP more rudely so the economic welfare can be measured proof. Nordhaurs & Tobin in 1972 tried first towards this. They constructed measure of Economic Welfare MEW, which **Samyulson** is called Net Economic Welfare New.

According to Nordhaus and Tobin, is their MEW all those consumption by which human welfare causes, tried to measure it. For the value of estimation of MEW he deducts some items from consumption which does not which security, regrettable necessities as a police, cleaners etc. on government expenditure and daily by individual frame house to work place going by scooter, bus or vehicle cost, durable machine, fridge etc. are included, and thirdly occurred expected cost form negative externalities which are found due to urbanization, corwd and pollution.

After the deduction of all there items, Nordhaus and **Tobin** following three items deposit is consumption. There are (1) Value of non-market activities, (2) estimation of Value of durable consumer goods which consumptions actually, and (3) estimation of value of leisure.

Nordhan and **Tobin** gives more emphasis on evaluation of rest in estimation of MEW For this they followed two methods: Alternate cost method and Actual value method. First method based on this principle that when only person selects more rest then it does on the sacrifice of more income. The meaning of one hour rest, sacrifice of one hour wages. According to their estimation, rest value measured by alternate cost are continually increasing during several year. Because with respect to time per hour real wages is continually increasing. Actual value method, value of given by one hour rest measured by given actual pleasure (utility.)



Task

Give your view on economic welfare.

Using such a evaluation method, **Nordhaus** and **Tobin** is United States of America in 1965 estimated MEW that was 1200 Billion dollar which was double to GNP of that year. In the period of 1929-65 the estimation of per person MEW was 1.1 Percent annually, whereas precipitate GNP estimated was 1.7 Percent. There estimation expresses clearly the during this period in America economic welfare increase magnificently.

But form above discussion it should not be concluded that the concept of MEW does not substitute. It is most supplementary of GNP which economic welfare including with GNP non-market activities are included.

Self Assessment

State whether the following statements are true or False:

- 7. The changing in the distribution of national income by two types.
- 8. Rest is an important factor affection society's welfare.
- 9. In the estimation of GNP, the quality of life is not included.
- 10. Externalities have tendency to minimize or maximize welfare also.

3.4 Summary

Economic welfare and national income both are measured is money, due to this reason pigor has established close connection between these. When national income increase then economic welfare increases and vice- versa. The effect of national income on economic welfare can be studied by two methods: first, changing in the size of national income, secondly chancing in the distribution of national income.

3.5 Keywords

- Regressive coming below
- Leisure Empty time, rest

3.6 Review Questions

- The size of national income and distribution system, how effects system of economic welfare, explained. Give example.
- 2. Discuss the effects on welfare of changing in size and distribution of National Dividend.
- 3. Evaluate the views of economic welfare. Clearly it's relations with only counties national income.
- 4. In the interest of poor, changing in the distribution of national dividend, whatever their effects on economic welfare, explained it clearly.

Answers: Self Assessment

1. satisfaction	2. happy	3. total summation
4. (a)	5. (b)	6. (a)
7. True	8. True	9. True
10. True		

3.7 Further Readings

Notes



- **1. Macro economics -** *S.K. ChakraVarty, Himalaya publishing house,* 2010.
- **2. Macroeconomis: Economic Growth Fluctuations and Policy:-** *Robert A. Hall and David H. Paipal, Vaina Books,* 2010.
- 3. Macro Economics: Theory and policy- H.L. Ahuja, S. chand Publisher, 2010.

Unit-4: Sectorial Accounting

Contents

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Introduction

- 4.1 Business Sector
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- 4.3 The Government Sector
- 4.4 Foreign or Other Sector
- 4.5 Gross Saving and Investment Account
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- 4.7 Presentation of Social Accounts
- 4.8 Social Accounting's Laws
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- 4.10 Keywords
- 4.11 Review Questions
- 4.12 Further Readings

Objectives

After studying this unit, students will be able to:

- Know the business sector,
- Understand the private sector,
- Know the government sector,
- Do the study about the foreign and other sector.

Introduction

To present the account of income and expenditure of private sector, at the side of income show the payment and at the side of expenditure show the payment of borrowing by customer. These both are not involve in the account national income.

4.1 Business Sector

Within the field of economy are involved the operated firms, single business and joint firms. All economic activities are involved in the field of saving accounts. After that the total national production are involves in it. Year 1991-1992 the account of production and income of business sector are clear following table:

TAT	210
1.01	mes

		Acco	nt of Income	e ar	nd Production in Bussiness	
			Se	ecto	or 1991-1992	
					(1)	orice in lacs)
	Income Recei	ips	Amount		Sale	Amount
1.	Wages and Com	nplemenry	2,500	1.	To customer	22,000
	Income			2.	To states	11,200
2.	Social Security Pa	yment	1,000	3.	Export	4,000
3.	In spite of rules p		500	4.	Sales of capital things	6,000
	of many unit and the price of residu			5.	Pure change in the price of	3,500
4.	Income of individ		1,000		rematerialsidual	46,500
5.			5,000	6.	Total production of bussiness	
3.	Change in the price material and prof		3,000			
6.	Pure interst		500			
7.	Receiving of Total	l income	3,750			
8.	Indirect Bussiness	s Tax	6,000			
9.	Payment in excharbussiness tax	nge of pure	43,500			
10.	Wear Discounting	7	3,000			
11.	Total payment with of bussiness produced	~	46,500			

Self Assessment

Fill in the Blanks:

- 1. Within the personal field the income of all.....field are involve.
- 2. In the institute of personal field wages, salary andare involve of employee.
- 3. The income of personal interest is show theof total interest by people.

4.2 Private Sector

In private field are involve the supplements income, salary and wages of employee of institution. The big part of supplements income, salary and wages got by business sector and remain part got by foreign field, family and government. Within the private sector the income are involve of corporate sector and non-corporate sector. The one part of total income of corporation is involved in the income of private sector as premium. The income of personal interest is shows the total interest got by people and it income is get by government, private institution and business firms.

To present the account of income and expenditure of private sector, at the side of income show the payment and at the side of expenditure show the payment of borrowing by customer. These both are not involve in the account of national income. In further table direct services means, pure and total production are show in income side and in private sector show the direct payments, expenditure and income tax of services and foreign things in expenditure side. Because of being difference in expenditure and item income of personal savings is a balancing item. When personal income is more than expenditure, less or equal then this item can be positive, negative or zero. The accounting of income and expenditure of private sector 1991-92 in following table:

Account of Income and Expenditure of Private Sector 1991-92					
				(Mone	y in lacs)
Purchasing of direct service 1. Wages and complementary income 2. Intrest 3. Recieve income and pure and total production 4. Purchasing from bussiness firms 5. Purchasing erom foreign 6. Personal tax 7. Social security payment 8. Personal saving 9. Personal saving	1,500 500 1,000 30,100 11,100	2,000 22,000 100 5,000 11,100	1. Source of complementary income Bussiness firm etc Goverment Family Recieving from foreign 2. Non-corporation changes in the price of bussiness pure income and residule 3. Personal assesment Income 4. Profit 5. Income of personal intrest (i) From bussiness sector (ii) From other people (iii) From goverment 6. Transfer payment 7. Personal Income	25,000 3,000 1,500 100 500 500 1,000	29,600 5,000 1,000 1,500 2,000 2,100 3,000 44,200
u meome	I	I 44,400		l	1 17,200



Notes

4.3 The Government Sector

Notes

The accounts are present of income and expenditure as private sector within government sector. In it those all item involve which are not involved in gross national production. In spite of that in this account are involve the receiving of social security and payments. The income of government is normally got by the direct and indirect taxes. In spite of that kingdom got the social security of private sector, and business firms as contributon. In further table the purchasing of direct services, and expenditure sector show the purchasing of services, things of foreign and business sector by government. Government spent some on social life policy and unemployment help to person as transfer payments and paid interest on social borrowing, it is also involved in government account. In following table present the account of 1991-92 of the income government field.

		Account of inco	ome and expenditure of government sector		
			1991-92		
				(Money	in lacs)
	rchasing of Dire	ct	Surce of Income		13,500
ser	vices		1. Personal tax	5,000	
1.	Wages and salary	3,000	2. Tax on rules	2,500	
2.	Payment or social security	al 100	3. Indirect bussiness tax	6,000	
3.	Recieve incom and pure and tot production	-,	4. Reciving of social security		-2,100
4.	Purchasing from	m 1,100	(i) From bussiness	1,000	
	bussiness firms		(ii) From person	1,000	
			(iii) From goverment	100	
		200	5. Income of goverment		
5.	Purchasing from foreign	m			15,600
6.	Transfer payments	2,100			
7.	Pure paid intrest	1,000			
8.	Total expenditur (3) to (7)	re 17,400			
9.	Pure loss				
		-1,800			
		15,600			

Self Assessment

Multiple Choice Questions:

4.	The one part of total income of corporation	is involved in the income of personal sector as
	(a) profit	(b) loss
	(c) costs	(d) none of these

5. Being difference between personal savings of item income and expenditure is one

(a) Balanced item

(b) Unbalanced item

(c) Balance income

(d) Unbalanced income.

6. When personal income is more than expenditure, less and same then item can be

(a) positive

(b) positive, Negative

(c) zero

(d) negative

4.4 Foreign or Other Sector

The account is present the income and expenditure of external sector within it. In further table the account is present in net terms of external sector. The left hand side of this account is present the net residual fraction of the flow of in and out of country of continue production of services and things. If net flow is in the under of country then it present by the positive sign. The export price of services of things of country is 39,00 lacs rupees. It is the part of net national production. The payment of these exports is doing as net foreign investment of people.

Account of inco	me and ex other secto	-	of foreign and	
			(Mone	ey in lacs)
	Ruj	pees		Rupees
Wages and complementary income		100	Net foreign Investment	3900
2. Profit from foreign branch		100		
3. Recieve income and total and pure production		200		
The specific purchase transaction				
(i) From bussiness	4,000			
(ii) From government	- 200			
(iii) From people	- 100			
5. Pure Export		3700 3900		



Did You Know?

The accounts are present of income and expenditure as private sector within government sector.

4.5 Gross Saving and Investment Account

Within it total saving and investment related all description is given which is related economy. In every field has one residual money in above four fields which is the saving of that special field. In other items where the account present in table both side the income and expenditure, the item of

saving is present one side of the table. It does because that saving account is related to transaction of money aspect of transaction.

Notes

In following table actually show the equilibrium of total investment and total savings. The right hand side of table shows the personal saving, savings of corporation and loss of government. In total investment involve the foreign investment, pure change in residual material and business purchasing of capital things and foreign exchange. So by the above five sector's account are show the structure of economy.

	Acc	ount of total sav	ving and exchange 1991-92		
				(Mo	ney in lacs)
1. 2.	Purchasing on bussiness capital thing Pure change in residua		Savings of corporation (i) Profit which cannot distribute		4,100
3. 4.	material Pure foreign exchange Total Investment	3,500 3,900 13,400	(ii) Change in the price of residual material (iii) Forein branch profit (iv) Capital	200 100	
			(iv) Capital depreciation discounting 2. Personal saving 3. Goverment loss 4. Total saving	3,000	11,100 -1,800 13,400

4.6 Meaning of Social Accounting or National Income Accounting

Social accounting describes the all economy of economic activities as statistic-description, describe their mutual relations and present the structure of their analysis. According to A.D. **P.Cock** and **Kapoor-** "Social accounting is related to the activities of people and human institution of statistical description that it helpful to understand the causation of whole economy, but within the social accounting the field of study is not only involve the action of statistics description but involve the collective information for the analysis of causation of economy". In simple words, social accounting is the way to understand the economic situation of whole economy in terms of statistics by describing several of economy and their inter-relationship.

Social accounting is addressing with the name of national income accounting, economical accounting political math etc.

4.7 Presentation of Social Accounts

Social accounts are keeping by double account method similar with private and business accounts and social accounts are presents as the table of social accounts. This table is call social account. In the rows of this table presents the receiving of different fields basics of and columns in debtors of different fields. The records of every entry show in a special rows and special column. Social accounts is free

of mistake or not, then it is necessary for it that the addition of every rows is equally to the total of it equivalent column.

```	by		Account				
	Receipts	1	2	3	4	5	
	To yable	Production	Consumption	Capital	External	Total	
1	Production		16		4	20	
2	Consumption	18				18	
3	Capital	2	6			8	
4	External						
5	Total	20	22		4	46	

The record in above table (1) is related with production field. Its also call the National Production and Income Account. In it all transaction are include initiations by firms and government (2) Consumption sector is related which divided Records- (i). Private income and expenditure record (ii) government income and expenditure records. Business and house holder are payment for the fulfillment of their needs, other side the government expenditure is for the fulfillment the need of public health, administration, police, education and justice. At the side of rows the business and house income is get by the public borrowings, wages, salary, profit, interest and revenue and government get income by taxes. (3) Record is related to collection point and it also calls national capital account. It also calls capital transaction. At the side of row get the capital transfer as reduce the capital transaction price. (4) Is related to external sector. It call the rest of the world account and external account, in it involve the transaction of all country and debtors, in it things and services involve are net creditors and debtors and current transfers. There will be balance three records in a close economy. In an open economy should be the calculation of transaction with external records for balance the social records.



Task

Give your views on the account of total savings and exchange.

### **Self Assessment**

#### State whether the following statement are True or False:

- 7. Social accounting describes the economic activities of whole economy as statistics description.
- 8. We did not get knowledge of economic structure by the use of social accounts.
- 9. By the help of national income accounting can evaluate easily the effect of government policies.
- In an open economy should be the calculation of transaction with external records for balance the social records.

## 4.8 Social Accounting's Laws

The main methods of social accounting are following-

a. Present method by Saiman Kuznets.

- b. Transaction system present by Liyontif.
  - Method of the study of flow of liquid present by Morris Copland.

## The importance of social and national accounting

- 1. The knowledge of economic structure- We are gets knowledge of economic structure by the use of social accounting. With the analysis of it national income is get the information about the structure of production and consumption level of tax and savings.
- **2. Evaluation of the effect of government policy:** By the help of national income accounts can evaluate easily the effect of government policy.
- **3.** The evaluation of business industries: It is help to evaluate the activities of big business industries
- **4. The guide of change of economy:** Social income accounting is shows the need of change in economy and provide a useful guide for that change.
- **5. Light on the importance of the different field and flow of economy:** Social income accounting are highlight the related information of different field and flow of economy.
- **6. Helper to get the multinational objective:** National income accounting is proved helper to get the multinational objective.
- 7. **Insights on the mutual dependency of different field:** Social income accounting provide the insight on the mutual dependency on different field and describe it.

## Different part of national and social accounting

## The different part of social accounting is as follows:

- 1. Gross national Product
- 2. Net national Product.
- 3. National Income
- 4. Personal Income
- 5. Disposable Income.

### 4.9 Summary

Social accounts are keeping by double account similar with private and bussiness accounts
and social accounts are presents as the table of social accounts. This table is call basic of social
account. In the rows of this table presents the receiving of different field and columns in debtors
of different fields. The records of every entry show in a special rows and special column. Social
accounts is free of mistake or not, then it is necessary for it that the addition of every rows is
equally to the total of it equivalent column.

### 4.10 Keywords

- Government Sector- Account are present of income and expenditure as a private sector within government sector.
- Foreign Sector- The accounts in present the income and expenditure of external sector within it.

# 4.11 Review Questions

- 1. What is Business sector? Specify.
- 2. What do you understand by government sector?
- 3. Comments on 'Foreign and Other field'.
- 4. Tell the methods of social accountings.

## **Answers: Self Assessment**

1. non-corporation2. complementary income3. income4. (a)5. (a)6. (b)7. True8. False9. True10. True

## 4.12 Further Readings



Books

- **1.** Macroeconomics: Theory and Policy- H.L. Ahuja, S. Chand Publisher, 2010
- **2. Necessity of Macroeconomics-** *H.S.Nath, Saiber taik publication*,2012.
- 3. Microeconomics- S.K.Chakravarty, Himalaya Publishing house, 2010.

# **Unit-5: Classical Theory of Employment**

**Notes** 

#### Contents

Objectives

Introduction

- 5.1 Classical Theory of Employment
- 5.2 Summary of Complete Classical Model
- 5.3 Keynes' Criticism of Classical Theory
- 5.4 Summary
- 5.5 Keywords
- 5.6 Review Questions
- 5.7 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the classical principle of Employment,
- · Know the summary of full classical model,
- · Criticise classical principle by Keynes.

### Introduction

**John Meaynard Keynes** is directly hit on the element base of classical on his book *The Theory of Employment, Interest and Money (1336)*. He developed a new economics; it brought revolution in economic view point and policy. *General Theory* was written in the background of his view point. According to **Keynes**, classical was the follower of Recordso. In this specially **J.S.Mil, Marshal and Pigu** are involved. Keynes did disclaimer that customary and institutional economics, which constructed till more than one century and was fix his dominance on economic view point and tradition till before 'Great Depression'. Because the economics of Keynes is dependent on the criticism of classical economics, so it is necessary to understand the above nature, it is involve in the principle of employment.

## 5.1 Classical Theory of Employment

Classical principle believed that the full employment is found without Inflation in capitalist economy. Being the flexibility in labour prices, the automatic power of economics system are able to keep continue the situation of full employment and has ability of production on that level. So full employment is considering a normal situation and there are some abnormal situation of deviation by that level which was tends for their full employment.

## Notes Assumptions

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

- 1. Full employment is foundwithout 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.



Notes

Classical principle believes that the full employment is found without inflation in capital economics.

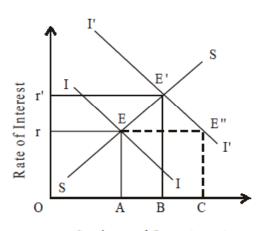
## Say's Law of Market

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 writers Jean Bapiste Say "Supply created its own demand". It's called the rule of Say. In the words of Say's, "Production created market for things. As anything produced then it creates market for other things which is similar its price. The Supply of other item is according to the demand of the item and not more than that. "This rule is applied on the barter economy, where finally things is sale in place of things. Any things of market are demand for any other things. According to Say's, doing work is not interesting, so if any person is not want to exchange his favourite thing with any things then he did not do work for the production of that things. So the demand is involved in the work of supply of things. In that situation, more production cannot possible because the supply of things will not more total demand. It may be possible that one special thing is more produced, because customers wrongly assess the quantity of those things, which is necessary for other. However, this situation is temporary, because that special thing is more produce to reduce the production of others. So supply is creates its own demand so unemployment cannot possible.

This basic rule cannot change to get the currency. As **Prot. Hansen** says that, "The market rule of Say is the description of things- exchange economics. This rule is true by that view point that the main source of demand is that flow of source-income, which creates by the process of own production." When producer make available different inputs (land, Labourer and capital) are used in production process, then they create the necessary income which got to sources owner as interest, wages and tax. Above it creates demand for produced things. So supply creates its own demand. This logic is based on that perception that all income of earned by source- owner is expand to buy that things they helped in that production. Which part of income is not spent, it save and it invested. So saving will be equal to the investment. If both have any difference, then by the median of rate of interest, similarity is established. Interest is the reward of saving according to classical economist. The rate of interest will more according to savings. Apposite it the rate of interest will as low, the demand of situation

for investment will as more and vice versa. If at certain time the saving is increased from investment, then the rate of interest will fall. Investment will increased and then savings will reduce whenever both is not same at the level of full employment. It is because saving considers the increasing function of interest rate and investment is considering the decreasing function of interest rate.

The similarity of savings and investment is shown in figure 5.1 where *SS* is saving curve and II is investment curve. Both curve is intersect each other on E point where *Or* is the interest rate and savings and investment both is equal to the *OA*. If investment is increased then investment curve is sifted right side and become I'I' and *OC* investment is more than *OA* savings at *Or* interest rate. According to classical



Saving and Investment

Figure 5.1

economist, saving curve is on his before situation when investment is increased. Interest rate will increased for continuing similarity in saving and investment. It shown in figure Or to Or'. At that interest rate, saving curve investment SS is intersecting on E to investment curve I'I'. Saving and investment both is equal on OB.

In currency economy the validity of the rule of Say's is dependent on the classical magnitude principle which tells that price-level is the function of supply of currency. As Algebra, MV=PT where M,V,P,T is the supply of currency, the operating velocity of currency, price level and the transaction by currency. This equation is tells that the total currency-inflation is equal to MV in economies and the total price of production is PT, if consume that V and T are constant then the supply of currency (M) is proportionate change in price level (P) by change. It is based on that consumption that currency is source of exchange.

The quantity of currency, total production and price level is shown in figure 5.2 where price is on vertically and total production is on horizontal level. MV is the currency supply curve which is rectangular hyperbola. It is because that the equation *MV=PT* is involved on all point of curve. When production level OQ is given then there will be one price-level *OP* similar with the quantity of currency as there is m point on MV curve. If the quantity of currency is increased then MV curve is sifted left side and will become  $M_1V$ . So when the production level OQ is given ,then the price level will become from OP to  $OP_1$ . That increment of price level is proportional with the increment of the quantity of currency, mean  $PP_1=MM_1$ .

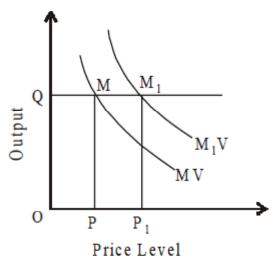


Figure 5.2

**Notes** 

According to classical economist, if the quantity of currency is double then the price level will become double. Apposite it, if the quantity of currency is half then price level will become half. So currency is only a veil its main work is decided the normal price level on which the things and services are exchange.

## Pigou's Version

**Pigou's** provided the last form to classical principle of employment whose formulated the rule of Say's in the reference of labour market. According to Pigou's, the nature of economic system is within the free competition that labour market is automatically provide full employment. Hardness in the structure of wages, provide the unemployment by interference in the causation of free market economics. When states are interfered to given the assumptions to trade union and applied the low wages rules and adopted the labour monopoly system, then wages increases and unemployment started. If the interference of states removes and the power of competition done work freely, then full employment become to increase and decrease the wages-rate. As **Pigou's** did objective, "By the independent competition....always one such tendency will be operational in which the rate of labourur will be so aligned to demand that every person has employment." Pigou presented a equations N=qY/W described the all proposals,. N number is the employed labours in equation q is the half part of national income earned as wages and salary, Y is the national income and if we reduced W then N can increased. So the key of full employment that currency wages reduced. It cleared in figure 5.3. In

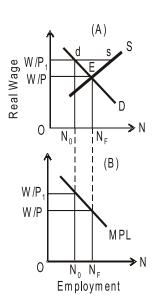


Figure 5.3

the part (A) of figure S is the supply curve and D is the demand curve. The cut of both curves on E show the point  $N_{\circ}$  of full employment and actual wages W/P on which full employment available. If actual wages kept on high level  $W/P_{1}$ , then by the demand of labour supply sd increased and  $N_{\circ}N_{\rm F}$  labourur is unemployment. When wages reduced and take on the point W/P then unemployment finished and got the level of full employment. It shows in the part (B) of figure. MPL is the curve of frontier productivity of labour, which is slant at down as demand curve. Its reason is that when more labour is apply on employment then the frontier productivity reduced because every labour got wages according to their frontier productivity so when wages become  $W/P_{1}$  to W/P then economies got the full employment level  $N_{\rm F}$ .

In the classical model, the change in currency-wages and actual wages are directly related or proportionate. When currency cut then actual wages are also reduced as same quantity, which reduced the unemployment and finally economies took full employment. This relation is based on the perception that prices are proportionate the quantity of currency. The logic is that the decrement

in currency-wages in competition economies reduced the prices of things and cost of production so the demand increased. To complete the increasing demand of things more labourur are keep for employment. When employment increased then total productivity also increased. Whenever there is no situation of full employment. When economy is on the level of full employment then total employment is become constant. So there are relation among the stock of capital, engineering knowledge and on given sources total production and the quantity employment. Total production is the increasing function of wages number. It shows in **figure 5.4**. there Q = f(K, T, N) in which total production Q, function  $f_C$  capital

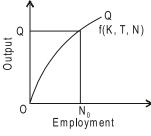


Figure 5.4

stock *K*, technical knowledge *T* and the number of labour *N*. This production function show that total production, capital stock and technical knowledge is increasing function of the number of labour. In **figure 5.3** total production *OQ* is analogy to full employment level *Nf*.

Notes

Classical economist believed that in the normal competitive situation, full employment will continue without inflation. In spite of competition among the owners for putting labourers to work, wages will not be more than full employment level. Now because of applying the Say's rule, the full employment of production will generate the demand on that level. The increment in the all demand is the reason of inflation. But the mechanism of the rate of interest is stop to more increment in all demand. Again, inflation is also because of that when the currency such increased that incrementing production cannot supply it. But it is also not possible, because the increment in the quantity currency is only increase absolute price level not relative. So full employment is get without inflation in classical system.



Did You Know?

The nature of economic system within free competition is that full employment automatically provide in labour market.

### **Self-Assessment**

#### Fill in the blanks:

- 1. The market rule of Say is the heart of .....employment.
- 2. According to Say, Supply creates its own ......
- 3. The market law of Say, in the broad form free.....is the description of economics.

## 5.2 Summary of Complete Classical Model

The classical principle of employment is based on the assumption of full employment according to it there are find the normal situation of full employment in economies and the abnormal situation of unemployment is abnormal. In Classical principle the selection of production and employment is in the market of labourur, things and currency of labourur of economics, it show in the 5.5 figure. The power of supply and demand in this market will take the full employment. By any interference of government of there will not full employment. His mean of full employment is that no where the involuntary employment.

Production and all production function of employment in the Classical analysis are decided by the demand of labourur and supply of labourur. Stock of capital, technical knowledge and on given the other inputs there are a certain relation in the quantity of total production and employment it calls Q=f(K,T,N) as show in the figure penal (B). In other words, total production is the function (f), capital stock (K), technology(T) and labour number (N). When K and T is given then labourer number function is Q=f(N). But when more labour 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 increased the demand of labour and the demand of labour dependent on its frontier physical productivity (MPP) which reduced to apply more tax. The supply of labour is dependent on the labour rate  $D_1 = f(W/P)$  is the increment function of labour rate. Other side, the demand of labour is dependent on labour rate  $S_1 = f(W/P)$  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 decide the full employment on wages rate (W/P),  $D_1 = S_1 - N_P$  as show in Panel (C).

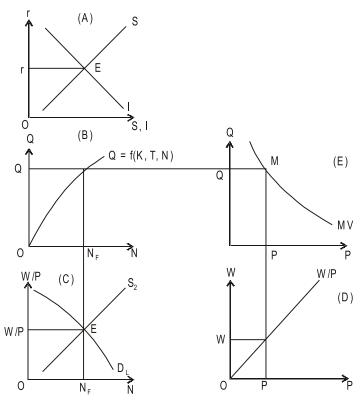


Figure 5.5

Thing 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 balance by the demand and supply of currency. It is elaborate 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 the quantity of currency. Balance is describe 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 show in panel (B) and (E). Now actual wages is decide with currency wages. As show in panel (D) by W/P curve. When currency wages is increase by increasing the price level then actual wages W/P is reduce so there will be effect on level of production and employment. So the conclusion is that 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.



Task

Express your ideas on the classical principle of employment.

Self Assessment Notes

#### **Multiple Choice Questions:**

4. Classical economist consider the savings of interest-

(a) Reward (b) Measurement

(c) Part (d) None of these.

5. This basic.....is not change on get the currency.

(a) principle (b) rule

(c) exchange (d) non of these

6. Saving consider the increasing function and investment consider the -

(a) Diminishing function (b) Increasing function

(c) Cost (d) None of these.

## 5.3 Keynes' Criticism of Classical Theory

Keynes' criticize 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 assuming those specific, they did not keep relation with that economic society in which we lives, which magnitude is that when we are apply it on reality experience, then its training is prove doubtful and destructive. We have as hope of behaviour by his economies, it expressed that style. But it consider that it happen, close the eyes by difficulties."

Keynes' attacked on classical principle because of following reason-

- 1. Under-employment Equilibrium: Keynes rejected the basic classical perception of balanced full employment in economics. He told unreal to this perception. He consider a specific condition to full employment. Under-employment is the normal situation in socialist economy. Its reason is that capitalism is not work according to the rule of Say and supply is always increased by demand. We see that lacs of labour are ready to work on present wages and less than that, but they did not get work. So the existence of involuntary 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' is disclaimer the market rule of Say that supply creates its own demand. His perception is that all income earned by sources-owner is not spent to purchase that things on which they helpful for production. Some part is saving from the earned income, which are not automatically invested because saving and investment are two separate works. So when all earned income is not spent on customer things and some part remains, then total demand reduces. Resultantly it is normal hyper production, because all could not sold which has been produced, further, it lead to common unemployment. so by this to take the support of this rule Keynes settle the fruitless the Keynes' rule that the nature of frontier is less than one.
- 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 decides that capitalism system is not self adjust because of unequal structure of their society. There are two major class- rich and poor. Rich have more money but they did not spend all money on consumption. Poor have no money for purchase the consumption 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 is never happen. So 'big depression' was the result of it. If capitalism arrangement is self adjusted, then never happen that. 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 believe of classical economist that saving and investment are equal at the level of full employment and if there any deviation, then the mechanism of the rate of interest took similarity on them. According to Keynes', the level of saving is dependent on the level of income. So as the rate of interest of investment are also decided the productivity of frontier. If the business expectancy is less then in the low rate of interest, investment will not increase. If saving increased by investment, then its mean that people are spent less on consumption. Resultantly the demand reduced, and hyper production is start and investment income and production reduced. By this saving will reduced and there are established similarity in investment and savings on income.
- 5. Refutation of Wage Cut: Keynes' had disclaimer this principle of Pigou that full employment can be get in economy to cut the currency-wage. In the analysis of Pigou the big doubt is that the logic of specific industry is apply 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 reduced resultantly total demand reduced and employment is also reduced.

At behaviourally Keynes' never supported the policy of cut in wage. Labours established a strong trade union in present era which protests the policy of reduced wage. They will strike on it protest. Resultantly the disturbance 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 also not accepted that opinion that there are directly proportionate relation among currency wage and actual wage. According to it, they have opposite relation among it. When total wage are reduced, then actual wage are increased and vice versa. So as the believed of the traditions that, as not happen and being the reduction on currency-wage the actual wages are not reduce but increase, the cost of wage and price will more reduced to cut the currency-wage. So the opinions of traditions are not outstaying that employment will increased to reduce the actual wage. But the believe of Keynes was that employment can increased more to reduce the currency-wage by the median of currency and exchequer. Now the institutional protest is stronger of decrement of prices and wage so that type of policy cannot continue in trend.

- 6. Support of State Intervention: Keynes was not satisfied by Pigou's opinion that "The failure of temporary is responsible to fully use of ours 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 the interference of state. State can directly invested 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 completely use the source of economy for available the full employment.
- 7. Short-run Analysis: In the long duration Keynes believed in full employment. Keynes had no patience that he can wait for ling time, because he believed that "After long time we all die." As the objective of Shumpeter, "His lofe philosophy was fundamentally short duration." His analysis was limited till short duration sources. Apposite to traditionalists he believed that nature, behaviour, method of production and labour are certain during short time he leave the long duration impact on demand. Assume that consumption demand is certain, he forced

on that things that investment demand increased to remove the unemployment. But by this the balance level get, it is the short duration employment level not full employment level.

8. Importance of Speculative Demand: Classic economist believed that currency is demand 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 satisfying by this opinion. He force on the importance of speculative demand. He tells that earned interest by property to keep the transaction objective can less on low interest rate. But on low interest rate the speculative demand will more. So the rate of interest will not fall by a special lowest level and the speculative demand of interest will fully flexible. It is the liquidity trap of Keynes, classical economist were failed to analyze it.

Keynes cleared in this reference 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. It is show in figure 5.6. where SS is a saving curve and II is investment curve. If liquidity traps on  $Or_1$  i.s. interest rate then it stops to fall on Or of interest rate. In the situation of liquidity trap of  $Or_1$  interest rate is more than of saving to investment. So economy will

not establish on the full employment level *E* where savings and investment is equal but short employment level where more saving possible.

Keynes told above that interest rate is giving on zero then saving will more by investment. It shows in **figure 5.6** where II curve is shifted and become  $I_1I_1$  and show decrement in investment. Such situation is found. Zero on the zero interest rate saving is  $i_os_o$  more from investment. In that situation, classical saving and investment curve is intersect on  $E_1$  point when Or' is negative on interest. It is the inconsistent situation.

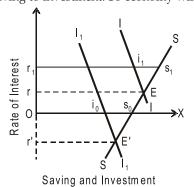


Figure 5.6

**9. Money not Neutral:** Classical economist believed that currency was not effective. So he did not involve

the production, employment and interest rate in currency principle. According to him, the level of production and employment level and balance rate of interest are decided by actual powers. Keynes criticizes the classical opinion that currency principle is different from value principle. He joints the value principle and currency principle and interest principle took on the currency principle. He joined the production principle and currency principle with value principle. So by this he show established relation among the quantity of currency and price level. Example, when the quantity of currency increased then interest rate decreased, investment increased income and production increased, demand increased, sources cost and wage increased, related prices increased and normal price level increased. 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.

#### Self Assessment

#### State whether the following statements are True or False:

- 7. Hardness in the structure of wage and interference in the causation of market economic come unemployment.
- 8. If the quantity of currency is doubled then price level will also double.

Notes

- 9. The change in currency-wage and actual wage in classical model of employment are related and disproportionate.
- 10. The classical model of employment is based on full employment.

## 5.4 Summary

The classical principle believed that full employment is found without inflation in capitalist
economy. Giving the wage-price flexibility, the automatic power get in economic system
which has nature to continue the full employment and does production on same level. So full
employment is consider a normal situation and deviation is abnormal situation at that level
which are the marching at full employment.

## 5.5 Keywords

- Law of Market The rule of market.
- Barter Exchange of things.

## 5.6 Review Questions

- 1. What is the classical principle of employment? Explain.
- 2. What is the market law of say? Explain.
- 3. Write the summary of full employment model.
- 4. Write a note on the 'criticism of classical principle, by Keynes.

#### **Answers: Self Assessment**

1. classical principle	2. demand	3. thing-exchange	4. (a)
5. (b)	6. (a)	7. True	8. True
9. False	10. False.		

## 5.7 Further Readings



Books

- 1. Macroeconomics- S.K.Chakravarti, Himalaya Publication House 2010.
- **2. Macroeconomics-** *Mohan Shrivastsva, DND Publication* 2010.
- **3. Macroeconomics-** *Economic growth, Fluctuations and Policy- Robert E. Hall and Devid H.Paipal, Vaina Books, 2010.*

# Unit-6: Keynesian Theory of Employment

**Notes** 

#### Contents

Objectives

Introduction

- 6.1 Keynesian Theory of Employment
- 6.2 Effective Demand
- 6.3 Equilibrium Determination
- 6.4 Comparison of Classical and Keynesian Theory of Employment
- 6.5 Summary
- 6.6 Keywords
- 6.7 Review Questions
- 6.8 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- · To know the employment principle of Keynes,
- · Study of effective demand,
- To know the equilibrium determination.

## Introduction

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 it difference show the unemployment in economy. For increment in income and employment the difference in income and consumption can remove by investment. So the level of employment is dependent on investment. So the effective demand is increase by investment for increase the employment.

## 6.1 Keynesian Theory of Employment

Keynesian gave a special name to a famous principle, which applies on limited area of his normal principle. According to him in the normal situation economic system based on self property, there can happen any thing from detailed unemployment to full employment. He stricken to above from his prosperous view point and developed economics to bringing revolution in economic idea and policy.

**J. M. Keynes** was the first economist; he gave an arranged principle of employment. When in 1930 A.D., the famous principle failed he criticize 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.

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

#### Self Assessment

#### Fill in the blanks:

- 1. J. M. Keynes was the first economist; he gave an arranged principle of......
- 2. Keynes gave a name of ......to prosperous principle.
- 3. .....principle keeps the strategic importance in the employment principle of Keynes.

## 6.2 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 did not increase supply and decrease supply. Effective demand decides the level of income and employment. The decrement in effective demand arise 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 it difference show the unemployment in economies. For increment in income and employment the difference in income and consumption can remove by investment. So the level of employment of is dependent on investment. So the effective demand is increase by investment for increase the employment.

There are two important decider of effective demand:

- 1. Aggregate Demand, and
- 2. Aggregate Supply.

## 1. Aggregate Demand

The total addition of demand of things and services in economics calls aggregate demand. It is the total of total consumption demand and total investment demand. The demand of consumption of things and services are by self consumption and public consumption. And total addition of it calls consumption demand. So the demand of investment is by entrepreneurship and government. Its addition is called total investment demand.

When any person, firms and government demand the things and services, the expenditure of consumption calls consumption expenditure. And the expenditure which is does on capitalism things, calls investment. Briefly,

Aggregate Demand (Expenditure) = Consumption Demand + investment expenditure (investment demand)

So Aggregate demand or expenditure is increase by the increment in investment expenditure or consumption. And it directly contacted with employment level in country. In this **figure 6.1.** X-axis show the volume of employment and Y-axis show the total expenditure. Aggregate expenditure can understand the total finding of firms. Because all expenditures are belongs to firms, which supply the things and services.

So, Aggregate demand can describe as the get currency in exchange of that things and services of firms, which are produced in fixed number by labour.

Notes

When firms want to earn more by increasing expenditure on services or society, they provide employment to more labour. In **figure 6.1** show the aggregate demand tells the table of produced things on different level of employment and receives by services. The expenditure on total production is increase with the increment in the level of employment and reduced with the decrement of level of employment. In **figure 6.1** the level of employment is increase with  $ON_1$  and reached to  $ON_2$ , when anticipated expenditure (AD) on production is increase from  $OE_1$  and reached to  $OE_2$ . It function relation can show as AD=f(N).

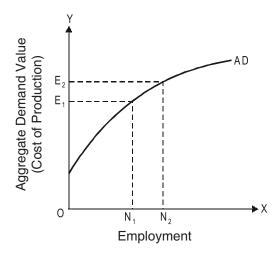


Fig. 6.1: Aggregate Demand

Total demand function increases with decrement rate, because person less spent his that income, which is increase in production and employment. So the shield was short of agreed demand.

## 2. Aggregate Supply

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

Aggregate supply or value is that low anticipated value, firms wanted to it for keep employed to labour or production on a certain measurement

In the words of **Stonyer** and **Hag**, "Aggregate supply is that volume of value currency on the given employment level which should be get by the sell of that product to all entrepreneurship, which was produced by given people, it is profitable to give employment to those." Aggregate supply is increases with in the value employment and decrease with decrement. It can be show as equations

AS = f(N)

AS = Aggregate supply

N = Number of employed labour

In **Figure 6.2** on X-axis show volume of employment and on Y-axis show 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 ON₂. Aggregate curve is also soar above as Aggregate supply curve. As increasing the level of employment, total production and total cost are also increased. So firm keeps expectance of 'low sell receiving'. When frontier cost is reducing, then production in increment quantity is beneficial. The shield of aggregate supply curve is increased with the increment in the level of employment. It is happen because low skills sources get employment as relative on the increment in employment. According to it the optimum ratio is disturbed among 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 increase and therefore total expense will always increasing.

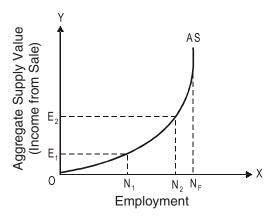


Fig. 6.2: Aggregate Supply curve

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 can not 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.



Notes

The total addition of things and services in an Economy calls Aggregate demand.

### Self Assessment

#### **Multiple Choice Questions:**

## 6.3 Equilibrium Determination

The level of employment production and income is decided by the effective demand, which itself 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 show on the employment level  $ON_1$  in figure 6.3), firms increases the employment level for receiving the more profit. If aggregate demand curve is below in the aggregate supply curve (as shows on the employment level  $ON_2$  in figure 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 to each other.

In **figure 6.3**, aggregate demand and aggregate supply curve are intersecting on *E* to each other. It point (*ON* point) says the equilibrium point of effective demand and employment. It point represents

expenses of produce 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 nature at that point, because its profits are more at that point. The competition among labours takes employment level on equilibrium.

When aggregate demand curve increase on up side, then employment level increases. In snatch the possibility of change is not existent in aggregate supply curve, because that production is based on techniques, availability of raw materials and machinery. To increase the productivity of labour in long period, the aggregate supply curve can be at below side. But it is not possible on unemployment

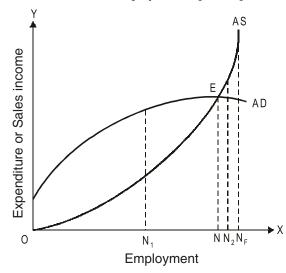


Fig 6.3: Equillibrium within Kension Theory

economy. Now it is important to say that Keynes considers an important decider of effective demand and employment level to aggregate demand.

**In Figure 6.4** according to the increment in aggregate demand, effective demand is shift at right side. So the equilibrium point is become E to  $E_1$  which is according to the change in total demand. Because of the change in total demand, there are the situations of unemployment in economy on 'E' point, where  $NN_{\rm F}$  labour are unemployed. Now an  $E_1$  point Economy gets the full employment equilibrium. There all person are employed whose want. The situation of under-employment can be finish to change the aggregate demand by increasing the investment expenses or consumption in an economics.



Did You Know?

The level of employment production and income is decide by effective demand, which itself decides by aggregate supply and aggregate demand.

It is clear by above description that effective demand can also get the point of full employment or not. In other words, effective demand is always not related to full employment level. The view point of **Keynes** is that the situation of under-employment 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 in only the situation of more prosperity. The full employment is only possible in an economy, when investment demand 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

**Notes** 

is responsible for under-employment in economy. In **figure 6.4**, an economy will get the full employment situation to increase its appropriation from MM₁.

It investment is inspired to give discount as tax and decrement in institutional borrowing cost to investors. In the work of social welfare should also invest by government. Full employment is important at one limit, because after that production or employment are unchanged to increase the effective demand. If aggregate demand is increase after the point of full employment, then raise the situation of currency inflation, because employment or production is not increases after full employment.

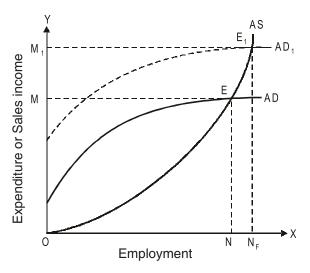


Fig 6.4: Shifting in Equilibruim

#### Self Assessment

State whether the following statements are True or False:

- 7. Employment production and the level of income are dicided by effective demand.
- 8. When aggregate demand curve is rise up side, then the level of employment is increase.
- 9. Aggregate supply curve can be below to increase the productivity of labour in long period.
- 10. The availability of change is no-exist in aggregate supply curve in long period.

## 6.4 Comparison of Classical and Keynesian Theory of Employment

The employment principle of Keynes is different in many forms classical employment principle.

- (i) Classical economist believes that an economy is on stable equilibrium on full employment point as invariably. So classical principle is related with special situation of full employment, and ignores the possibility of normal unemployment. Apposite that the principle of Keynes, which indicates works in all situation of economy (full employment, under-employment and unemployment). According to Keynes- the situation of full employment is very less or as exception. Normally economy is in equilibrium on low level from full employment level.
- (ii) Classical economist believed that if full employment situation is not in economy, then equilibrium can be established to decrease the wage. But **Keynes** considers that idea unreal and impractical. According to **Keynes** if the rate of wage is reduces in a special entrepreneurship then employment can be increase. But if it should be in whole economy then it will reduce the income, production and employment.



Task

Express his idea on the employment principle of Keynes.

- (iii) In classical system the increment in currency supply takes the nature of currency inflation. Whenever according to **Keynes** the increment in the currency supply after full employment creates the currency inflation.
- (iv) According to classical economist the analysis of interest-investment is the instrument of decide the interest rate. Any change in saving interest does inequality in investment or savings. Apposite that **Keynes** consider the analysis of interest-investment is the instrument of decide the level of income and employment. If savings more than investment, then consumption expenses is less. So demand will reduce. If production and saving are responsible for the decrement in the investment, income, interest and employment. So when the atmosphere of business is disappointed then the decrement in interest rate is not increase the investment. So the situation of equilibrium can possible among savings and investment by change the level of income. So the principle of **Keynes** is more useful for the analysis of more real and
- (v) Distinguished economist considers that the level of economic activities can change by the change of the quantity of currency and interest rate. They conformable to stops the use of monetary policy, unemployment, business depression etc. Apposite that Keynes kept believed that to solve all problems by policy (public expenses, financial arrangement of loss etc).
- (vi) Classical principle considers most important to conformable on decide the equilibrium level of income and employment in any economy. The assumption of that principle that supply creates its own demand. Apposite that **Keynes** considers supply constant and consider the decider of equilibrium to demand of economy, so in Keynes principle, supply is a stock variables.
- (vii) The decision of savings and investment are take in one division with in classical principle. So saving and investment are equal. The similarity is established by interest rate being any inequality in both. So interest rate keeps an important place in a classical arrangement. Apposite that **Keynes** consider interest the return of sacrifice and less important to give it. According to it which changes are perform in any economy; it is according to the change of income and expenses, not according to the change interest rate. With it in the situation of equilibrium in economy, savings and investment will be equal, because savings and investment are according to different objectives by different divisions.
- (viii) There are two separate principle by classical economist one is for currency, second is value and production level. But **Keynes** presents a joint principle of currency principle, value and production level. According to him this principle can not presents as separate principles, because the quantity of currency is directly effect the level of employment, production and income.
- (ix) Classical principles are only active in long period. Keynes is not understand that principle and rendering such principle that are active in short period.

## 6.5 Summary

economic development.

• Aggregate supply is the second decider of equilibrium of the level of employment and income. It indicates addition of total things and services produced in economy. If it assumes that all things and services produced in economy are available for consumption and investment, then total supply will be equals to the national income and national product. This national product will be equals to the four sources (land, labour, capital and entrepreneur) of production. Aggregate supply or value is that anticipated value, it is receive to firms for production on a certain scale and employed the labours.

Notes

## 6.6 Keywords

- Effective Demand Valuable order.
- Equilibrium balance.

## 6.7 Review Questions

- 1. Define the employment principle of Keynes.
- 2. What is the aggregate demand? Explain
- 3. Write note on 'Equilibrium decider'.
- 4. Clear the aggregate total supply.

### **Answers: Self Assessment**

1. employment	<ol><li>special principle</li></ol>	3. Effective demand	4. (a)
5. (b)	6. (c)	7. True.	8. True
9. True	10. False		

## 6.8 Further Readings



Books

- **1. Macroeconomics: Economic Growth, Fluctuations and Policy-** *Robert E. Hall and David H. PaiPal, Vaina Books,* 2010.
- **2.** Macroeconomics: Theory and Policy- H. L. Ahuja, S. Chand Publisher, 2010.
- 3. **Necessity of Macroeconomics-** *H.S.Nath, Syber Tech Publication,* 2012.

# **UNIT-7: Theory of Consumption Function**

**Notes** 

#### Contents

Objectives

Introduction

- 7.1 Keynes Consumption Function Theory
- 7.2 Absolute Income Hypothesis
- 7.3 Summary
- 7.4 Keywords
- 7.5 Review Questions
- 7.6 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the consumption function principle of Keynes's,
- Study of absolute income hypothesis.

## Introduction

In the previous chapter we have described the relation among income and consumption render by Keynes we says it consumption function. After **Keynes**, Economist is studying some component to affect the consumption function and creates new principle related with it. It is- (1) Absolute income principle related Tobin; (2) Relative income principle of Dussenberry; (3) Certain income principle of Friedman; (4) life-cycle principle of Modygliani. Before describe these principles we briefly explain the principle of Keynes on which these all principles are corrective.

## 7.1 Keynes Consumption Function Theory

Keynes renders the consumption function principle in his book *General Theory*. According to him, all consumption is the function of all current disposable income. It is shows as-

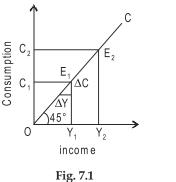
$$C = a + cy$$

Where a is a positive autonomous consumption that is effect 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  $y_d$  is disposable income that have customer for expenses after tax.

The relation between consumption and income is dependent on Keynes 'Psychological rule of consumption' it indicates that when income increases then consumption expenses is also increases but in low quantity. In other words, being increment in income, consumption expenses are not increase as proportionally. The mean of the perception of that 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 then unit: 0 < MPC < 1. Lastly, in the consumption function of Keynes's

takes constant value in both short period and long period. The principle of Keynes proved unsatisfied because it can not describe statically short period rationally in consumption and income.

For understanding that we are differentiates in rational and non-rational consumption function. Consumption function are rational when APC is constant at every level of income and equals to MPC as show in figure 7.1. Where consumption C cut on origin O. When income are change as  $OY_1$  to  $OY_2$  then on  $E_1$  and  $E_2$  points with C curve APC = MPC. In other words, on  $E_1$  point of line  $45^\circ$  APC =  $OC_1/OY_1$  1 and MPC =  $\Delta$  C/×2 Y = 1 consumption function is non-rational when APC is reduces with the increment in income. In **Figure 7.2**, C is the consumption function.  $OY_1$  income level to the C curve on E point of APC > MPC, where APC =  $OC_1/OY_1$  and MP C =  $\Delta$ C/ $\Delta$ Y =  $ER/RE_0$  but  $OY_0$  level of part when C curve insects on  $E_0$  point to line  $45^\circ$ , there APC=MPC.



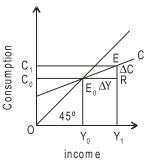


Fig. 7.2



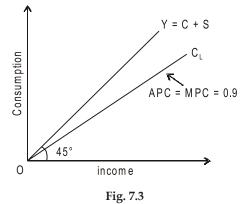
Notes

Keynes renders the principle of consumption function in his book *General Theory*.

There are any study are perform in the last of 1930 A.D. and in median of 1940 A.D. that are based on time-series and cross-section of budget issue. Keynes's principle proves by these studies that is calls absolute income Hypothesis.

**Kuznets** studied the data in 1946 of income and consumption of USA in 1869-1938 time periods and the consumption function of that duration is 0.9. Then he conclude that there are not nature at below side in average APC according to it as income increases with the long period nature then APC = MPC. Its mean is that long period consumption function is a simple line that passes on original point, as show

in figure 7.3 by Cl line. Bold smith again inspections of that conclusion in 1955 A.D. and conclude that long period consumption function is constant on 0.87 or 0.9. It gets by these two study that short period consumption function is a non-rational because APC>MPC and long period consumption function is rational, MPC = APC,. So both study is disclaimers to each other and becomes a puzzle for economist. For solving it many economist tries to reconcile in long period and short period consumption function and "as solution are resolve in that tries to re-define the free component in consumption function". Above we are studying such principle of consumption function.





Did You Know?

All customers are the function of whole disposable income.

**Notes** 

### **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 increase and decrease.
- 3. The consumption function of Keynes gives the name of.....income hypothesis.

## 7.2 Absolute Income Hypothesis

The consumption function of Keynes gives the name of absolute income hypothesis that indicates when income increase, then consumption is also increases but it increases less in comparison to the increment of income and vice versa. Its mean is that the relation of consumption and income are non-rational. **James Tobin** and **Arthur Smithys** inspected that hypothesis in different study and conclude that the short period relation of consumption and income are non-rational, but gets by the time series data that the long period relation of both are rational. The relation of consumption-income is because by shifting up the short-period non-rational consumption function. For that different reason are responsible. These reasons are describe below.

#### Self Assessment

#### **Multiple Choice Questions:**

- 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

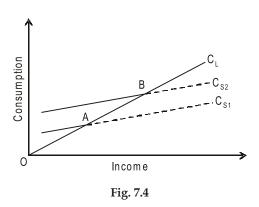
(c) Expenses

(d) None of these

**First, Prof. Tobin** involves the asset holder of the Negro and White families in budget study for the inspection of that hypothesis. He concludes that for the assets of family are increases, then the consumption are also increases then accordingly the consumption function is shift above. **Second**, many new customer things came fast in use after finished the Second World War. Being the use of these necessary things, the consumption function is shift to up. **Third**, the nature of urbanization is increase after period of the War. The transfer speeds of public from rural areas to urban areas, the consumption function shift up because the nature of consumption of urban labours is more then

workers of field. **Fourth**, after long duration, the population of old age people increases. Though old age people are not earning, but they consume things. To increase them population, the consumption function is shift up.

"According to Absolute income principle, these reason are shift consumption function at level side as necessary to established rational among consumption and income in long period and so it stops to seems like that those seems the non-rational relation only based on income."





Task

Express his ideas on consumption function principle of Keynes.

Absolute income hypothesis presents in **figure 7.4** where  $C_1$  is a long period consumption, as we grow with long period curve then it present the rational relation among consumption and income.

Example, On A and B point of that curve APC and MPC is equal.  $CS_1$  and  $CS_2$  is the short period function. But those reason are describes above, because of that these consumption function are increases up side from A to B point with  $C_1$ . But  $C_1$  and  $C_2$  will not increase the dotted part of consumption function in the same proportion as increase in income. So this part shows the non-rational relation.

**It's Critical Appraisal:** The quality of that principle that it force on all element except income that preset the customer-behaviour. That is not described by Keynes. But the problems are that it non-rational consumption function continues with assumption. As Pro. Shapiro objected, "Now economist feels that basic consumption function are rational its mean to ignores the main principle of absolute hypothesis."

## **Self Assessment**

State whether the following statements are True or False:

- 7. It principle of Keynes proves unsatisfied because it can rationally describe the statistics long period in consumption and income.
- Kuznets studied the data in 1946 of income and consumption of USA in 1869-1938 time periods.
- 9. When income increase then consumption are also increase.
- 10. In consumption function tries to re-define the free component.

## 7.3 Summary

The relation between consumption and income is dependent on Keynes 'Psychological rule
of consumption' it indicates that when income increases then consumption expenses is also
increases but in low quantity. In other words, being increment in income, consumption expenses
are not increase as proportionally.

7.4 Keywords Notes

- Time Series-Moment chain.
- Cross-Section- sample slice.

## 7.5 Review Questions

- 1. What do you understand by the consumption function principle of Keynes?
- 2. What is the meaning of Absolute income hypothesis?
- 3. Critically evaluate the absolute income hypothesis.

## **Answers: Self Assessment**

1. General Theory	2. consumption	3. absolute	4. (a)
5. (a)	6. (a)	7. False	8. True

9. True 10. True.

# 7.6 Further Readings



Books

1. Macroeconomics: Theory and Policy- H. L. Ahuja, S. Chand Publisher, 2010.

# **UNIT-8: Relative Income Hypothesis**

#### Contents

Objectives

Introduction

- 8.1 Relative Income Hypothesis
- 8.2 Relative Income Hypothesis's Criticisms
- 8.3 Summary
- 8.4 Keywords
- 8.5 Review Questions
- 8.6 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the Relative Income Hypothesis,
- Know the criticizes of Relative Income Hypothesis.

### Introduction

**Dussenberry** while describing his principle of consumption function writes, "If we really want to understand the problem of consumer behaviour, then we would 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 neighbour but also to overtake them.

## 8.1 Relative Income Hypothesis

Relative income hypothesis of **James Dussenberry** is based on the rejection of basic assumption of consumption principle of Keynes. **Dussenberry** says that (1) the consumption behaviour of every person is not free but it depends on the behaviour of every other person, and (2) consumption behaviour 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 neighbour 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 the some part of his income for keep his consumption structure. Other side, the APC of poor person is relatively more because he tries to reach till consumption slandered of his neighbours and friends. It is clear the stability of long period APC, because overall shorter and more APC will balance. So, if any country, the relative size of income increased, then the APC of whole economy will stable on high relative level of income.

The second part of **Dussenberry principle**, "the hypothesis of 'past peak of income' that describes the short period ups and down in consumption function and disclaimers the assumption of Keynes

that consumption relation is not permanent. The establishment of that hypothesis is that consumption will increases during the period of prosperity and slowly-slowly it will adjust on more high status. Once when people are reaching on special high status and habitual of that life-status then they did not want to leave his consumption structure during depression. In the words of **Dussenberry**, "In starting for any family in spite of stop more expenses, reduce expenses from high status is tougher. So incomes reduces then consumption also reduces but in low proportion in spite of increment in income, because consumer expenses for consumption. Other side, when income increases during the period of recovery, then consumption increases with the fast increment in saving". It says the economist Ratchet effect.

Notes



Notes

The consumption behaviour of every person is not free but it depends on the behaviour of every other person.

Dussenberry presents as following to mix his both rivalry hypothesis-

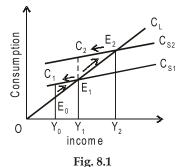
$$\frac{C_t}{Y_t} = a - c \frac{Y_t}{Y_0}$$

### **Self Assessment**

#### Fill in the blanks:

- 1. Relative income hypothesis of James Dussenberry is based on the rejection of basic assumption of consumption principle of......
- 2. The consumption behaviour of every person is not......
- 3. Consumption relation is.....in time.

Where C and Y is serially consumption and income, t is current period, (o) is last maximum status and a is a constant related with positive autonomous consumption and c is consumption function. In that equation, consumption-income ratio  $(C_t/Y_t)$  (= APC) is consider the function of  $Y_t/Y_0$  in current period means the ratio of current income from last maximum income. If that ratio is constant, as happen in increasing income period by stability, then current consumption income ratio is constant. During depression, when current income  $(Y_t)$  fells down from last maximum income status  $(Y_0)$ , then current consumption income ratio  $(C_t/Y_t)$  will increases.



Relative income hypothesis is explained in **figure 7.5** from graphics form where  $C_L$  is long period consumption function and  $C_{s1}$  and  $C_{s2}$  is short period consumption function. Assume that income is on maximum status of  $OY_1$  where consumption is  $E_1Y_1$ . Now income fells and become  $oy_0$ . Because people are habitual of life-status on  $oy_1$  level, so they did not reduce their consumption on  $E_0Y_0$  status, but they reduce their current saving and will reduce their consumption as possible. So, they will reach on  $C_1$  point going backwards on  $Cs_1$  curve and will on  $C_1Y_0$  status of consumption. When recovery duration starts, then income increases and reaches on maximum level  $OY_1$ . But consumption reached on  $C_1$  and  $E_1$  slowly- slowly with  $Cs_1$  curve because consumer will again establish last status of his savings. If income increases and reached on  $OY_2$  status, then consumer will reach on short period consumption

function to upper side  $E_1$  and  $E_2$  with  $C_{S2}$  on  $C_1$  curve. If depression will start once again on  $OY_2$  status of income, then consumption function will falls and go to  $C_2$  point with  $CS_2$  and income reaches on  $OY_1$  status. But during recovery in short period, consumption again will until then increase with long period consumption function  $C_L$  unless it did not reach on short period consumption function  $C_{S2}$ . Its reason is that when income increases with more from its present status  $OY_1$ , then consumption-income ratio (APC) becomes constant in long period. Short period consumption function reaches on  $C_{S1}$  to  $C_{S2}$  to shifting up but consumption long period function reaches to  $E_1$  to  $E_2$  on  $E_3$  on  $E_4$ . But when income is falls then consumers reaches backwards to  $E_2$  to  $E_3$  on  $E_4$  on  $E_4$  on  $E_5$  on  $E_6$  on  $E_7$  on  $E_8$  on



Did You Know?

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

### Self Assessment

### **Multiple Choice Questions:**

4. The preferences of consumers are..... on each other.

(a) dependent

(b) attached

(c) nirasakt

(d) none of these

5. In any two communities, the difference of relative income hypothesis of people is..... the consumption expenses.

(a) restricted

(b) determined

(c) low

(d) high

6. Consumption relation is unchanged in time, and it is not-

(a) Unchanged

(b) Related

(c) Change

(d) None of these

## 8.2 Relative Income Hypothesis's Criticisms

However, the principle of Dussenberry solves the direct opposition between short period and long period study, but there are many drawbacks in that-

- No Proportional Increase in Consumption: The assumption of Relative Income principle
  is that income and consumption are rationally increases. 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 is assuming that consumption and income are directly related. But this thing is not supported on the bases 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 assumption that the distribution of income is approximately unchanged being change on the level of whole income. If income reorganized in more similar side with the increment in income, then the

APC reduce of every persons related with poor and rich family. So, when income increase, then consumption function will not shift up from  $C_{S1}$  to  $C_{S2}$ 

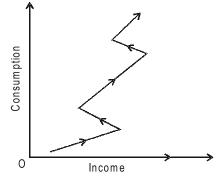
- Notes
- 4. Reversible consumer Behaviour: According to Michal Ivenj, "Consumer behavior is slowly-slowly change not fully unchanged. Then as more time expend from last maximum level, current consumption of last maximum income status will as low effected." If we know it also that how any consumer had 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 bases on assumption that the change in expenditure of consumer is related with his last high income level. This principle is weak according that it neglects the other component that affects the consumer-behaviour like updating new consumer things, changes in age-structure, urbanizations and asset holder.



Task

Express his idea on Relative income Hypothesis.

- **6. Consumer Preferences do not Depend on other:** The unreal assumption of that principle is that consumer preferences is dependent on each other according to it the expenditure
  - of any consumer is related with the consumption structure of his rich neighbour. But it is not always. By the direct study of **Prof. George Katona** get 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 Pro Jackson criticizes the Dussenberry on the bases of their experience prove that the income is recovering after depression it is no because of Ratchet effect but

Fig. 8.2

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 show in **figure 8.2** where consumption status shows with increasing income by arrow as the reverse lightning bolt.

## **Self Assessment**

### State whether the following statements are True or False:

- Though the principle of Dussenberry solves the direct opposition among short period and long period study.
- 8. The relative income assumption is that income and consumption are rationally increased.
- 9. Consumption and income are directly related.
- 10. There is always rational increment in consumption from the increment in income on full employment status.

## 8.3 Summary

The second part of Dussenberry principle, "The hypothesis of 'past peak of income' that
describes the short period ups and down in consumption function and disclaimers the
assumption of Keynes that consumption relation is not permanent. The establishment of that
hypothesis is that consumption will increases during the period of prosperity and slowlyslowly it will adjust on more high status.

## 8.4 Keywords

- Adjust Regulate.
- Recovery improvement.

## 8.5 Review Questions

- 1. What do you understand by the relative income hypothesis?
- 2. Criticized the relative income hypothesis.

### **Answers: Self Assessment**

1. Keynes	2. free	3. unchanged	4. (a)	
5. (b)	6. (c)	7. True	8. True	
9. True	10. False			

## 8.6 Further Readings



Books

- **1. Necessity of Macroeconomics-** *H. S. Nath, Sayber Tech Publications,* 2012.
- **2. Macroeconomics-** *S.K. Chakravarti, Himalaya Publishing House,* 2010.
- **3. Macroeconomics: Economic Growth, Fluctuations and Policy-** *Robert E. Hall and David H. PaiPal, Vaina Books,* 2010.
- **4. Microeconomics: Theory and Policy:** H.L. Ahuja, S. Chand Publisher, 2010.

# UNIT-9: Permanent Income and Life Cycle Hypothesis

Notes

#### Contents

Objectives

Introduction

- 9.1 Permanent Income Hypothesis
- 9.2 Life Cycle Hypothesis
- 9.3 Summary
- 9.4 Keywords
- 9.5 Review Questions
- 9.6 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the Permanent Income Hypothesis,
- Know the Life Cycle Hypothesis.

### Introduction

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

## 9.1 Permanent Income Hypothesis

**Friedman** presented one more solution of direct opposition between the function of rational long period and non-rational short period by the median of his permanent income Hypothesis. Friedman rejected that opinion "current or measured income" decided the consumption expenses and on that place he assume that consumption and expenditure both have two parts — permanent and transitory, like

$$Y_{m} \text{ or } Y = Y_{p} + Y_{t}$$
 ...(1)

$$C = C_p + C_t \qquad ...(2)$$

Where p =permanent, t=transitory, Y= income and C=consumption.

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

Because the measured and current income of consumer is Y, so it can be more or less in any duration from its permanent income. This type of difference in measured income and permanent income are because of transitory part  $(y_t)$ . According to the immediate profit and loss and cyclical change, transitory income can be increases or decreases. If transitory income will be positive because of immediate profit, then measured income will be increased. If due to theft (or because of loss) transitory income will be negative, then fix income will be less then transitory income. Transitory income can be also zero and in that situation measured income will be equals to the permanent income.

### **Self Assessment**

#### Fill in the blanks:

- 1. Friedman rejected that opinion "current or measured income" determines ......
- According to the immediate profit and loss and cyclical change, transitory income can be......

Permanent consumption is the value of these services which planes consumption in any special duration. Measured consumption is also divided in two parts: permanent consumption ( $C_p$ ) and transitory consumption ( $C_p$ ). Measured consumption can be more, less or equals to the permanent consumption that will depend on that thing is transitory consumption is positive, negative or zero. The coefficient (k) of permanent consumption ( $C_p$ ) and permanent income is ( $V_p$ ).

$$C_{\rm p} = k \, Y_{\rm p}$$
 And, 
$$k = f(r, w, u)$$
 So, 
$$C_{\rm p} = k(r, w, u) \, Y_{\rm p}$$
 ...(3)

Where k (coefficient), the function of rate of interest (r), total money and the ratio of assets or non-assets from national income (w), and the consumption nature of consumer (u). So constant is k (=  $C_p$ /  $Y_p$ ) that are free from permanent income. Thus k is the permanent and frontier nature of consumption and APC = MPC.

**Friedman** analyzed that off-setting powers by which that conclusion find out. If interest rate (r) is taken, then it is falling secularly from the decade of 1920 A.D. By it's the value of k increases. But the ratio of assets and non-assets income from national money are long period downfall. By it's the value of k decreases. The nature of consumption is affected by three reasons. **First**, the population of farms (field) downfall fast by which the consumption increased with unbans. So the value of k increased. **Second**, the structure of families reduced. So saving increased so the value of k reduced. **Third**, social security arrangement increased by state government. So the necessity of more saving is finished. So the nature of consumption increased so the value of k increased. The total effect of these portal powers is that consumption increased by ratio of change in the stable income part.

So, According to Friedman, permanent income and consumption are proportionate related.

$$C = kY_{p} \qquad ...(4)$$

Where k is the proportionality coefficient, in which APC and MPC are contained and which depends on above described factors. In other words, it is that proportion of permanent income, which is consumed.

Now we take the permanent income, which Friedman considers on the time series basis that the permanent income depends partly on current income and partly on previous period's income. It can be measured as:

$$Y_{pt} = a Y_t + (1 - a) Y_{t-1}$$
 ...(5)

Where  $Y_{pt}$  = permanent income in current period,  $Y_{t}$  = Current income in current period,  $Y_{t-1}$  = the previous period's income; a = the ratio of change in income between previous period (t - 1) and present period. This equation tells that the permanent income is the sum of income of current period ( $Y_{t}$ ) and previous period's income ( $Y_{t-1}$ ) and the ratio of income change in both ( $Y_{t-1}$ ) and the ratio of income change in both ( $Y_{t-1}$ ) and the ratio of income. For increasing the permanent income, we've to increase the income till many years continuously. Then people will think it as increased.

From the combination of equation (4) and (5), the short-termed and long-termed consumption function can be expressed as following:

$$Ct = KY_{pt} = K a Y_{t} + K (1 - a) Y_{t-1}$$
 ...(6)

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

According to **Friedman**, k and ka are different from each other and k >ka. Then k is equal to 1 approximately and ka is equals to 0 (zero).

Equation (6) tells that consumption depends on previous and current income both. Previous income is so important for consumption that it is helpful to people in future forecasting of income.



Motoc

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 no any correlation between variable and constant income.
- 2. There is no any correlation between variable and constant consumption.
- 3. There is no any correlation between variable consumption and variable income.
- 4. Only the changes in constant income affect the consumption in organized form.

These assumptions show the cross sectional results of Friedman Theory according to which Short-termed consumption function is linear and non-proportional means APC> MPC and contemporary consumption function is linear and proportional, i.e., APC = MPC. Figure 9.1 explains the Friedman constant income approach where  $C_L$  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. Cs1 is a non-proportional short termed consumption function where measured or current income includes both the constant and variable parts, CL and Cs. Both the curves are equal to point E

of OY income level where constant income and measured income are same and therefore constant and measured consumption (YE) are same. The variable factors are not found on point E.

If consumer income becomes  $OY_1$  on increment then he will increase his consumption according to the increment in his income. For this he will move on  $C_S$  curve from E towards  $E_2$  where his measured income in short period in  $OY_1$  and measured consumption is  $Y_1E_2$ . But if  $OY_1$  income becomes constant income level then consumer will accordingly increase his consumption from which his short period consumption function  $C_S$  will move upwards on  $C_{S1}$ 

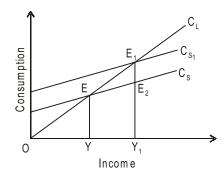


Figure 9.1

**Notes** 

and cut the long duration consumption function  $C_L$  on  $E_1$ . Therefore, consumer will consume  $Y_1E_1$  on constant income level  $OY_1$ .

Friedman constant income principle is similar to cross sectional budgetary data. Long period data shows the proportionate relation between income and consumption. But it is find out by the study of the fluctuation related income by short period balance way that measure income and measure consumption are non-proportionate related.



Did You Know?

Permanent income and consumption are proportionate related.

Its Criticisms- Still there are some drawbacks in this principle-

- 1. Correlation between Temporary Income and Consumption: its assumption of Friedman is unrealistic that in the temporary part of consumption and income are not related. The mean of that assumption that when the measure income of family is increases or decreases, then his consumption neither increase nor decrease, because accordingly he neither save nor spends. But this thing is apposite to real consumer behaviour. 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 person lost his wallet, then he will not go to bank for money for fulfill his need, but he will ignored or cut his present consumption.
- 2. APC of all Income Groups not Equal: The rule of Friedman says that APC is equals 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 did not save more income as more income holder. It's not only one reason that their income is low but it is also that they will prefer to present consumption expect to future consumption for fulfill their left need. So, the savings of low income is low relatively to their income but the savings of more income families more relatively 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 use that words in his principle 'Permanent', 'Temporary' and 'measured', it untangle that principle. the perception of measured income one side improperly find by permanent and temporary income and other side by permanent and temporary consumption improperly.
- 4. No Distinction between Human and Non-Human Wealth: The more deflect of permanent income principle is that Friedman did not do distinction between Human and Non-Human wealth and the experiential analysis of his principle, it is mix in one dictionary gets income by both. Despite of these deflect, in the words of Michal Ivenz, "It can be appositely says that certification is the supporter of this principle that by the replacement of Friedman the research of consumption gets new way and new side."

#### Self Assessment

#### **Multiple Choice Questions:**

3. If due to profit, temporary income is positive, then measured income increases by ...... income.

(a) permanent

(b) temerity

(c) cost

(d) none of these

4. Temporary income can be-

(a) More

(b) Zero

(c) Less

(d) None of these

According to Friedman, the relation between permanent income and consumption is-

**Notes** 

(a) Rational

(b) Positive

(c) Permanent

- (d) Temporary
- According to Friedman, k and Ka are ..... from each other.
  - (a) similar

(b) different

(c) important

(d) none of these

#### 9.2 Life Cycle Hypothesis

Ando-Modiglyani started the life cycle of consumption. According to him, consumption is depending on the anticipated income of any consumer. The consumption of a personal consumer is depend on that thing that what is the available resources, what is rate of return on capital, what is the plan of spend, and in which age that plan make. In the present value of his income involve the income find from money or asset and find from current or expected.

Its Assumption: Life cycle principle is depend on following assumption:

- There is no change in the price level of consumer lifetime. 1.
- 2. The rate of interest is constant.
- 3. Consumers are not found any assets in heritage and their nibble assets are the result of their

The aim of a consumer keeps their need maximum in their life time, which further will depend on the thing that how much available sources and total income in their time. When the life duration of a person is giving then their consumption and sources are in ratio. But the plan he makes to spend his sources (income) the law is that in starting years his income increased, in the middle years his income high and at the time retirement his income becomes low. Therefore, he will dissave or less saving and consume more in pubertal, more save and less consume in middle age and then consume more than his income on dissaving in old age. Resultantly, his consumption level is increasing and constant in whole life, it shows in figure 9.2 by CC₁ curve.

 $Y_0YY_1$  curve show the income flow of that personal consumer in T time period. In the starting duration of his life, this shows in figure by T₁, he borrows CY₀ B quantity of currency for make his consumption level CB that is simple. In the middle years of his life, this shows by T₁T₂, he save the BYS quantity of currency for future and to pay his borrowings. In the last years of his life, which show by T, T, it spends the SC₁Y₁ quantity.

According to this principle, consumption is the function of anticipated income in the life duration of any consumer which depends on his sources. In some sources his current income  $(Y_{\perp})$ , present value of future anticipated labour income  $(Y_{\perp}^{e})$  and present value of assets (A_i) are involved.

Consumption function is shows like that:

$$C_{t} = f(V_{t}) \qquad \dots (1)$$

Where  $V_{t}$  = total sources on time t.

 $A_{i}$  = price on t duration of assets.

Further, 
$$V_t = f(Y_t + Y_{Lt}^e + A_t)$$
 ...(2

...(2) Here  $Y_{i}$  = current income;  $Y_{i}^{e}$  =Present value of future expected labour income in period t; and

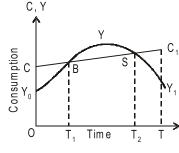


Figure 9.2

Replace the equation (2) in (1) and make linear (2), and weighted average of different income divisions, total consumption function is-

$$C_t = a_1 Y_t + a_2 Y_L^e + a_3 A_t$$
 ...(3)

Here,  $a_1$  = MPC of current income;  $a_2$  = MPC of anticipated labour income; and  $a_3$  = MPC of assets, now APC is,

$$\frac{C_{t}}{Y_{t}}a_{1} + a_{2}\frac{Y_{L}^{e}}{Y_{t}} + a_{3}\frac{A_{t}}{Y_{t}}$$

APC is constant in over time or long period because in current income, the ratio of the part of labour income and total assets of current income is constant, when economics increased.

On the bases of life cycle principle, Ando and Modigliani studied for creating the short duration and long duration consumption function. It is finding out by the oblique hole that in the low income division many people were low income level because they were in the last duration of his life. So them APC was more. Other side, high income division related person were mostly on high income

level because they was in middle years on their life. Therefore, them APC was relatively les. In that respect, as income increases as APC was decreases it told that APC > MPC. It find out by the inspection of America related data that APC = 0.7 was constant in long duration.

Ando-Modigliani consumption function shows in **figure 9.3** by  $C_{\rm S}$  curve.  $C_{\rm S}$  curve can consider constant on any given point of time, and during the short period fluctuations, when assets is constant, this function is seems like Keynes consumption function. Its intercept changes according to the collection of assets by the median of savings, and  $C_{\rm S}$  shift upward and become  $C_{\rm S}$  with time. Long duration consumption function is  $C_{\rm I}$  which shows that when income increases

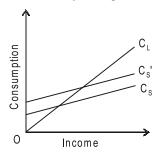


Figure 9.2

then APC is constant. It is a simple line which passes on origin point. APC remains constant throughout the life because when economics increases then labour-income part of total income and the ratio of assets from total income remain constant.



Task

Express your idea on the life cycle hypothesis.

**Its Criticism-** There is some limits of life cycle principle.

- 1. Plan for Lifetime Consumption Unrealistic: It is the statement of Ando-Modigliani is that consumer planed 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: Life-cycle principle already consider that consumption is directly related to assets of person. As assets increases as their consumption increases and consumption decreases on the decrement of assets. It is also necessary because it may be that person reduces his consumption for increase the asset.
- **3.** Consumption Dependent on Attitude towards Life: Consumption depends on the view point of the life of person. Being given the same income and asset, one person can more consume expect of other.
- **4. Consumer not Rational and Knowledgeable:** This landscape is depend on that hypothesis that consumer is full prudent and he has full knowledge about his income and life. It realistic to being rational and prudent of any consumer.

5. Many Variables: This principle is depend 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. Despite these things, life-cycle principle is great from those all Theories, that are already described, because there are involve only assets as variable within consumption function, and it also clear that thing that why MPC < APC in short duration and APC remain constant.

Notes

#### Self Assessment

### State whether the following statements are True or False:

- This hypothesis of Friedman is unrealistic that the temporary parts of consumption and income have no any relation.
- 7. The principle of Friedman says that the APC of poor and rich are not same in long period.
- 8. The permanent income principle of Friedman is according to oblique hole budget.
- 9. Ando-Modigliani started the life cycle hypothesis of consumption.

## 9.3 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 is find out by
the study of the fluctuation related income by short period balance way that measure income
and measure consumption are non-proportionate related.

## 9.4 Keywords

- Earner one who earns money.
- Over time—long period.

### 9.5 Review Questions

- 1. What do you understand by the permanent income hypothesis?
- 2. What do you know about life cycle hypothesis?
- 3. What are the assumptions of life cycle principle?

## **Answers: Self Assessment**

1. consumption expenses	2. increment or decrement	3. (a)	4. (b)
5. (a)	6. (b)	7. True,	8. False
9 True	10. True		

## 9.6 Further Readings



Rooks

- **1. Macroeconomics: Economic Growth, Fluctuations and Policy** H. Paipal. Robert E. Hall and David
- 2. Macroeconomics: Theory and Policy H. L. Ahuja, S. Chand Publisher, 2010.
- **3.** The Necessity of Macroeconomics H. S. Nath, Sayber Tech Publisher 2012.

## **UNIT-10: Investment Function**

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- 10.1 Investment
- 10.2 Marginal Efficiency of Capital
- 10.3 MEC and Rate of Interest
- 10.4 Investment Demand Curve
- 10.5 Summary
- 10.6 Keywords
- 10.7 Review Questions
- 10.8 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- · Study of investment,
- Know the Marginal Efficiency of Capital,
- Know the investment demand curve.

### Introduction

Besides the consumption function of last chapter, investment function is the second important decider of collective demand. Investment function is also related to national income of economics like consumption function, as show in figure 10.1. In mathematical form I=f(Y). In the analysis of Keynes, consumption function is considered constant in short period. So, investment function becomes main decider of income, production and employment level in economics. It is, not for Keynes and the theorist after Keynes, but also truth for the trade customer theorist before Keynes.

### 10.1 Investment

The mean of investment is that part of collective production, which can become the form of new plant and capital instrument, new structure and new trade goods. Investment can be divided on different bases.

## 1. Gross Investment and net Investment

Gross investment is mention the change in new permanent capital property (like House, instrument and industries etc) and material tables (like raw materials, non-saleable) in a certain time period. Gross investment can be show signally like that-

$$\Delta K_t$$
 or  $I_t = K_t - K_0$ 

Here,  $\Delta K_t$  is the change in capital stock in certain time period t, the mean of  $K_t$  is the capital stock in last of duration t ko is capital stock in beginning duration. It is known gross investment in the last of duration t.

It is not necessary that the gross investment done in capital investment in economy, because one part of new capital will necessary for the establishment of depreciated capital stock. The expenditure on the establishment of depreciated capital during year is known as replacement investment. It is important for maintain the present stock. So, net investment can get to subtract capital investment and replacement investment from gross investment. In other words, to get the net investment, the amount of present total structure and producers invested in producing the production of period and durable equipment are subtracted from gross investment. Briefly,

net investment = gross investment - replacement investment

Or pure investment = net investment + replacement investment.

When gross investment is only sufficient for keep the capital stock intact, then net investment is equals to the zero. Here gross investment is similar with the amount of capital to spend during period. But when economy is in the grip of recession, new investment symptoms is disappoint. The stock of non-saleable goods are collect in the environment of recession and investor becomes reluctant to take loss for the establishment of depreciating capital equipment. When resolution investment is less then the replacement necessity, then its difference is disinvestment. It shows the reduction in the stock of capital net investment is only possible, when gross investment is more than the replacement investment. net investment is not only the stopper for development, but it put economy to recession, so people become handle more tremendous strain.

### 2. Financial Investment and Real Investment

Financial investment means devaluate the authority form one person to another. By this real capital stock of economy is not increase. For example, bank deposit, home by one person, present shares, debentures, and bonds are not generating some thing new. In it only involve the devolution of the authority from one person to another, but total capital of economics is unchanged. When one buyer invested, then other is disinvested. Investor gets some returns by this investment. But, there is no investment for economies.



Notes

When gross investment is only sufficient for keep the capital stock intact, then net investment is equals to the zero.

Apposite it, real investment created more production capacity in economy. The construction of new industry and workshop are the examples of real investment. That work of investment is not only important for that, but also important for economy. Keynes used that investment in national income analysis. It is important for attention that when one person purchases new shares of a company, then different investment will be the indicator of real investment.

## 3. Planned Investment and Unplanned Investment

Investment is known as planned and intended investment, which inspired the deliberate for expand the present stock by the establishment of an extra instrument or increment in the materials tables. It

can be inspired by the condition of favourable market or heavy sells. Entrepreneurs are thought about its investment according to certain time period or decide objective.

Apposite it, unplanned investment is the forced investment of entrepreneurs. It happens, when some non-saleable goods are collect because of short sells.

It is not necessary that realized investment is equals to the planned investment. Realized investment is equals to the addition of planned or unplanned investment. When unplanned investment is equals to zero, then realized investment is equals to the planned investment. Briefly,

Realized investment = planned investment + unplanned investment

## 4. Induced Investment and Autonomous Investment

The classifications of investment in induced and autonomous investment are important in corporate economic analysis. Investment that is dependent on the profit expectation of entrepreneur called induced investment. When entrepreneur hopes the fast sells of produced goods with the help of capital goods, then they generate those capital goods or bring. That prediction is depending on the level of income and effective demand of customer. The level of employment is increase with the increment in the level of income and so the demand of customer goods is increased. That positive functional relation between income and investment is show in figure 10.1 by article.

In this figure, income is represented on X- axis and investment is represented on Y-axis. The level of investment is increase  $Y_1I_1$  to  $Y_2I_2$  according to the

increment from  ${\rm OY}_1$  to  ${\rm OY}_2$  in income. So induced investment income is elastic. The level of income is such high, investment will more. Besides the income, induced is depend on innovations, government policies, integration and structure of popularity.

Autonomous investment is not effected by the level of income and rate of interest. Mostly investment of population services (like railways, road, light, post and wire) by government is related to that category and division, since the investment of government is not inspire by the only decisional profit or loss. Apposite it, self investment autonomous is not more important. Autonomous investment is flexible for interest; its curve is parallel to X-axis. It shows in **figure 10.2** by dotted lines, which shows that the quantity investment

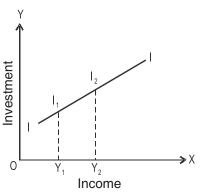


Figure 10.1: Induced Investment

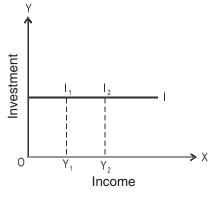


Figure 10.2: Autonomus Investment

is similar on every level of income. Its curve is shifts to upward on the bases of change in technique, search new resources, increment in population and budget allotment for investment. Collective investment can get to add the induced and autonomous investment.



Did You Know?

Consumption function is considers constant in short period in the analysis of Keynes.

Political stability is increase the autonomous and induced investment with direct foreign investment. The difference between induced and autonomous investment are explain in following table 10.1.

Notes

	Table 10.1: Difference between Induced and Autonomous investment			
Base	Induced investment	Autonomous Investment		
Profit	It depends on the profit expectations of entrepreneurs.	It did not depend on profit.		
Income flexibility	The level of induced investment increase by the increment in the level of income and it is also truth vice versa that in other words, it is flexible for income. By its become the positive shield of curve.	Autonomous investment is ineffective by the change in of income level. In other words, it is totally income flexible. Its figure is parallel to X-axis.		
field	Induced investment do in self investment in the form of normal field or self investment, that are depend on the market rate of interest and marginal efficiency.	Mostly investment as popular investment by government is autonomous investment which is inspired by public welfare.		
Element	Besides the income, induced investment is depending on innovations, government policies, integration and structure of popularity. Political situation are also effected the induced investment. The instability of government can do a great destruction.	Autonomous investment is depending on the social, economic and political situation of country. Its curve is shifts to upward on the bases of change in technique, search new resources, increment in population and budget allotment for investment.		

## 5. Private Investment and Public investment

One more important classification of investment, on that bases who is investing, can possible in public investment and self investment. Now, the big part of total investment in capital economies is doing by government. Investment is effective by political and social ideas in public field. Government normally invested in the services of profits, loss, concession and free project like schools, colleges, hospitals, roads, electricity, gas, water, travel and house for population. That investment is for purchasing the capital things by public officers like central government, state government, local officers and public corporations. The profit presenting services are also affected by welfare of society.

In the situation of public investment, the comparison of proceeds of project with their investment cost is not possible. Public investment decision to select the mostly profitable projects in different project is based on cost-benefit analysis. For that object, we will heave to decide the social profit and social cost

of presented investment. The mean of social profit is the total satisfaction by the whole society, which are not fully presented in receipts by entrepreneur. For example the housing facility of government is more by the social profit, receipts by the teachers of university. Like that, social cost by society from air, water and sound pollution is not ignorable at the time of evaluate real cost of public investment because of the public field entrepreneurs. Public investment is inspired by the social welfare, but self investment inspires by profit on purchasing the capital goods like instrument, plant, industries, offices, store and shop. Entrepreneurs are invested whenever they expected a satisfied return by the projects. Marginal efficiency of capital is decided to meet the required income and its purchase price by the capital property. Investment is profitable whenever the marginal efficiency of capital is more than the investment rate of market. Now we explain that how it is happen.

### Self Assessment

#### Fill in the blanks:

- The mean of investment is that part of collective production, which can become the form of new......
- 2. New investment symptoms is.....

## 10.2 Marginal Efficiency of Capital

According to **Keynes**, the investment in new project is depending on the marginal efficiency of capital and interest rate of market. And the marginal efficiency of capital is decide by the anticipated receipts or profit from the capital property and fulfillment value of capital property.

## **Supply Price of Capital Asset**

When entrepreneurs want to purchase a capital property, then he will pay for those. Its price is says the purchase price of capital thing. Keynes says the establishment cost or supply price of capital property to the cost of property acquisition. It is that price on which new capital property are establish or available. It is possible that the spread-over of total supply of property is spread many years, especially in construction related services. Resultantly, total cost of entrepreneurs is separate from required price. But, that situation is not considered for make simple to present analysis. Besides that, the disposal value of property considers zero.

## **Prospective Yields from Capital Assets**

Prospective yields from capital asset or Expected wealth from income stream is the difference between the sale from production and variable cost during the lifetime. Variable or prevailing cost is the expenditures on raw materials, labours, advertisement, keep and travel.

Every entrepreneur whose decide to purchase new instrument and construct new industry, firstly think about the prospective receipts of assets. Whole capital properties are continuing to long time period and their receipts are spread many years in future. What will be in future, its prediction is more important. The uncertainty in returns of future is because of the uncertainty in goods price and productivity of capital property. If the physical life of property is known, then it is thought to know their economic life because of the possibility of technical changes. Resultantly, before depletion physically the thing is old or obsolete. So, entrepreneur measures carefully its life and income flow in the life duration of capital property.

It is clear from above description that supply price is present cost of asset, but prospective receipts are the future returns of property. The receipts spread in economic life of capital property should be make equivalent to its supply price because future receipts are less costly from the similar present price. Entrepreneurs can not differentiate the block expenditure of future and present receipts on new investment.

**Keynes** used the 'Annual' word for required annual net return during its life period. On every annual it is far from present such years, the present price of these annual can found by discount. The measurement of compound interest is used in apposite side for discount.

If one capital price P is gives on compound interest for n years, it will becomes A value to collect. So  $A = P(1 + r)^n$ . Where r is the rate of interest. In other words, if A, r and n are known, then the value of P is gives as  $P = A(1 + r)^n$ . Here, future income or returns A can be understand discounted equals to A. Its formula is used to get present value of get income after a certain time period. Like that, if future or present cost is given, then we consider the discount rate. For example, if one firm purchase a capital logistic in 1, 00,000 rupees, by that after two month it hopes to get 1,21,000 rupees then annual income can be consider by that formula. Here

$$1,00,000 = \frac{1,21,000}{(1+r)^2}$$
$$1+r = \sqrt{\frac{1,21,000}{1,00,000}} = 1.1$$
$$r = 0.10 = 10\%$$

Receivings in real life gets continuously in the life of capital assets. Let, the series of required future receiving is  $A_1$ ,  $A_2$ ,  $A_3$ , ....... $A_n$ , here it is the sign of Hereunder the year.  $P_1$ ,  $P_2$ ,  $P_3$ , .....,  $P_n$  are its present price. The total present price of required annual future reciepts are  $P_1 + P_2 + P_3 + ...$ ,  $P_n$ . Or

PV = 
$$\frac{A_1}{(1+r)} + \frac{A_2}{(1+r)^2} + \dots \frac{A_n}{(1+r)^n}$$

Here, PV means the total discounted present price of future flow of required income and the investment in capital assets.

$$\frac{A_1}{\left(1+r\right)'}, \frac{A_2}{\left(1+r\right)^2}, \frac{A_3}{\left(1+r\right)^3}, \dots, \frac{A_n}{\left(1+r\right)^n}$$

These items are presents the present price of acceptable of required income flow of first year, second year, third year and the last nth year.

Now, there is an important question that should be involved or not in investment projects. If the cost of capital goods is less than the present value of receipts, investment project is beneficial. But, If the investment on goods is more than the income, then should not involve the investment. When both are only equals, then investment become the subjects of indifference.

### Illustration

A 5 years economic life instrument provides the 1,000 rupees. Its present cost is 35,000 rupees and market rate of interest is 12%. Is it profitable to invest in that instrument?

#### Solution:

Present value of required receipts

Notes

PV = 
$$\frac{A_1}{(1+r)} + \frac{A_2}{(1+r)^2} + \frac{A_3}{(1+r)^3} + \frac{A_4}{(1+r)^4} + \frac{A_5}{(1+r)^5}$$
  
=  $\frac{1,000}{(1+0.12)} + \frac{1,000}{(1+0.12)^2} + \frac{1,000}{(1+0.12)^3} + \frac{1,000}{(1+0.12)^4} + \frac{1,000}{(1+0.12)^5}$   
=  $\frac{1,000}{(1.12)} + \frac{1,000}{(1.12)^2} + \frac{1,000}{(1.12)^3} + \frac{1,000}{(1.12)^4} + \frac{1,000}{(1.12)^5}$   
= 892.86 +797.20 +711.78 + 635.52 + 567.43  
= 3,604.79 rupees

It is clear, rupees 3604.79 (present value)>3500 rupees (present cost)

An alternate approach can be used by investor, under which the related rate of return (i) is found and it is compared to market rate of interest (r), on which the loanable funds are available for purchasing that asset. To estimate the relative rate of return, all expected receipts are so discounted perfectly that their total current price becomes exactly equal to replacement rate. This discount rate which makes the total current price of expected annual income series in its life time from capital asset equal to capital price of the asset is called as Marginal Efficiency of Capital. In following formula, (i) is the Marginal Efficiency of Capital.

$$C = \frac{A_1}{(1+i)} + \frac{A_1}{(1+i)^2} + \frac{A_1}{(1+i)^3} + \dots + \frac{A_n}{(1+i)^3}$$

### **Self Assessment**

#### **Multiple Choice Questions:**

The mean of financial investment is the right of...... from one person to another. (b) non-transfer (a) transfer (c) expenditure (d) none of These. When a buyer is investing, the other (seller) is..... (b) disinvestment (a) investment (c) sell (d) buy Investment is called hold or ..... investment. (a) minimum (b) maximum (c) intended (d) none of These. Unplanned investment is ...... from entrepreneur's side. (a) constrain Investment (b) divestment (c) structured investment (d) none of these.

## 10.3 MEC and Rate of Interest

Notes

The Marginal Efficiency of Capital of a special capital asset can be known on relating the expected receipts of asset with its supply price. The Marginal Efficiency of Capital of an asset shows what the entrepreneur expects to acquire in comparison to the payment from an extra asset of that type. It is the internal rate of return on that asset. Because the estimation MEC is dependent on the future forecasting, this is a very subjective and indefinite quantity. Generally profit becomes from investing, until this relative rate of return from capital asset is more than the market rate of interest. It is described following.

When an entrepreneur decides to invest in any capital good, he either borrow fund from the market, or arranges the finance on using his own sources for investment plan. In first condition, he has to pay the interest rate of market while in second condition he rejects that interest, which he could get on lending these funds. In any of the condition, interest is the price of investment. Entrepreneur compares this price of investment with the income (or profit) from investment in the form of relative rate of return or with Marginal Efficiency of Capital. If the Marginal Efficiency of Capital (i) is less than market rate of interest (r), to start the plan is beneficial, though entrepreneur had to borrow on market rate of interest of fully or partially important funds. On the other side, if the Marginal Efficiency of Capital is less than market rate of interest, then the investment plan is not beneficial. In this situation, entrepreneur should lend the available funds on market rate of interest. For example, if the Marginal Efficiency of Capital (MEC) is 10% and market rate of current interest is 8%, then on provisioning of all costs as the interest cost of funds and the depreciation cost of asset, investment gives the net return of 2%. But, if interest rate becomes 12% then prospective investor should not start the plan because the net rate of return is -2%. Therefore, the net return is the difference between Marginal Efficiency of Capital and market rate of interest.

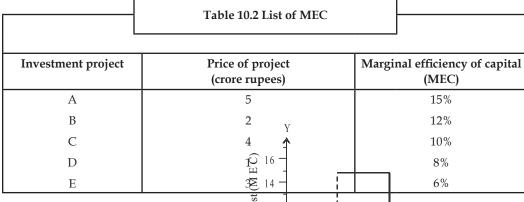
It is very must to see that the Marginal Efficiency of Capital (MEC) doesn't depend on market rate of interest anyhow for any capital asset. Once on estimating the Marginal Efficiency of Capital, the market rate of interest only shows is the proposed investment plan beneficial, when the Marginal Efficiency of Capital is compared with this rate. There would be no effect on Marginal Efficiency of Capital (MEC) from the change in rate of interest (r). But, if before the rise in the rate of interest, it becomes lower than Marginal Efficiency of Capital and rate of interest becomes more than Marginal Efficiency of Capital after increasing, which investment plan was seemed as beneficial previously, now seemed as unbeneficial. Therefore, the rise in the market rate of interest reduces the relative profitability of capital goods and till here changes it in the relative loss and vice-versa.

### **MEC Schedule**

On a definite time, a firm has to face the different kinds of investment opportunities. Some of these for the change in investment technique, while other become necessary for the expansion in production units. The decision to put the investment expenditure for each possible plan is done on the basis of the Marginal Efficiency of their Capital and market rate of interest. Firm will select those investment plans, for which the Marginal Efficiency of Capital (MEC) is more than the market rate of interest (r). Firm is expected to select the different plans in the decreasing order of its Marginal Efficiency of Capital, because firms are aimed to make the return maximum. So, according to availability of funds and market rate of interest, the Marginal Efficiency of Capital list is made on classifying the investment opportunities in the decreasing order of its Marginal Efficiency of Capital. It can be understood with the help of following Marginal Efficiency of Capital list, where 5 plans which a firm starts, are classified in the decreasing order of its Marginal Efficiency of Capital. (Table 4.1)

We see that the list of marginal efficiency of capital shows the relation of alternative levels of MEC investment of personal firms. If market rate of interest is 13%, then first project of 5 crores is profitable.

When the rate of interest is fall and become 9%, then firm consider profitable the three projects of 11, crores. More investment will increase the total quantity of capital clearly. Let, in starting firm have 20 crores starting stock. On the 13% interest rate, total capital stock becomes 25 crores and then becomes 31 crores, when the rate of interest falls 9%. Firms did not start any new project, whenever the rate of interest is not fall.



In figure 10.3, these five future projects are classified in decreasing order of profit. The dark line of that figure represents the list of marginal efficiency of capital of personal firms. So, the list of marginal efficiency of capital of personal firms are continues in steps. If think about the list of marginal efficiency of capital of all firms, then we will get infinite investment projects. When it represent in a figure, then it is a smooth curve because of group process.

In **figure 10.4**, marginal efficiency of capital curve show the possible level of investment of different values of marginal efficiency of capital. Marginal efficiency of capital is shielding at downward, shows the negative relation between the marginal efficiency of capital and level of investment. When the level of investment increased from  $I_0$  to  $I_1$ , the marginal efficiency of capital is fall from (MEC)  $i_0$  to  $i_1$ .

There are two reasons of apposite relation between marginal efficiency of capital or investment. First, marginal productivity of capital property is less because of the affect of diminishing effects. Second side, the price of things reduces because of the increment in production. So required returns become reduce. Second, when real capital stock increased, then its supply prices will increased because of the increment demand of property.

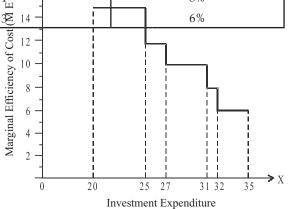


Figure 10.3 List of marginal efficiency of capital

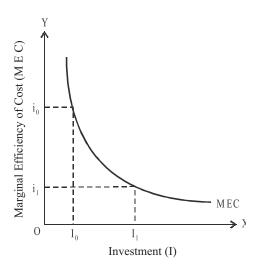
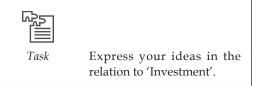


Figure 10.4: Marginal efficiency curve of capital



Marginal efficiency curve can be shift by the change of expectation of investor. The hopeful nature of businessman will shift marginal efficiency of capital curve to upward relate to required returns by capital property. That type shifting? in marginal efficiency of capital show in figure 10.5.

We see that for the same value of marginal efficiency of capital, because of presence of optimum, the more investment is available on curve MEC₂. For example the decrement in income tax and corporation tax are inspired to entrepreneurs for shifting upward their

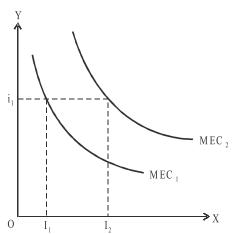


Figure 10.5: Shifting of MFC curve

investment projects. So entrepreneurs will favourably correct the techniques. Apposite it, if depression involved, anticipated return falls low level on capital and MEC curve will shift downward. Except it, for example, the fall in income because of labour deduction and the fall in the demand of goods and services will push the MEC curve downward. Direct taxes can also reduce the investment demand.  $S_o$  we see that the marginal efficiency of capital, on which investment demand depend, are effected by the government policy, technical element, business situation etc, that are unpredictable.

### 10.4 Investment Demand Curve

It is above clear that firms invested until the marginal efficiency of capital is not being equals to the market rate of interest. So for the list of certain marginal efficiency of capital, the level of investment demand is decided by the rate of interest. The value of marginal efficiency of capital is being established by the market rate of interest, we get the list of investment demand and investment demand curve. In **figure 10.6**, investment is presents investment demand to address to different levels of interest.

According to the imaginary marginal efficiency of capital list is show in that chapter, marginal efficiency of capital is 15% on the 25 crores investment. It can be conclude that 25 crores investment available on 15% rate of interest, because

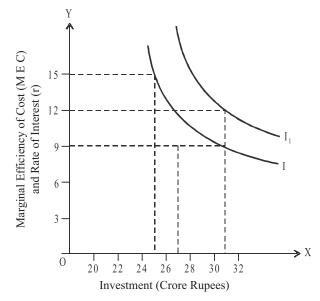


Figure 10.6: Investment Demand Curve

marginal efficiency of capital (MEC) will equals to rate of interest (r) on only that investment level. So, when the rate of interest fall 12%, investment increased 27 corers. On 12% rate of interest  $I_1 = r_2$ .

**Notes** 

Except it, on the 1% rate of interest  $I_3 = r_3$  or investment increased to 31 crores and continue. So the conclusion is that investment demand curve is downward similar as MEC curve.

Investment demand curve show the apposite relation between investment and rate of interest, it shifts by that reasons, by which MEC change. On certain rate of interest, the level of interest will increase to upward the investment demand curve and will reduce on downward. In **figure 10.6**, the rate of interest like the level of interest will be 27 crores favorable on r = 12%. When investment demand curve is upwards, marginal efficiency of capital on 12% is more than the 10% rate of interest on that level of investment. Resultantly, investment becomes 31 crores, so the marginal efficiency falls and become 10%, which are equals to the rate of interest.

## 10.5 Summary

It is not necessary that the gross investment done in capital investment in economy, because
one part of new capital will necessary for the establishment of depreciated capital stock. The
expenditure on the establishment of depreciated capital during year is known as replacement
investment.

## 10.6 Keywords

- Investment Input in the market. Land and money.
- Capital Assets

## 10.7 Review Questions

- 1. What do you mean by investment?
- 2. What is the mean of marginal efficiency of capital?
- 3. Define the marginal efficiency of capital and interest rate.
- 4. Write note on 'investment demand curve,

### **Answers: Self Assessment**

1. plant 2. disappointed 3. (a) 4. (b) 5. (c) 6. (a)

## 10.8 Further Readings



- Books
- 1. Macroeconomics S. K. Chakravarti, Himalaya Publishing house, 2010.
- **2. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E. Hall and David H. PaiPal, Vaina books,* 2010.
- **3. Macroeconomics: Theory and Policy** *H. L. Ahuja, S. Chand publisher,* 2010.

# **Unit-11: The Theory of Acceleration**

**Notes** 

#### Contents

Objectives

Introduction

- 11.1 The Theory of Acceleration
- 11.2 Role of Accelerator as a Theory of Investment
- 11.3 Summary
- 11.4 Keywords
- 11.5 Review Questions
- 11.6 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- · Know the theory of Acceleration,
- Know the investment theory of Accelerator.

#### Introduction

**T. N. Carver** was the first economist who's understood the relation between consumption and future investment in 1903. But **Aftalion** analyzed that principle in 1909. **J. M. Clark** used this name 'A theory of Acceleration' first time in economics in 1917. Then Hicks, Samyulasan and Goodwin developed by business cycle.

## 11.1 The Theory of Acceleration

The Theory of Acceleration is based on facts that the demand of capital things is derived from the demand of those consumption things, which are helpful in that output. A theory of Acceleration clears that process by which the investment of capital things increased or decreased by the increment or decrement in the demand of consumption things. According to **Kurihara**, "Accelerator coefficient is the ratio of Induced investment and consumption expenses between the starting changes."

In formula form,  $\beta = \Delta I_t/\Delta C_t$  or  $\Delta/I_t = \beta \Delta C_v$ , where  $\beta$  is an Accelerator coefficient,  $\Delta I_t$  is the net change in investment and  $C_t$  is the net change in consumption expenses. If 30 crores investment is increased by the increment in the 10 crores consumption expense, then 3 is the accelerator coefficient. **Hicks** more describes the theory of Acceleration that it is the ratio of change which happens by induced investment in production. So accelerator  $V = \Delta I_t/\Delta Y_t$  or capital production ratio. It is depend on the change in investment ( $\Delta I_t$ ) and related change ( $\Delta Y_t$ ) in production. It shows that demand for capital things are not only creates by consumption things but by any direct demand of national production. In both descriptions  $\beta$  and  $\nu$  are equals.

### Notes Self Assessment

Fill in the blanks:

- 1. .....used this name 'A theory of Acceleration' first time in economics in 1917.
- 2. Accelerator coefficient is the......of Induced investment and consumption expenses between the starting changes.

In economics, desired stock of capital is depending on the change in demand of production. Capital stock will change by any change in production. Further its change is equals to the v time's change in production. So  $\Delta I_t = v\Delta Y_{t'}$  where v is accelerator. If the price if one machine is 4 lacks rupees and it produced 1 lacks production, the value of v is 4. An entrepreneur whose want to increase his production 1 lack rupees per years and he should be invested 4 lacks rupees on this machine. It is also applied on a economy equally where if the value of accelerator is more than one then production want more capital per unit, so net investment (it is because of the increment of production) is more increased. Gross investment is equals in economy, replacement investment + net investment. Being constant the replacement investment, gross investment will change according to every level of production.

The theory of Acceleration can be show by the following equations of **Brooman:** 

$$\begin{split} I_{gt} &= \nu \left( Y_{t} - Y_{t-1} \right) + R \\ &= \nu \Delta Y_{t} + R \end{split}$$

Where  $I_{gt}$  is the gross investment in t period, v is accelerator;  $Y_{t}$  is the national production in period t,  $Y_{t-1}$  is the national production in last period (t – 1), and R is the replacement investment.

Equation tells that in the period of time t induced investment depend on deference of multiply accelerator (v) on production time from t - 1 to t plus replacement investment (R).

For find out the net investment  $(I_n)$ , R is removed from both sides of equations so there is net investment in t period:

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

This equation is only  $\Delta I = v\Delta Y$  because if  $\Delta Y = Y_t - Y_{t-1}$  is  $Y_t > Y_{t-1}$  then net investment is positive during t period. Other side, if  $Y_t < Y_{t-1}$  then future investment is negative or disinvestment during t period.



Notes

J. M. Clark used this name 'A Theory of Acceleration' first time in economics in 1917.

### **Its Assumptions**

The theory of Acceleration is based on following assumption-

- 1. It considers the constant capital-production ratio.
- 2. It considers that resources are available easily.
- 3. Plants have not any extra or passive efficiency.
- 4. It is considers that increasing demand is constant.
- 5. It is also assumption that the supply of capital and credit is flexible.
- 6. Net investment is fast increase the increment in production.
- 7. There are no any differences between desired capital stock and actual capital stock.

## Operation of the Acceleration Principle

Notes

Operation of the Acceleration Principle is explained by the help of example given in table.

	Oprati	on of the Acc	eleration Principle v	= 4	
Duration	Total	Desired	Replecement	net	Induced
in year	production	Capital	investment	investment	investment
	(Y)		(R)	(In)	(lg)
(1)	(2)	(3)	(4)	+(5)	= (6)
t	100	400	40	0	40
t + 1	100	400	40	0	40
t + 2	105	420	40	20	60
t + 3	115	460	40	40	80
t + 4	130	520	40	60	100
t + 5	140	560	40	40	80
t + 6	145	580	40	20	60
t + 7	140	560	40	-20	20
t + 8	130	520	40	<b>-4</b> 0	0
t + 9	125	500	40	-20	20



Did You Know?

T. N. Carver was the first economist who's understood the relation between consumption and net investment in 1903.

The time period of from table t to t + 9 shows the changes in total production, capital stock, net investment and induced investment. Assuming the acceleration value v = 4, the desired capital stock is four times product in every time as shown in column (3). The replacement investment is considered as 10 times of capital stock in time t which is shown 40 crores rupees in every period. In column (5),net investment is v times of the change in the production in a period and its previous period. For example, in time period t + 3, the pure investment = v ( $Y_{t+3} - Y_{t+2}$ ) or 40 = 4 (115 – 105). It means that on giving acceleration value 4, on increasing of 10 crores rupees in the final production, there is an increment of 40 crores rupees in demands of capital goods. Resultantly, the total demand of capital goods become 80 crores rupees (Column 6) after increment which is gotten from the sum of replacement investment of 40 crores rupees (Column 4) and net investment of 40 crores rupees (Column 5). The net investment remains positive until the demand of final goods (Production) is increasing. But when it is started to reduce then the net investment is negative. In above table, the total production (Column 2) is increasing in period from t + 1 to t + 4 with an increasing rate, similarly in net investment. Again, in period from t + 5 to t + 6, it increases with a decreasing rate and net investment is low. The total production falls in the period from t + 7 to t + 9 and the net investment becomes negative.

The Acceleration theory is shown by the graph in **figure 11.1** where in upper part, the total production curve is increasing with an increasing rate until  $Y_{t+4}$  period. Again, increases with a decreasing rate

until Y_{t+6} period. After it, it starts to fall. In the lower part of figure, the I curve shows that the pure investment rises from increasing the production in t + 4 period because production is increasing with increasing rate. But when the production increases with the decreasing rate between the periods t + 4 and t + 6 than net investment is decreasing. When the production starts to decrease in the period t + 7 then net investment becomes negative. Curve In shows the entire investment of economy. It's behave is same as net investment curve. But there is difference in both that the entire investment is not negative and when it becomes zero in period t + 8 then In curve starts to move upward. Therefore, because of that on being the entire investment

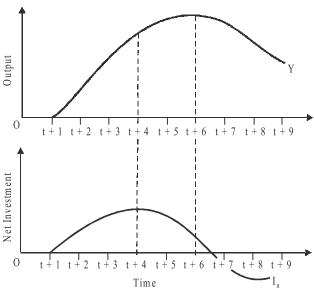


Figure 11.1

negative, the replacement investment is going on with the same rate in the economy.

### **Its Criticisms**

Economist criticizes it because of the hard assumption of acceleration-rule. Its limitation is following:

- 1. Capital-out Ratio not Constant: Acceleration-rule is base on the capital-output ratio. But its ratio is not constant in modern dynamic world. There are continuous development in invention and production and in the techniques of production by it the per unit production of capital logistic increases. Or, present capital logistics can be deep work. Then, the expectation of businessman is effected more related with prices, wage and interest and capital-production ratio changed. So, capital-production ratio is not constant but change in different stages of business-cycle.
- 2. Resources not Elastic: Accelerate consider that sources are available. Sources should be flexible so it can use in capital thing industry so it can expand. It is possible only whenever there is unemployment in economy. But when economy one time reached on the level of full employment, then the shortage of sources, capital-things industry is not expand. Now it the operation of the acceleration principle becomes limited.
- 3. Idle Capacity in Plants: Acceleration principle considers that plants have not unused or excess capacity. If some machine are not doing work according to their full capacity and becomes passive, then being the increment in production of customer things, the demand will not increased for new capital things. In that situation, acceleration-rule will not work. Now, this principle will not apply in recession because there are more capacity find on it.
- 4. Difference Between Required and Real Capital Stock: Acceleration-principle is based on principle that there are no any difference between required and real capital stock and if there are any difference then it remove in one period. But capital things producing industry already work on whole capacity then difference can not possible to remove in single period.

- 6. **Does not Explain Timing of Investment:** The mean of find full capacity is that increasing demand of production comes inspired investment. So acceleration rule failed in the timing of investment. In better form, it arranges the quantity of investment. Actually, there can be possible time lag before new investment breeding. Example, if time lag is 4 years then the effect of new investment will not seems in 1 one year but its seems in 4 years.
- 6. Does not Consider Availability and Cost of Capital Goods: Now, the time lag of find the capital things are depend on the its availability and cost or availability of finance and its cost.
- 7. Acceleration Effect, Zero for Installed Capital Equipment: It is consider that the increment in the demand of consumer things were not already assume and there was no arrangement for of its in last investment. If being the prediction of future demand, capital logistic already involved, then there will not inspired investment by it and acceleration effect will be zero.
- 8. Does not work for Temporary Demand: This principle is also consider that new consumption demand is permanent. If its hope that the demand is temporary for customer things, then producer will not invest in new capital things. Expect it they can fulfill the increasing demand by deep work of present capital logistic. So acceleration will not successful.
- 9. Supply of Credit not Elastic: Acceleration considers that the supply of credit is flexible. Because when inspired investment is on the inspired consumption, then cheap credit can easily find for investment in capital things industry. If cheap credit will not available in proper quantity, then the rate of interest will high and there will very less investment in capital things. So, acceleration will not work properly.
- 10. Neglects the role of Expectations: The main mistake of acceleration rule is that it neglects the role of expectations in take decision by entrepreneurs. Investment decisions are not only effected by demand. It's also affected by the future expectancy like stock market change, politics stir, international incidents, economic environment etc.
- 11. Neglects the Role of Technological Factors: On more mistake of acceleration is that it neglects the technological factor in investment. Technological change can be capital-saving or labour saving. So it can increase or decrease the quantity of investment.
- 12. Neglects Profits as the Sources of Finance: The mean of its assumption that firms takes the help of external finance sources for investment objects. But experiential prove show that firms choose the internal sources expects of external sources. Acceleration rule is weak in this mean that it neglects the profit in the forms of the sources of internal finance. Actually the level of profit is main decider of profit.
- 13. Not Precise and Satisfactory: According to Prof. Knox, the acceleration rule is not real and also unsatisfied to describe the time-decider of investment. So it is inadequate as investment principle.
- **14. Of no use for Lower Turning Point:** It is not describe the turn point below business cycle.



Task

Express his ides related to acceleration principle.

Despite this limit the rule of Acceleration makes more real and clear the process of income breeding expect of multiplier principle. Multiplier shows the effect of change in investment on income by the consumption way, but accelerator show the consumption effects on investment and income. Therefore, the acceleration explains the fast fluctuations in income and employment on the fluctuations in capital

**Notes** 

goods industries. But it can explain the turn point of upward more good expect of the downward turn point. To understand the cyclical fluctuations Samulson, Hicks and Goodwin mix the acceleration and multiplier for the analysis of income breeding.

### **Self Assessment**

#### **Multiple choice Questions:**

Capital stock will.....by any change in production (a) change (b) unchanged (c) profit (d) loss Being constant the replacement investment, gross investment will...... according to every level of production. (a)unchanged (b) change (c) harmful (d) profitable. Capital stock will.....by any change in production. (b) unchanged (a) change (c) loss (d) none of these Net investment is fast......by the increment in production. (a) decrement (b) increment (c) loss (d) none of these.

## 11.2 Role of Accelerator as a Theory of Investment

According to the theory of acceleration, investment demand is depend on the increment of production because by increment in production firms inspired that it has been increased the stock of capital things. Change in production and clear relation in investment is depending on the capital-production ratio  $(\Delta I/\Delta Y)$  mean  $v = \Delta I/\Delta Y$ , where v is the accelerator and  $\Delta Y$  is the change in production and  $\Delta I$  is the change in investment.

Actually lees the theory of acceleration tells us that the change in capital stock is equals to the v multiplications of the change in production. Means  $\Delta I = V\Delta Y$ , in that principle the value of accelerator always consider more than one so the increment of net investment always more than the increment in production.

In a economy three kinds of investment is found-Gross, replacement and net investment. Gross Investment = replacement investment + net investment. If we assume replacement investment is constant then gross investment will change with every stage of production.

In the theory of acceleration, net investment or induced investment is related to production. The formula of net investment  $I_{nt} = \Delta Y_t$  and replacement investment (R) collects in both side in the formula of net investment for know the gross investment. So gross investment is,  $I_{ot} = v + \Delta Y_t R$ .

The work in the form of investment theory of accelerator is explained with the help of above table 1 and **figure 11.1.** Some of the things are cleared from it.

First, the rule of accelerator shows the relation in production and investment.

Second, the change in investment because of the change in production, it is more than the change in production.

Third, on the bases of working assumption on whole capacity of economies, being little bit increment in relative production, investment will relatively more increase. Its mean is that economics will have to increase always increment rate for continue increment.

Notes

Fourth, it is clear by the table 1 and **figures 11.1** that by the operation of accelerator, investment and production move in single cyclical structure. In starting both are increases by slow motion, then fast motion and in last loss is started.

Last, if the rules of accelerator shows in MEC and MEI curve then both curve (that are related to capital stock and investment) will shift upwards.

#### **Self Assessment**

## State whether the following statements are True or False:

- 7. The theory of Acceleration considers that sources are available.
- 8. Sources should be flexible because it can use in capital things industries
- 9. The theory of Acceleration considers that the supply of credit is not flexible.
- The theory of Acceleration is not only unsatisfactory but also unreal as the description of timing of investment.

## 11.3 Summary

• Despite this limit the rule of Acceleration makes more real and clear the process of income breeding expect of multiplier principle. Multiplier shows the effect of change in investment on income by the consumption way, but accelerator show the consumption effects on investment or income. Therefore, the acceleration explains the fast fluctuations in income and employment on the fluctuations in capital goods industries. But it can explain the turn point of upward more good expect of the downward turn point. To understand the cyclical fluctuations Samulsan, Hicks and Goodwin mix the acceleration and multiplier for the analysis of income breeding.

## 11.4 Keywords

- Acceleration increase the speed.
- Accelerator festinate.

## 11.5 Review Questions

- 1. What is the mean of the theory of acceleration?
- 2. Draw the table of the Operation of the Acceleration Principle.
- 3. Define the investment principle of the theory of acceleration.

### **Answers: Self Assessment**

1. J. M. Clark	2. ratio	3. (a)	4. (b)
5. (a)	6. (b)	7. True	8. True
9. False	10. True.		

# Notes 11.6 Further Readings



Books

- **1. Macroeconomics: Theory and Policy** H.L. Ahuja, S. Chand Publisher, 2010.
- **2. Necessity of Macroeconomics –** *H. S. Nath, Syber Tech Publication,* 2012.

# **Unit-12: Demand of Money: Quantity Theory of Money**

**Notes** 

#### Contents

Objectives

Introduction

- 12.1 What is Value of Money?
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- 12.3 Theories of Value of Money
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- 12.6 Concepts of Supply of Money and Demand for Money in Fisher's Equation
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- 12.8 Keywords
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- 12.10 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- · Know the value of money,
- Know the theories of value of money,
- Know the quantity theory of money.

### Introduction

There is an inverse relation between the value of money and general price level of commodities and services. When general price level decreases, value of money increases.

## 12.1 What is Value of Money?

In the words of **Crowther**, "Value of money is what it will buy." As much goods and services are received in exchange for one unit of money, it is its value. As per **Robertson**, "By the value of money we mean the amount of things in general which will be given in exchange for a unit of money."

### Self Assessment

### Fill in the Blanks:

- 1. ..... of money is what it will buy.
- 2. There is an .....relation between the value of money and general price level of commodities and services.
- 3. When general price level decreases, value of money ......

## Notes 12.2 Value of Money and Price Level

Value of various goods and services is expressed in form of money, but money's own value cannot be expressed in form of money. If value of money is expressed in form of goods and services there will be lacs of values of money because lacs of goods and services are found in this world. For doing away with this difficulty we calculate a group value of money. For this we select few such representative goods and services, which we use daily. Their average price is calculated and it is called general price level. There is an inverse relation between the value of money and general price level. When general price level decreases, value of money increases.

Value of Money = 
$$\frac{1}{\text{Price level (P)}}$$

(Here P: Price level)

In the words of **Irving Fisher**, "The purchasing power of money is the reciprocal of the level of prices, so that the study of purchasing power of money is identical with the study of price level."



Notes

Value of various goods and services is expressed in form of money, but money's own value cannot be expressed in form of money.

## 12.3 Theories of Value of Money

In theories relating to value of money, it is studied that how value of money is determined to be reciprocal of the price level.

In the reference, two important theories are as follows: (i) Quantity theory of money (ii) Keynesian Theory of Money. In this lesson, both the theories will be studied extensively.

## **Self Assessment**

### **Multiple Choice questions:**

- 4. The purchasing power of money is the reciprocal of the level of prices
  - (a) Reciprocal

(b) Identical

(c) Opposite

- (d) None of these
- 5. There is an inverse ......relation between the quantity of money and value of money.
  - (a) abysmal

(b) proportionate

(c) one-to-one

- (d) none of these
- 6. Prof. Miltion Friedman presented modern ...... theory.
  - (a) Quantity

(b) cost

(c) Curve

(d) None of these

## 12.4 Quantity Theory of Money

**Notes** 

Quantity theory of money is the oldest theory of determining the value of money. It was demonstrated in 1566 by the French economist, Jean Bodin. In 1588, Italian economist **Davanzatti**, in 1691british economist **John Locke** and in 1752, **David Hume** made a much clearer description of this theory. In twentieth century, this theory was described in detail by economists like, Irving fisher, Marshal, Pigou, Robertson etc. Prof. Mition Friedman had presented the modern Quantity theory.

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.

- 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 raising 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 remaining 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"



Did You Know?

Purchasing power of money is called the value of money

## 12.5 Two Equations of Quantity Theory of Money

Two main equations related to the theory of quantity of money are as follows:

- 1. Transactions Approach or Fisher's Equation,
- 2. Cash Balance or Cambridge equation.

### 1. Transactions Approach or Fisher's Equation

**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 prices 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:

$$PY = MV + M'V'$$
or
$$P = \frac{MV + M'V'}{Y}$$

(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 above 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 constant, hence a direct relation establishes between quantity of money and price level. In other words, on 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 
$$\left(\frac{1}{P}\right)$$
.

Assume, M = ₹. 100, V = 8

$$M' = ₹. 200 V' = 4$$

$$Y = 400$$

$$P = \frac{MV + M'V'}{Y} = \frac{100 \times 8 + 200 \times 4}{400} = \frac{800 + 800}{400}$$

$$= \frac{1600}{400} = 4$$

And value of money  $\left(\frac{1}{P}\right)$  = Rs. =  $\frac{1}{4}$ 

#### The Underlying Classical Assumption

Inverse relation between quantity of money and price level or a one to one relation between quantity of money and value of money is an important conclusion of classical theory and it is based on the assumption that there is only one job of money, which is medium of exchange.

Especially it is assumed that apart from being a medium of exchange, there in no other job of money, like store of value. If for once, this assumption is removed, (and definitely it must be removed because this assumption is opposed to actual life situation) then assertion of statistical relation between one for one supply of money and price level will crumple. It has been mentioned in the next section of the unit.

As per **Fisher**, proportion between credit money (M') and money in circulation (M) remains constant. It means that if money in circulation (M) doubles, credit money (M¹) will also be doubled. Hence,

$$M = ₹ 200, V = 8$$

$$Y = 400$$

$$P = \frac{200 \times 8 + 400 \times 4}{400}$$
$$= \frac{3200}{400} = 8$$

And value of money  $\frac{1}{4} = \frac{1}{8}$ 

Proportionate relation between quantity of money and Price level is shown in **figure 12.1.** 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  $P_1P_2$  increases in the same proportion. Percentage

increase in quantity of money =  $\left(\frac{M_1M_2}{OM_1}\right)$  is equal

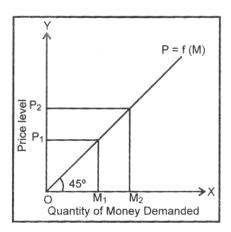


Figure 12.1

to the percentage increase in price Level =  $\left(\frac{P_1P_2}{OP_1}\right)$ . 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.



Task

Express your thoughts on value of money and price level.

# 12.6 Concepts of Supply of Money and Demand for Money in Fisher's Equation

# 1. Supply of Money:

Supply of money depends on two factors, (i) Quantity of Money (ii) Velocity of Money.

(i) Quantity of Money: By quantity of money is meant, sum of money in circulation (M) and the demand deposits of bank (M') which is also known as credit money. Hence,

Supply of money = 
$$M + M' = (Notes + Coins) + Credit money$$

Hence by quantity of money is meant that net quantity of money which is available for purchasing goods and services. Actually, as per the classical economist (in which Fisher is also included) money is used only for medium of exchange. It is not kept in form of store of value. Accordingly, entire money in circulation is available for purchasing goods and services.

(ii) Velocity of Money: Velocity of money is number of times a unit of money changes hands during a specified period of time (generally one year). Meaning of velocity of money is that in a specified time, how many times a unit of money purchases goods and services. Consider that Ram has a rupee. He buys a pen from Shyam for one rupee and Shyam buys sweets **Notes** 

from Mohan from the same rupee. In this manner, in a specified period of time a note of one rupee accomplished the transaction of exchange for four times, in order words, a note of one rupee did the job of four rupees. Hence, the velocity of one rupee will be called four. To know the velocity of money in a country, Gross National Product is divided by money in circulation.

$$Velocity (V) = \frac{Gross \, National \, Product \, (GNP)}{Money \, in \, Circulation}$$

In this manner, gross supply of money = MV + M'V'

# 2. Demand for Money

Money is demanded because it does the job of medium of exchange. Hence, on any given time, demand for money depends on the exchange being done in the society. Quantity of exchange depends on two things:

- (i) Trade Transactions- Y: by trade transactions is meant, gross physical quantity of goods and services sold in form of money through trade transactions, in a specified period of time. As many times this object is sold in the specified period, it is counted in trade transaction.
- (ii) **(P) Price Level:** Average price of each unit of 'Y', in a specified period is known as price level (P). In detailed meaning, it is known as general price level.

Hence, Demand for money = Price Level (P)  $\times$  Trade transactions (Y) (P')

#### Price in Form of a Passive Parameter

Fisher's opinion is that price (P) is an inactive parameter. Price is determined by the supply of money, but it itself does not determine the value of production, income and employment of the economy, nature of all these is to stabilise on the level of complete employment. That is why in Fisher's equation, there is no influence on parameter Y of the changes happening in parameter P.

## Assumptions of Quantity theory of Money

Quantity theory of money is based on the following assumptions:

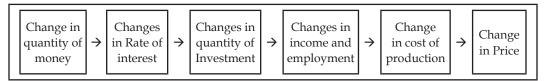
- 1. Constant velocity of currency (V) and velocity of bank money (V'): It is assumed that velocity of currency (V) and velocity of bank money and credit money (V') remain constant.
- 2. Generally, in the economy situation of full employment is found.
- **3. Constant trade transactions:** Due to the 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

Keynes and Keynesians after economists like Crowther, Halm etc have done the below mentioned criticism of Fisher's equation:

- 1. A simple truism or Tautological: In the words of Keynes, "The quantity theory is a truism which holds in all circumstances though without significance." Quantity theory of money is a simple truth or a truism. It does not tell anything which people do not know beforehand. This theory tells us that gross monetary expense of buyers is equal to the gross monetary income of the sellers. In other words, as many goods and services are sold in the market, that many are purchased. It is one such truth which even an illiterate person also knows. It is not known through it that because of change in supply of money, what is the actual reaction of change happening in price level and of these factors, which factor is the cause and which is the result. It is also not known through it that why there are changes in supply or quantity of money. It only tells an identity.
- **2. Unrealistic Assumption:** This theory is based on an unrealistic assumption that price level is only influenced by changes in quantity of money. Other elements of the equation like V. V', and Y have been considered to be constant. We can see that these elements are never constant in actual life and price level also changes through changes happening in them.
- **3. Variables are not independent:** Fisher's assumption is that M, M', V, V' are independent variables i.e. one has no influence on the other. But we see that in real life, these variables are not independent of each other. Change in any one variable, like Y, has its influence on other variables also.
- 4. Lop Sided: As per critics, as compared to demand for money, this theory lays more emphasis on supply for money. Fisher, by assuming the demand for money to be constant has ended the influence of demand in price determination. As per Fisher, only by change happening in supply of money, change in price level takes place. It means that importance is given only to the Money's job of 'Medium of Exchange' and the job of 'Store of value' has been ignored. Hence it is a lop-sided theory.
- 5. Price Level is not a passive factor: The assumption of this theory that price level is a passive factor is also wrong. Actually, price level is an active factor. Because of changes in price level, quantity of trade (Y) is influenced because due to increase in prices, profits increase. As a result, there is an increase in trade (Y) and quantity of money. That is why due to increase in prices there is increase in quantity of money and on decrease in trade, quantity of money decreases.
- 6. Applicable only in case of full employment: Quantity theory of money is applicable only in case of full employment. But as per Keynes, economies may also be in a situation of incomplete employment. In such economies, on increase in quantity of money increase takes place in production and not in prices.
- 7. It fails to explain trade cycles: As per Crowther, "The quantity theory is at best an imperfect guide to the cause of trade cycle. "It is not known through this theory that during recession, why the prices do not increase even on increasing the quantity of money and during inflation why do prices increase, even without increasing the quantity of money? The actual reason for this is that during the days of recession, velocity of money decreases and in the situation of inflation it increases. But this theory presumes the velocity of money to be constant. Actually, velocity of money keeps changing.
- 8. Inconsistent: As per Halm, quantity theory of money in inconsistent. In this effort has been made to know the quantity of money by multiplying quantity of money, which is related to a point of time or stock or is a static concept, with velocity, which is related to a time period, or which is a flowing or a dynamic concept. It is technically inconsistent.

9. It ignores the effect of rate of interest: This theory ignores the effect of rate of interest on prices. As per Lord Kez, Hawtrey and Prof. Hayek the assumption of this theory that there is a direct relation between quantity of money and price level, is wrong. Actually, changes happening in quantity of money influence the rate of interest and changes happening in rate of interest create changes in price level. Hence there is an indirect and not a direct relation between quantity of money and price level:



As per **Mrs Joan Robinson**, "Changes in the quantity of money are of great significance. Their importance lies in their effect on the rate of interest. But a theory of money that makes no mention of rate of interest is not worthy of being called money theory."

- 10. Difficult to measure velocity in Fisher's equation: It is very difficult to measure the velocity of money. It is not possible to count that in a specific period, how many hands does a unit of money goes into. Apart from this, to know the total quantity of money it is important to know the money collected in personal treasuries. In countries like India, Black money is also found in circulation. It is difficult to measure the net quantity and velocity of such money. other than this, in short term, velocity may be presumed to be constant but in long term, velocity definitely changes.
- 11. It ignores the effect of non-monetary factors: This theory ignores the effect of non monetary factors on price level. Not only does the quantity of money affect the price level but many non monetary factors such as political and psychological factors also have an influence. These factors are not studied in this theory.

Full Employment-a precondition of the classical assertion of one to-one relation between supply of money and price level.

Classical economists had the opinion that full employment is a natural incident in a free market economy. This assertion is actually a precondition of their belief that price level changes in the same proportion in which quantity of money changes. Once this pre-condition is fulfilled, proportionate relation between quantity of money and price level becomes a reality that may not be challenged. But the question arises that whether full employment is a self happening event in a free economy? The great depression of the decade of 1930, as a historical proof, does not support this opinion.

# Cash Balance or Cambridge Equation

Many economists like Marshall, Pigou, Robertson (initially kenes also) of Cambridge university have demonstrated cash balance equation of quantity theory of money. It is also known as Cambridge equation. As per cash balance equation value of money is determined by its demand and supply. At a definite point of time, supply of money remains constant, hence changes in demand of money have more effect on value of money (or price level). Hence this theory give more importance to demand for money instead of supply of money. That is why this theory is also known as Demand theory of money. For completely understanding this equation, it is important to study concepts relating to demand and supply of money.

Supply of Money: As per cash balance equation, Supply of money at a particular point of time
is the sum total of all the notes and coins with the public and the demand deposits. Hence,

# Supply of Money = Notes + Coins+ Demand Deposits

**Notes** 

If it is thought about at a specific point of time, it is believed that velocity will have no effect on supply of money.

### An Important Observation

Supporters of Cambridge equation have recognised not only money's job as a medium of exchange but also as a store of value. But while describing the concept of demand of money, they have emphasised on using demand for money in form of medium of exchange and for dealing an emergency situation. In other words, their meaning with 'demand for money' is 'demand for exchange' and 'demand for precaution'. Importance of demand for money with an objective of speculation or importance of demand for money with an objective of earning money from money was ignored by them.

2. Demand for Money: According to Cambridge equation by demand, is meant, the people's desire to keep money as cash balance. As per Fisher, demand for money is done only for using it as a medium of exchange. But as per cash balance equation money is demanded not only for using it as a medium of exchange but also with an objective of accumulating money. Cash balance is that ratio of annual actual income, which people like to keep as cash money. Hence,

As per this equation, if supply of money remains constant, on an increase in demand for money or cash balance prices will decrease because people will like to keep with them, a big part of their income as cash and their demand for goods and services will reduce. As opposed to this, if demand for cash balance will reduce, demand for goods and services will increase because of will price level will rise. Accordingly, demand for money or cash balance has an inverse relation with price level.

## **Different Variants of Cash Balance Equation**

There are various forms of cash balance equation. Important ones are described as follows:

**Marshall's Equation:** Dr. Marshall has explained the value of money though the below mentioned equation:

$$M = kY$$

(Here: M: quantity of money, Y: monetary income, K: that part of the income which people want to keep as cash)

Because monetary income (Y) is the product of gross production (O) and price level (P), i.e., Y = PXO. Hence, the above equation may be written as follows:

$$M = POk \text{ or } P = \frac{M}{Ok}$$

If M = 700 crores, O = 500 units,  $k = \frac{1}{5}$  (i.e. people want to keep  $\frac{1}{5}$  th part of their income as cash) then,

$$P = \frac{M}{Ok} = \frac{100}{500 \times \frac{1}{5}} = \frac{100}{100} = 1$$
 ₹ per unit

If people reduce cash balance (k) from  $\frac{1}{5}$  to  $\frac{1}{10}$  then price level will increase to  $\frac{100}{500 \times \frac{1}{10}}$  = Rs. 2 per unit

Pigou's Equation: Pigou's equation is as follows:

$$P = \frac{kR}{M}$$

(Here, M: total quantity of money, R: gross actual income, k: That part of actual income which people want to keep as cash)

Value of money is inverse of the general price level. People do not keep all their money in form of currency or legal tender money. They keep a part of their cash balance deposited in bank. Keeping this fact in mind, Pigou made some amendments in his equation in which some part of k is kept in form of legal tender money and some part in bank. New equation is as follows:

$$P = \frac{kR}{M} \left[ C + h(1-c) \right]$$
or
$$M = \frac{kR}{P} \left[ C + h(1-c) \right]$$

(Here, c = cash with the people, 1 – c: bank deposits, h: cash reserve ratio or that part of bank deposits which bank keeps with itself as cash)

#### Illustration

Assume, 
$$K = \frac{1}{4}$$
;  $c = \frac{1}{2}$ ;  $h = \frac{1}{10}$ 

R= 2000 Quintal of rice, M= ₹. 550

We have to find P

We know that

$$P = \frac{kR}{M} \left[ C + h(1-c) \right]$$

$$= \frac{\frac{1}{4} \times 2000}{550} \left[ \frac{1}{2} + \frac{1}{10} \left( 1 - \frac{1}{2} \right) \right]$$

$$= \frac{500}{550} \left[ \frac{1}{2} + \frac{1}{10} \times \frac{1}{2} \right]$$

$$= \frac{500}{550} \left[ \frac{1}{2} + \frac{1}{20} \right]$$

$$= \frac{10}{11} \times \frac{11}{20} = \frac{1}{2} \quad \text{quintal of rice.}$$

If we have to find M according to the Pigou' equation, we may find it out through the below mentioned method:

$$M = M = \frac{kR}{P} \left[ C + h(1-c) \right]$$

$$= \frac{\frac{1}{4} \times 2000}{\frac{1}{2}} \left[ \frac{1}{2} + \frac{1}{10} \left( 1 - \frac{1}{2} \right) \right]$$

$$= \frac{500}{\frac{1}{2}} \left[ \frac{1}{2} + \frac{1}{10} \times \frac{1}{2} \right] = 500 \times \frac{2}{1} \left[ \frac{1}{2} + \frac{1}{20} \right]$$

$$= 1000 \left[ \frac{1}{2} + \frac{1}{20} \right]$$

(in it,  $1000 \times \frac{1}{2} = ₹.500$  is with people as currency or legal tender money and  $1000 \times \frac{1}{20} = ₹.50$  is

bank money)

$$= 1000 \times \frac{11}{20} = ₹.550$$

According to Pigou, if k, R, c and h are considered to be constant, then because of changes happening in supply of money, proportionate change will take in value of money. it may be made clear with the help of **figure 12.2**.

In **figure 12.2**, demand and supply of money is shown on axis OX and value of money is shown on axis OY. DD is the demand curve of money.  $Q_1M_1$ ;  $Q_2M_2$ ;  $Q_3M_3$  are supply curves of money. At a specified point of time, supply of money is constant; hence it is represented through a straight line. When supply of money increases from  $OM_1$  to  $OM_2$ , then, value of money decreases from  $OP_1$  to  $OP_2$ . Reduction in value of money is in proportion to increase in supply of money. In the same way, when supply of money increases from  $OM_2$  to  $OM_3$ , value of money decreases from  $OP_2$  to  $OP_3$ .

Still in reference to change in value of money, Pigou has given more importance to K as compared to M. i.e., in comparison to supply of money, demand for money is considered to be a more important determinant of value of money.

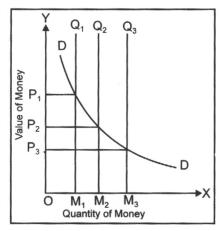


Figure 12.2

# **Robertson's Equation**

As per Roberson's equation:

$$M = PkT OR P = \frac{M}{kT}$$

(Here, P:Price level, M: Quantity of Money; T: quantity of goods and services bought at a specified point of time; k: that part of T which people want to keep as cash)

Robertson's equation is considered to be better than Pigou's equation because it is easy.

#### Notes Criticism

In the words of A.C.L. Dey, "Although the Cambridge version of the Quantity Theory represented a big advance on the Fisher version, it is not in itself an adequate monetary theory. Its weakness is that it is too simple to deal adequately with the complexities of economic system."

Main criticisms of Cambridge equation are as follows:

- **1. Unrealistic assumptions:** In this theory, some factors like k and T are considered to be constant. But in actual life, neither k, T nor R or O remain constant, they keep changing.
- **2. Ignores speculative demand for money:** This theory does not completely explain the demand for money. According to it demand for money is done only for transactions and precautionary purposes. In this theory, demand for money for speculative purposes has been ignored.
- 3. Circular reasoning: In cash balance theory, fault of circular reasoning is found. As per this theory, at one side price level (P) or value of money is determined by cash balance (k) but at the other side, price level or value of money, determines cash balance (k). Hence in this theory, fault of circular reasoning is found, till where, value of money determines cash balance and cash balance determines value of money. It has been unsuccessful in establishing causal relationship.
- 4. Incomplete theory: Cash balance theory is an incomplete theory. This theory, in determining the cash treasuries (k), gives importance to just one factor, i.e. income (R). But in reality, cash treasury depends on many other factors such as price level, monetary habits, professional structure etc. in this theory, these factors are ignored.
- 5. It ignores the effect of rate of interest: The assumption of cash balance theory that a direct relation is found between quantity of money and price level, is wrong. In reality, on changes happening in quantity of money, first rate of interest changes. Because of change in rate of interest, quantity of investment changes. Because of change in quantity of investment, cost of production changes and because of change in cost of production, changes happen in prices. But in this theory, there is no mention of this reasonable process of change.
- 6. Ignores the influence of real factor: according to this theory, cause of change in value of money is change happening in demand for money. But many other real factors such as savings, investment, income etc also have an influence on value of money. This theory ignores these real factors.
- 7. Lack of Integration of Theory of Value and Theory of Money: As per Don Patinkin, in cash balance equation, lack of integration is found in theory of value or level prices and theory of money or general price level. This theory has made the theory of value completely discreet from theory of money. In reality, mutual dependence is found among both the theories. This mutual dependence is determined by real balance effect. By real balance effect, it is meant that due to change in price level, change takes place in the real income of the people. It has an effect on demand and supply of goods. Thereby, it also affects the level prices. Hence theory of value and theory of money may be integrated through real balance. But the above mentioned theory ignores this integration.

#### Self-Assessment

State whether the following statements are True or False:

- 7. By quantity of money, it is meant, the gross quantity of money.
- 8. Money is demanded because it works as a medium of exchange.

9. Supply of money depends on two factors- (i) quantity of money (ii) velocity of money

**Notes** 

10. Purchasing power of money is known as value of money.

# 12.7 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.

# 12.8 Keywords

- Price level Value level.
- Quantity Amount.

# 12.9 Review Questions

- 1. What is known as value of money? Clarify.
- 2. Tell the theories of value of money.
- 3. Describe two equations of the quantity theory of money.
- 4. Mention the concepts of demand for money and supply of money in Fisher's Equation.

## **Answers: Self Assessment**

1. Value	2. inverse	3. increas	4. (a)
5. (b)	6. (a)	7. True	8. True
9. True	10. True		

# 12.10 Further Readings



Books

- 1. Macroeconomics S.K. Chakrabvarty, Himalaya Publishing house, 2010.
- **2. Macroeconomics Economic growth, fluctuations and policy** *Robert E Hall and David H. Paipal, Vaina Books,* 2010.
- **3. Macroeconomics: Theory and Policy** *H.L Ahuja, S. Chand Publisher,* 2010.

# **Unit-13: Keynesian Approach**

#### **Contents**

Objectives

Introduction

- 13.1 Keynesian Theory Related with Money and Prices
- 13.2 Superiority of Keynesian Approach
- 13.3 Summary
- 13.4 Keywords
- 13.5 Review Questions
- 13.6 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know the Keynesian principle related to price and currency.
- Know the power of Keynesian approach.

#### Introduction

According to **Keynes** there is an indirect effect on price level to the change in quantity of currency. The fulfillment of currency is only effect 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.

# 13.1 Keynesian Theory Related with Money and Prices

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 on money indirectly affects the price-level. The fulfillment of currency is only effect 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.

#### Self Assessment

#### Fill in the blanks:

- 1. According to Keynes' there is a ......effect on price level to the change in quantity of currency.
- 2. The change in the quantity of currency is effect the rate of......

According to the Keynes the quantity of currency is effect the price level in following way-

**Notes** 

The change in the quantity of currency is firstly affected the rate of interest. When the quantity
of currency is increase then the rate of interest is decrease, that there is no change in liquidity
preference for speculated objective. This system is continue like that-

The reason of increment in the supply of money-

- Being the increment in remain cash of people.
- Being the increment in the demand of bonds.
- Being the increment in the price of bonds.
- · Decrease the rate of interest.



Notes

There is an apposite relation in the rate of interest and the price of bonds. The increment in the price of bonds is the decrements in the rate of interest in a simple means and also apposite it.

- 2. The decrement in the rate of interest encourages the investment, with the condition that the capital limit production MEC remains constant.
- 3. Increment in investment (I) increases the production, income and employment by multiplication process. It is because that the sources are not fully used.
- 4. As production, income and employment(Y,O,N) increase, the demand of sources of production increases. However, before the condition of full employment, because of being their supply fully flexible, by the increment in production consequently there is no increment in prices.
- 5. Once to get the condition of full employment cannot increase the more employment. So the price is increase because of the increment in demand of inputs of production.
- 6. When the price of inputs is increase then the cost of production is also increase.
- 7. Produce things and the price of services is increase because of increment in the cost of production.

In this flow chart shows the relation of price and currency.

Increment in the fulfillment of currency  $\Rightarrow$  increment in the cash fund of people  $\Rightarrow$  increment in the demand of bonds  $\Rightarrow$  Increment of bonds price  $\Rightarrow$  decrease in rate of interest  $\Rightarrow$  increase in investment  $\Rightarrow$  increase of demand of inward  $\Rightarrow$  increase of price of inward (if Instrument is in the state of employment then)  $\Rightarrow$  increase in cost of production  $\Rightarrow$  increase in cost of products and services.



Notes

When the condition is get of unemployment in a economy, then production and employment is increase because of the increment in the quantity of currency.

The summary of price and currency related to Keynesian' principle is like that- when the condition of unemployment is found in an economy, then production and employment is increase because of

the increment in the quantity of currency. The price is increase in that ratio in price because of the increment in the quantity of currency at the condition of full employment.

# Description by figure

In figure 12.3, show the relation among currency, production and prices. In figure 12.3 (A) show that the quantity of currency is increase from O to A, then the production is also increase in that ratio from O to Q. when the quantity of currency is become OA, then the production is OQ which is the production of full employment. But production is raise up till B curve point but after that adopt the form of straight line BM. The mean is that after point B the increment in the quantity of currency is not inspire the production.

Now see the **figure 12.3.** When the quantity of currency is OA then price value is constant on OQ. When the quantity of currency is increase more than OA then price line BR raise up, which present the ratio relation in price level and the quantity of currency.

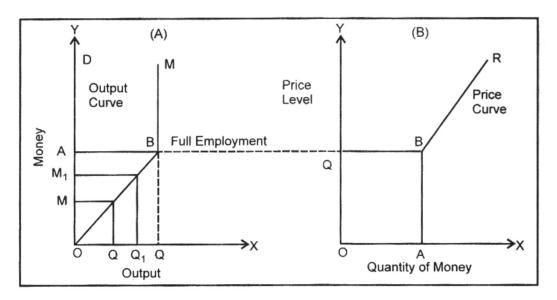


Figure 13.1



Did You Know?

At the condition of full employment the price is increasing in that ratio because of the increment in the quantity of currency.

#### Tou are not to overlook the fact

According to Keynes the boundary attitude of increment in price level can be gotten before the condition of full employment. It's reason is 'barrier in movements' in production equipment though they are unemployed and are in desire of employment. It can take time in making the sources to reach to the place of their employment. Consequently their supply can't be equal to it's demand and it's price get increased. The increment in cost means the increment in price-level. But this increment in price-level is very general. Keynes' has named it as Reflation (not as Inflation).

# The Algebra of Keynesian Theory of Money and Prices

#### Notes

Or

# Keynes' fundamental equation

Keynes; is show his idea related to prices and money as the following equation-

$$Y = E + Q \qquad ...(1)$$

(y: National Income; E: Payment for sources; Q: windfall profit)

The national income (Y) is the addition of payments for resources (E) and windfall profit (Q).

Windfall profits are measure by subtracting the actual sell and sources payments. Only normal profits are gained in the condition of Y = E.

$$O = R = C$$
 ...(2)

(O: Total production; R: Customer things, C: Capital things)

$$S = E - PR \qquad ...(3)$$

(S = Savings; PR: consumption things (R) their price (P))

$$I = P_1 C \qquad ...(4)$$

(I = investment expenditure (C) their price (P₁) multiplying it)

$$n = \frac{PR + P_1C}{O} \qquad ...(5)$$

(n: Normal price level)

It represents the ratio of total expenditure (PR + P₁C) and total production (O).

Because PR = E - S (S = E - PR is from equation 3) and  $P_1C = 1$ .

Because the equation (5) can be write"

$$n = \frac{E - S + I}{O}$$

Or

$$n = \frac{E}{O} + \frac{I - S}{O}$$

It is the basis equation of Keynesian principle related to currency and price. The important part is like that- (i)  $\frac{E}{O}$ , the ratio of total production and payment of source and (ii)  $\frac{I-S}{O}$  mean the ratio of total production and the subtraction of I and S

Keynes; consider constant to  $\frac{E}{O}$  and his attention to centralize on  $\frac{I-S}{O}$  because can describe this

things that how is effect the price level. In this reference the following observation is important-

- (i) The reason in the difference of investment (I) and saving (S) is the difference in the natural rate and market rate of interest. The market rate of interest is the rate which found in the fix point in currency market. The natural rate of interest is the rate which is analog the similar of interest and investment on the full employment level.
- (ii) If saving on the level of full employment = Investment, market rate of interest = the natural rate and price level of interest is constant and there is no sign of change.

- (iii) If I > S (whenever economy is at the condition of full employment) then the market rate of interest is less than natural level. Their reasons are the increment in the fulfillment of currency and increment the demands of bonds. The price increase to increasing the demands of bonds and the market rate of interest is decrease.
- (iv) If I < S (economy is not the condition of full employment)
- (v) if the quantity of currency is less and the rate of intrest is increase, then I will be less and it will be less more than S (I < S). In that condition, the demand decreased of inputs, its mean the production cost is decrease. Finally the price level will be decrease.

#### **Self Assessment**

#### Multiple choice Questions:

_			
3.	Keynes' is present the relation in currency and price –		
	(a) A principle	(b) Rule	
	(c) Laws	(d) None of these.	
4.	The change in the quantity of currency effect theand ratio on price level.		
	(a) indirect	(b) direct	
	(c) economic	(d) none of these.	
5.	It can not be more employment on get the condition of full employment-		
	(a) Increment	(b) Less	
	(c) Similarity	(d) Non-similarity	
6.	The increment in cost means the	in price-level.	
	(a) increment	(b) decrement	
	(c) similarity	(d) non-similarity	

#### 13.2 Superiority of Keynesian Approach

Keynesian Currency Principle is better than Currency Magnitude Principle, as it is clear from following reasons:

- 1. Integration of Monetary Theory with the Theory of Value: One quality of Keynesian principle is that this principle has tried to integrate Currency principle or Principles of Normal Price-level and Value principle or Relative Price principle. According to Currency Magnitude Principle, normal price-level and different goods and services are determined from different ways. The cause of change in normal price-level is the change in the quantity of currency. So it is called as Currency principle. On it's opposite side, the cause of change in relative prices is the change in supply and demand of commodities, so it is called as Value principle. Don Patinkin has named this difference of Currency principle as Classical Dichotomy. According to Keynes, This dichotomy is unreal. The main cause of change in normal price-level and relative prices are the change in cost of production. The relative prices are determined by the flexibility of supply and demand and cost of production. These financial elements also determine Normal price-level. So Price Theory and Currency Theory are affected by same causes.
- 2. More Realistic Theory: The Currency magnitude principle is valid only in full employment condition only. But the full employment condition is a rare condition. Under employment

condition is found in mast Country. Keynes Currency principle is valid in both the full employment and less employment conditions. In less employment condition, the resulting of the increment in quantity of currency there is increment in employment and production. But after full employment condition price-level rose on the increment in currency quantity. Keynes also considers that in the partial employment condition also, because of the partialities of market, the price-level can also be increased with increment in production. But such increment is very limited.

- 3. Integration between Monetary Theory and Theory of Output: Lard Keynes also integrated Monetary Theory with Production Theory. The change in quantity of Currency affects the interest rate and the resulting Investment quantity is also changed. So in economy production quantity is also changed. Because of change in production quantity, there were also changed in cost of production and price-level.
- 4. Proper Explanation of the Causal Process: This theory explains causal process relation more scientifically instead of Currency Magnitude Theory. According to Keynes this is the demerit of Currency Magnitude Theory that those effects of currency, which occurs on interest rate, investment, production and employment, are fully ignored. The entire concentration is kept on total quantity and prices of currency in this theory. But in Keynes theory these all elements are kept in concentration. According to this theory supply of currency on being greater than demand decreases the interest rate. The resulting, there is increment in investment on increasing the investment, the demand of production equipment is increased, and the prices are increased on increasing the cost of production. So currency quantity affects prices indirectly. This explanation is truly more realistic.
- 5. Better Guide of Economic Policies: Keynes Theory is more behavioural in comparison to Currency Magnitude Theory and also a better guide of Economic Policies. According to the Currency Magnitude Theory, every increment in Currency quantity becomes the cause of increment or inflation in prices. But according to Keynes the increment in quantity on money generally made after money inflation after full employment. If the condition of recession or unemployment is found in any country than to overcome from this condition the financial arrangement of loss or the policy of credit expansion can be adopted without any fear. So because of increment in the supply of money price-level will increase, is not any dangerous thing.

In brief, Keynes has this view that supply of currency is an equipment of economic development till when the condition of full employment is not found. After the found of the condition of full employment on supplying of currency the problem of increment in Price-level is raised.



Task

Express your views about Keynesian Theory.

# **Key Points**

- Value of Money: The number of gotten commodities or services 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 = 
$$\frac{1}{\text{Price Level}}$$

**Notes** 

- Quantity Theory of Money: There is directly proportional relation between Quantity of Money and General Price-level and there is inversely proportional relation between Quantity of Money and Value of Money.
- Fisher's Equation: PY = MV + M'V' or  $P = \frac{MV + M'V'}{Y}$
- Assumptions of Quantity Theory of Money: (i) The moving speed of money v and v' is constant. (ii) Trade Exchange is constant. (iii) Full Employment. (iv) The ratio of M and m' is constant.
- Criticism: (i) The relation in quantity of Money and Price-level is a general truth. (ii) This theory is based on unrealistic assumptions. (iii) The variables taken in this model are considered as independent but actually they are not independent. (iv) This theory is one-sided because it is centered on money supply. (v) This theory considers Price-level as an inactive cause which is wrong. (vi) This theory can only be used in full employment condition only. (vii) This theory fails to explain Trade circle. (viii) This theory indicates inconsequence. (ix) It ignores the significance of interest rate. (x) It is very tough to measure the moving speed of money. (xi) It explains the non-monetary factors. (xii) Change in Price might be the result of change in income-level not of change in quantity of money.
- Marshall's Equation: M = kY + k' A
- **Pigou's Equation:**  $P = \frac{kR}{M}$
- Robertson's Equation:  $P = \frac{M}{kT}$
- Criticism of Cambridge Version of Quantity Theory of Money: (i)It is based on unrealistic assumptions. (ii) It ignores money demand for gambling objective. (iii) Circular logics are taken in this theory. (iv) It is an incomplete theory. (v) It ignores the effect of interest rate. (vi) It ignores the effect of realistic factors. (vii) It fails to explain Trade Circle. (viii) There is lack of combination of Value theory and Money theory in this theory.
- **Keynesian Theory of Money and Prices:** Till when there is unemployment in economy production and employment is increased because of increment in quantity of money. Once there will be full employment in economy then increment in quantity of money will increase the price-level in proportional form.
- Keynes Equation:  $n = \frac{E}{O} + \frac{I S}{O}$
- Superiority of Keynesian Approach Over Quantity Theory of Money: (i) It is helpful to integrate Money Theory with Value Theory. (ii) It is actually a more realistic theory. (iii) It is helpful to integrate Money Theory with Production Theory. (iv) It explains causal processes truly. (v) It is a better guide of Economic Policies.

#### **Self Assessment**

State whether the following statements are True or False:

- 7. Quantity Theory of Money is valid only in full employment condition.
- 8. Lard Ripen has integrated Money Theory with Production Theory.
- 9. Full employment condition is a rare condition.
- 10. The change in quantity of money doesn't affect interest rate.

13.3 Summary Notes

The summary of Keynesian Theory related to Money and Price is so—When the unemployment
condition is found in a economy, till then Production and Employment increases due to
increment in quantity of money. On coming the full employment condition because of
increasing in quantity of money prices also started to increase in the same proportion.

# 13.4 Keywords

- Inflation Money-inflation.
- Approach Understanding aspect.

# 13.5 Review Questions

- 1. Explain 'Keynesian Theory'.
- 2. What do you understand by the Superiority of Keynesian Approach?

## **Answers: Self Assessment**

1. indirectly	2. interest	3. (a)	4. (b)
5. (a)	6. (a)	7. True	8. False
9. True	10. False.		

# 13.6 Further Readings



Books

- 1. Macroeconomics S.K. Chakravarti, Himalaya Publishing House, 2010.
- **2. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E. Hall and David H. Paipal, vaina Books* 2010.
- 3. Macroeconomics: Theory and Policy H. L. Ahuja, S. Chand Publisher,
- **4. Microeconomics** *Mohan Srivastava, DND Publications,* 2010.

# Unit-14: Contribution of Boumol and Tobin

#### Contents

Objectives

Introduction

- 14.1 Boumol's Inventory Theoretical Approach
- 14.2 Tobin's Portfolio Selection Model: The Risk Aversion Theory of Liquidity Preference
- 14.3 It's Superiority over Keynesian Theory
- 14.4 Summary
- 14.5 Keywords
- 14.6 Review Questions
- 14.7 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- · Know Boumol's Inventory Theoretical Approach,
- Know Tobin's portfolio Selection Model.

#### Introduction

The base of Boumal's analysis is that any firm or person keeps the optimal inventory under his custody for transactions. He writes, "The meaning of remained cash of the firm can be considered as that inventory of money of which it's lord is ready to give in exchange of buying the labour, raw material etc."

#### 14.1 Boumol's Inventory Theoretical Approach

William Boumol has given important contribution in transaction demand of money presented by Keynes. Keynes considers transaction demand of money as a function of income level and as a linear proportion relation between transaction demand and income. **Boumaol** says the relation between transaction demand and income is neither linear nor proportional but it happens when there are changes in income, and then there are lesser changes from proportion in transaction demand of money. Again, Keynes considered that transaction demand is interest inflexible. However, Boumol has analyzed the flexibility of transaction demand of money.

The base of Boumal's analysis is that any firm or person keeps the optimal inventory under his custody for transactions. He writes, "The mean of remained cash of the firm can be considered as that inventory of money of which its lord is ready to give in exchange of buying the labour, raw material etc." Remaining cash is kept so that income and expenditures don't happen together. "But to the large amount of capital in the form of remaining cash is very expensive. Because that money can be used in

another place of the firm... It can be invested in the beneficial securities." Similarly, the second way to keep the remaining money is bond on which interest is given. To gain most benefit from its assets firm will always try to save the minimum cash for transactions. The interest rate on the bond will be as higher; firm will keep as lesser transaction remaining.



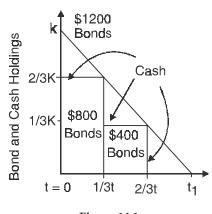


Figure 14.1



Notes

Keynes considers transaction demand of money as a function of income level and also as a linear proportion relation between transaction demand and income.

Boumol starts with considering that any firm per time-period, as there is the income of Y dollars in a year of which it spend with a constant rate in that year. So it would be very beneficial to buy the bonds from its inactive funds for a firm. Bond can be sold on the need of cash for any transaction.

The structure of cash availability and bonds availability of the firm is shown in **figure 14.1.** Let us consider that firm has \$1200 of which it has to spend during that year from a constant rate per four months from this amount on keeping \$400 for transaction it purchases the bonds of remaining \$800. The maturity of purchases half bonds is 1/3t (four months) and that of rest half bonds is 2/3t (eight months), let us consider that the size of amount gained on selling k bond is equal to half of the amount gained from selling average cash available bonds (1/2k) of the firm. On giving these considerations, firm purchases the bonds of it's 2/3rd income (\$800) in t=0 time and rest 1/3 (\$400) keeps in cash, as shown in figure. The first half bonds (\$400) purchased on 1/3t time are matured which it sold till time 2/3t for cash. Rest bonds are matured on time 2/3t of which firm sells so that could transact till the  $t_1$  time. The remaining cash is zero on time  $t_1$  and firm is ready to cash gain in New Year.



Did You Know?

Boumol's analysis also targets one more important fact for the behave of demand of transaction remaining.

It is must to solve this problem that the cost of keeping the remaining cash throughout the year should be kept minimal. The interest cost and non-interest cost are also included in keeping the remaining cash. As we have seen earlier, interest costs are in the form of chance cost. Because when a firm keep the cash for transaction, it has to leave its interest income. On the other side, for changing the cash

into bonds or from bonds into cash in the non-interest cost Brokerage, postage, bookkeeping expenses are also included.

So, whenever any firm keeps the money for transaction, it has to bear interest-costs and brokerage (non-interest-costs). Let us assume that the interest rate is r is constant throughout the year and brokerage b is also constant. Assume that firm's income is Y in the beginning of the year which is equal to actual value of transactions done by it and is the size of amount withdrawn each time on K intervals which is withdrawn on the time bond selling. So, amount is withdrawn Y/K times throughout the year. During the year b(Y/K) cost will appear on brokerage. Because average cash withdrawals are K/2, so the interest-cost of keeping the remaining cash is rK/2. So the total cost of transaction i.e., C can be written in the functional form as following:

....(2)

The optimal value of K would be so from which the total cost of inventory became zero. Derived on differentiating C with respect to K, dC/dK and keeping it equal to zero and then solving it for C we get,

$$\frac{dC}{dK} = \frac{r}{2} + \frac{by}{K^2} = 0$$

 $\frac{\mathbf{r}}{2} = \frac{\mathbf{by}}{\mathbf{K}^2}$ 

Or,

Or on multiplying both the sided with  $2K^2/r$ , we get:

$$K^2 = \frac{2bY}{r}$$

 $K = \sqrt{\frac{2bY}{r}}$ 

Or

#### Self Assessment

#### Fill in the blanks:

- ...... has given important contribution in transaction demand of money presented by Keynes.

It is clear from equation (2) that if brokerage will increase, then the number of withdrawals will be lesser. In other words, optimal cash remaining will be increased, because firm will less invest in bonds. On the other side, if the interest rates on bonds will be increased, then it would be more beneficial for the firms to invest in bonds and optimal cash remaining will comparatively lesser and vice versa.

Boumol's analysis also targets one more important fact for the behave of demand of transaction remaining. When any firm or person purchases the bonds in big amount, then he has less transaction remaining and vice versa. But the non-interest costs are found in the form of brokerage, posteen etc. in each purchase which buyer has to pay. So it has to balance the deficiency of expanse incurred on the purchase of bonds in a larger number in comparison to the income received on the purchase of bonds in smaller number. This decision depends on the interest rate on bonds.

However, the interest rate will be larger, firm could expense as more in purchase the bonds. One more important cause of determining this decision is that amount of money which is kept for transaction because the brokerage of purchase or sell of bonds is comparatively constant and doesn't change more

in comparison to transaction amount. When the amount for transaction will be larger, then brokerages will be comparative lesser. "The minimum brokerage on purchasing bonds of \$1000 will be expensive. The minimum brokerage on purchasing bonds of \$1000000 will be negligible. So however bigger will be the amounts of total transactions, the brokerage will be as lesser, and the optimal withdrawals will be done similar times." It happens because of scale savings in the use of cash management or money.

This means that the average cost of transaction on higher levels of income i.e., brokerage is comparatively lesser. As the income increases, the transaction demand of money is also increased but this increase in less quantity in comparison to increase in income. If income increased four times, then optimal transaction remaining is doubled only. Because Boumol considers the income-flexibility  $\frac{1}{2}$  (half) of money demand, therefore the proportion in which the income will increase, money demand will also increase in that proportion. It happens because of scale savings. Because of increment in income when the amount of money invested in transaction is comparatively large then the scale savings encourage more investment in bonds. In this stock theory of money demand Boumol also focuses on this thing that money demand is a demand for actual remaining. Because the value of average cash availabilities is K/2, therefore the demand of remaining for actual transaction will be as following:

$$\frac{M_{\rm D}}{P} = \frac{K}{2} \sqrt{\frac{2bY}{r}}$$

$$M_{D} = \frac{1}{2} \sqrt{\frac{2bY}{r}} P \qquad \dots (3)$$

Where  $M_D$  is money demand and P is price level. It is known from equation (3) that the demand of transaction remaining is directly "proportional to square root of quantity of transactions and is inversely proportional to the square root of interest rate." It means that there is a direct and equal proportional relation between changes in level and transaction demand of money. If the structure of firm's purchase is unchanged, then optimal cash remaining (Y) will be increased in that proportion in which price-level (P) will increase. If the price-level will be double, then the price value of firm's transaction will also be double. When all the prices will be double, then brokerage (b) will also be double. "Consequently it will be desirable to keep more cash remaining for saving from investments and withdrawals and those costs." On increasing the price value and brokerage of such transactions the optimal demand of money increased in that proportion in which price-level increased. So the mean of analysis of demand of actual remaining presented by Boumol is that there is no money-assumption in money demand for transaction.

# Its Superiority over the Classical and Keynesian Approaches

Boumol's Stock Theoretic Approach related to transaction demand of money is better than Classical and Keynesian Approach in the following points:

- (i) The Theory cash remaining amount of money starts with this consideration that there is linear and direct proportionality relation between transaction demand and income level. Boumol has cleared that it is not right to accept this relation. There is no doubt in this when income is increased, then transaction demand is also increased but because of scale savings in the use of cash management or money this demand increased in small proportion in comparison to income.
- (ii) One superiority of Boumol Theory is that where Keynes approach was that transaction demand of money is inflexible there Boumol proved that transaction demand of money is flexible.
- (iii) Boumol's Approach analyses the transaction demand for actual remaining, and finally forces on the lack of money illusion.

**Notes** 

(iv) Boumol's Inventory Theoretical Approach is better than Classical and Keynesian both the approaches because it integrates transaction demand of money in Capital Theory on keeping in the mind of assets and those interest and non-interest cost.

#### Self Assessment

#### **Multiple Choice Questions:**

The interest-costs and non-interest costs in keeping remaining cash, remains — (a) Included (b) Remaining (c) Maximum (d) Minimum If brokerage increases then the amount of withdrawals become..... (a) more (b) less (c) mos (d) none of These. As income increases, ...... also increases. (a) transaction demand of money (b) income (d) none of These. (c) expenses If income increases four times, then optimal transaction remaining becomes— (a) Only three times (b) Only double (c) Only equal (d) Only four times.

# **14.2** Tobin's Portfolio Selection Model: The Risk Aversion Theory of Liquidity Preference

James Tobin presented The Risk Aversion Theory of Preference based on portfolio selection in his famous text titled as "Liquidity Preference as Behavior towards Risk". This theory has removed two main weaknesses of Keynesian Theory of Liquidity preference. One, Keynesian Theory of Liquidity preference depends on the flexibility of expectations of future interest rates; and second, person keeps either money or bond. Tobin has removed these weaknesses. His theory does not depend on the flexibility of expectations of future interest rates, but starts with this consideration that the expected value of capital profit or loss is always zero on keeping the interest holder assets. Again, it is also clear that there is money and bonds both in the portfolio of any person; it is not that only one in a time.

On presenting his portfolio selection model of liquidity preference Tobin starts on considering that there is money and bonds both in the portfolio of any assets holder person. He has no income and risk from money. However, interests and incomes both are gained in bonds. However, the income gained from bonds is uncertain because the capital gain or losses are also included. However, the investment in bonds will be greater, the risk of capital loss from those will also as greater. Investor can only bear this risk when the gaining incomes from bonds fulfill it.

If expected capital gain or loss is g, then it is consideration that investor will work on the base on own estimation of probability distribution of it (g) and it is also consideration that the expected value of this probability distribution is zero and is independent from the level of interest rate r started on bonds.

There is M portion of money and B portion of bonds in his portfolio, where the total of M and B is One. No value is negative. The function of portfolio R is:

$$R = B (r + g)$$
 where  $0 \le B \le 1$ 

Because g is a random variable of which expected value is zero. So the function of portfolio is:

$$RE = \mu R = Br$$
 Notes

The risk related to portfolio is measured from the standard deviation of R i.e.,  $\sigma$ R. Tobin has described about the three types of investors. One-type of investors are those who are interested in facing risk and they use their entire money in bonds for facing the risk. They face risk in exchange of unexpected income of bonds. They are like gamblers. Second section is of plungers. They either invest their entire money in bonds or keep it in cash form. These plunger natured persons either invest their entire property or do not face a single risk.

But most of the investors are in third section. They are risk averters or diversifiers. Risk averters want to save from that risk of loss that is related by keeping the bonds instead of money. They become ready to face the risk only in that condition when they have expectation that they will get something extra (income) from bonds, subject to whatever extra risk they face it brings more increments in resulting income with it. Therefore, they will make their portfolio more diversified and will keep money and cash both. Though no result or risk is gained from keeping the money, then also it is the liquid form of assets that can anytime be used to purchase the bonds. To know about preference in risk and expected result of risk averters, Tobin uses indifference curves of positive slope, which shows that risk averters demand for more expected results to face more risk. It is shown in figure 14.2 in which horizontal axis measures risk  $\sigma R$  and vertical axis measures the unexpected results  $\sigma \mu R$ . Or line is the budgetary line of risk averter. It shows those combinations of risk and expected result on which basis he invests his portfolio of wealth in money and bonds. I₁ and I₂ are the indifference curves. Indifference curve shows that it is indifferent with those all combinations of risk and expected result which are situated on I₁ curve. It gives the preference to the points situated on I₂ curve instead of the points situated on I, curve. But the condition of balance between risk and expected result for the risk averter will be available where it's budgetary line will touch the indifference curve. Such point on budgetary line and indifference curve I, is T.



Express your views on Boumol's Inventory Theoretic Approach.

The length of vertical curve in the lower part of figure shows that assets of which risk averter keeps his portfolio in money and bonds. OC Line shows the risk as the proportion of part of total portfolio kept in bonds. Therefore, the point E on this line drawn as a normal from point T determines the mixed portfolio. There is OP as bond and PW as money.

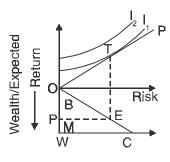


Figure 14.2

Therefore, risk averter, on keeping his entire wealth OW fewer in bonds and fewer in cash, diversifies his entire wealth.

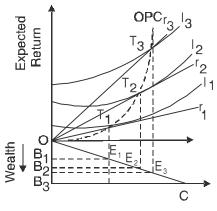


Figure 14.3

This is the reason that he is called diversifier. He is not ready to face the risk until he has not the expectation of expected result. However, risk averter gives the preference to liquidity in his mind, which can only be rectified from only very high interest rates. However, the interest rate will be greater; The demand of money will we lesser consequently, the rate of keeping the bond will also be as higher. On the opposite hand, however the interest rate will be lesser; money demand will be as larger, and consequently the desire to keep the bond will as lesser. It is shown in **figure 14.3.** 

When interest rate increases, the slope of budgetary line increases. It is shown by budgetary line  $r_1$  which on revolving reaches to  $r_2$  and  $r_3$ . Consequently, with the increment in interest rate the results in proportion of risk are increased and budgetary line moves with touching very high indifference curves. Lines  $r_1$ ,  $r_2$  and  $r_3$  touch the curves  $l_1$ ,  $l_2$ ,  $l_3$  on the points  $l_1$ ,  $l_2$ ,  $l_3$  respectively. These points trace the optimal portfolio curve OPC in the figure, which tells as the points move left to right side upward, the expected results and risks are increased.

These touching input list also determine the portfolio trend of risk averter, as shown in lower part of **figure 14.3.** When interest rate is  $r_{1\prime}$  then they keep  $OB_1$  bond and  $B_1W$  money. As interest rate on increasing  $r_1$  to become  $r_2$  and  $r_{3\prime}$  the risk averter starts to keep more bond  $OB_2$  and  $OB_3$  money respectively in their input list and converted the money into  $B_2W$  and  $B_3W$  on reducing. Figure also shows that when there is increment in interest rate in equal quantities from  $r_1$  to  $r_2$  to  $r_3$  then risk averter keeps the bonds in reducing quantities.  $B_2B_3 < B_2B_1 < OB_1$ . It also means that when interest rate increases then money demand comparatively reduces in less quantity. It's reason is that bonds and money are included in total asset of input list.

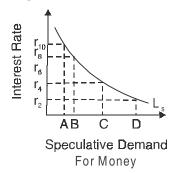


Figure 14.4

So the demand curve of money can be traced on the basis of **figure 14.3**. It is shown in **figure 14.4** as Ls curve. Curve shows that interest rate falls from high level, then there is comparative less increment in money demand. For example, when interest rate converts from  $\mathbf{r}_{10}$  to  $\mathbf{r}_{8}$  on reducing, then there is AB increment in money demand which is less than OA. It's reason is that risk averter wants to purchase more bonds in comparison to money. But when interest rate falls on lower level as become  $\mathbf{r}_{4}$  to  $\mathbf{r}_{2}$  on falling down, then there is a huge increment in money demand. This increment is CD in **figure 14.4**. This money demand curve is not only related with all demands of money but related with speculative demand of money.

Notes

#### Self Assessment

#### State whether the following statements are True or False:

- However the interest rate will be larger, firm could expense as more in purchase the bonds
- 8. Boumol's Approach analyses the transaction demand for actual remaining.
- 9. Tobin Theory depends on inflexibility of expectations of future interest rate.
- Tobin considers his theory more satisfactory form of liquidity preference in comparison to Keynesian Theory, logically.

# 14.3 It's Superiority over Keynesian Theory

In comparison to the Keynes theory of liquidity preference of speculated demand of money, Tobin's Input list Selection Risk aversion theory is the best.

- More Satisfactory: Tobin's theory does not depend upon the inflexibility of expectations
  future interest rates, but moves with this consideration that the expected value of capital profit
  or loss is always zero on keeping the interest holder assets. Tobin considers his theory more
  stisfactory from of liquidity Preference in comparison to Keynesian Thoeory, logically.
- 2. Diversified Input list: In comparison to Keynes theory this theory is also better in this thing that it tells that people instead of only bond or money, can keep the mixed form of bonds and money both as portfolio.

#### 14.4 Summary

Boumol starts with considering that any firm per time-period, as there is the income of Y dollars
in a year of which it spend with a constant rate in that year. So it would be very beneficial
to buy the bonds from it's inactive funds for a firm. Bond can be sold on the need of cash for
any transaction.

# 14.5 Keywords

- Theoretical Approach Principle, Rule.
- Money Illusion Illusion of money.
- Probability Distribution Potential Destribution

#### 14.6 Review Questions **Notes**

- 1. Determine the Boumol's Inventory Theoretical Approach.
- 2. Describe Tobin's Input list Selection Model.
- 3. Proved the Superiority of Tobin's Theory over Keynesian Theory.

#### **Answers: Self Assessment**

1. William Boumol 2. income and expenditures 3. (a) 4. (b) 5. (a) 6. (b) 7. True 8. True

9. False 10. True.

# 14.7 Further Readings



- 1. Macroeconomics: Theory and Policy – H. L. Ahuja, S. Chand Publisher, 2010.
- Macroeconomics Mohan Srivastava, DND Publications, 2010. 2.
- **Macroeconomics** S. K. Chakravarti, Himalaya Publishing House, 2010. 3.
- 4. Macroeconomics: Economic Growth, fluctuations and policy – Robert E Hall and David H. paipel, Vaina Books, 2010.

# Unit-15: Restatement of Friedman's Quantity Theory of Money

**Notes** 

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Introduction

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- 15.2 Empirical Evidence of Friedman's Theory
- 15.3 Friedman Vs Keynes
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- 15.7 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know Friedman's Theory,
- Know Empirical Evidence of Friedman's Theory.

#### Introduction

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, Simanz, Loyed Mints, Frank Knight and Jacob Winer were teaching in Chicago University and they developed such and 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.

# 15.1 Friedman's Theory

In the Restatement of Quantity Theory of Money **Friedman** has forced that "The Quantity Theory is in the first instance 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 meney 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:

- Total Asset: Total wealth is the identical of Budget constraint. Total asset should be divided
  into different assets. Behaviorally, the estimations of total asset are available on some times.
  Except it, income works as the indicator of the asset. So according to Friedman income is
  an agent of wealth.
- **2. Division of Asset 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 asset or vice versa, is under Institutional Constraints. It can be done from buying the 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 asset in the form of non-human asset is a very important variable. Friedman says the ratio of non-human to human asset or the ratio of asset to income as ω (Omega).
- 3. Expected Rates of Return on Money and Other Assets: These rate of returns are the another form of the price of a commodity, it's substitutes and it's 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, devident 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. These variables are named as  $\mu$  (Mu).



Notes

Quantity Theory is firstly a money demand theory. It is not the theory of production or money income or price level.

#### **Forms of Assets**

According to **Friedman**, broadly all the sources of income or consumable services are included in assets. It is capitalized income. **Friedman** means from income is 'Permanent income' which is the average expected yield of lifetime of assets. assets can be hold from the five different forms of assets-Money, bonds, equities, physical commodities and human capital. Every form of assets has it's own quality and these give different returns, which is described as following —

- 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 luxury commodity. It gives the actual return to holder in the form facility, security etc. which is generally measured in price level (P).
- **2. Bonds:** Bonds are defined as the form of claims of stream at the time of payment, which is constant in nominal units.

- Equities: Equities are defined as the form of claims of stream at the time of payment, which is constant in actual units.
- **Notes**
- **4. Physical goods or Non-human goods:** These are inventories of consumer and durabul consuming goods.
- 5. **Human capital:** Human-Capital is the production capacity of Humans.

So every form of assets have its unique quality and different return either in the form of explicitly interest, dividend, labour, income etc. or in the form of services of money measured in inexplicitly price level and inventories. The current price of present discounted price assets of these expected income flows is made from these five forms of wealth, which can be expressed as following —

$$W = Y/$$

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 assets is capitalized income.



Did You Know?

Total asset is the identical of budget constraint.

# **Demand Function of Money**

Friedman demonstrates the demand function of money of a personal asset holder by 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:

$$M/P = f (Y W, R_{m'} R_{b'} R_{e'} g_{p'} \mu)$$

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;  $R_{_{m}}$  is the rate of expected money form;  $R_{_{b}}$  is the rate of expected rate of return on the bonds in which the expected change in their prices are included;  $R_{_{c}}$  is the rate of expected rate of return on the equities in which the expected change in their prices are included;  $g_{_{p}} = (1/P)(dP/dt)$  is the expected rate of the changes in prices of commodity and so is the rate of expected nominal return on physical assets;  $\mu$  (Mu) is for other variables except income which can affected the importance related to services of money as interests, preferences etc.

The demand function of trade is approximately same. Though the division in total asset and human asset is not very beneficial, because one firm can sell and purchase in the market and give it's human asset on rent on it's 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 asset. Income is adjusted with which cash remaining, that is the long timed expected level 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 felling 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 Friedman. The supply of money is temporary because of works 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 with 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 money remaining 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 started to reduce from it. Therefore from both the ways the demand of money is constant. According to Friedman, if there is 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. Is 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 figure 15.1, where income is measured on vertical axis and the supply and demand of money on horizontal axis. M_k 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 coincides each-other on E and determine the balanced income OY. If money supply increases then MS curve on shifting towards right becomes M, S₁. Consequently, money-supply becomes greater than demand of money which increases the total income until there is not established a new balance in  $M_1$  and  $M_2$  on point  $E_1$ . Therefore, income on being increased became OY₁.

Conclusion: In conclusion, 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 it's determiners, then in the resulting of it the sufficient change in prices or nominal incomes occurs because of changes in supply money always approximately.

#### Criticism

The Restatement of Quantity Theory of Money of Friedman has started a heavy debate and empirical investigation if done from Keynesians and monetarists. The discussion of accusations against Friedman's theory is as follows:

on Friedman is that he has used such broad definition of money in which not only currency and demand deposits (M₁) but the term deposits of commercial banks (M₂) are also included. The clear conclusion from this definition is found that the interest flexibility of demand of money is negligible. If the interest rate on term deposit increases then their (of M₂) demand increases. But the demand of currency and term deposits (M₁) falls. So the total effect which will occur on demand of money will approximately negligible. But the weakness of Friedman's analysis is that it doesn't differentiate in long term and short

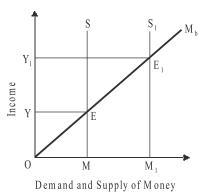


Figure 15.1

term interest rates. Actually if demand deposits  $(M_1)$  are used then, short term rate should be preferred, while long term rate is best for term deposits  $(M_2)$ . It is mandatory that the structure of interest rate like this will affect the demand of money.

- Notes
- 2. Money not a luxury goods: Because Friedman has included term deposits in money, so he considers money as a luxury goods. On this basis his conclusion is that the natural rate of supply of money is very higher than income in America. But no any 'luxury effect' like this is found about England.
- 3. Much Importance to Wealth Variables: In the Friedman's function of demand of money, to consider asset variables more eligible for preference instead of income, the together operation of variables of asset and income, is not seemed logical. As *Johansson* has targeted, whatever return is yielded on wealth, is the income and the current value of income is asset. In demand function of money interest rate and the existence of one out of these variables will be seemed as making failure to other.
- 4. Money Supply not Exogenous: Friedman considered money as constant. In Friedman's arrangement money holders changes the money from exogenous way. But in America money supply is made from those bank deposits which are produced by the changes in bank-lending donations. Bank lending donation further is based in those reserved funds which then increases or decreases when (a) financial intermediaries deposit or withdraw the currency; (b) commercial bank borrows from federal reserve arrangement; (c) money inflow from foreign and money outflow to foreign occurs; and (d) Federal Reserve Arrangement sells or buys the securities. First three items gives the ingenious element definitely to supply of demand. Therefore, Money supply is not fully exogenous, while Friedman's consideration considers it as exogenous. Money supply mostly occurs ingenious.
- 5. **Ignores the effect of other variables on money supply:** Friedman ignores the effect of other variables on money supply as price, production or the interest rate. But there is empirical evidence that money supply can't be described in the form of function of above given variables.
- **6. Does not consider time factor:** Friedman tell nothing about adjustment speed and time determination or time duration in which this theory is not applicable.
- 7. No Positive Relation between Money Supply and Money GNP: It is found in Friedman's conclusions that Money Supply and Money GNP are positively correlated. But Kaldor's approach is that in Britten, the best correlation is between the quarter changes in cash amount held in coins and notes by public and according to personal consumption on market prices, not between money supply and Money GNP.

**Conclusion:** But on being these criticisms "To apply the fundamental law of Capital theory by Friedman on Money theory i.e., return on capital and current value capital of income is the most important development in money theory after the General theory of Keynes. It's theoretical importance is included in this thing that it positively integrates to wealth and income in the form of effects on behaviourally."

#### **Self Assessment**

#### Fill in the blanks:

- 1. According to Friedman, money is an asset or.....
- 2. The demand of Money is the part of capital or ......

# Notes 15.2 Empirical Evidence of Friedman's Theory

Many Empirical studies related with Money Theory of Friedman have done in Chicago and other universities, in which some of them are highlighted below:

The modern theory of money forces on demand of money. Demand of money is the assets which depends on many variables and generally it is constant. *Friedman* himself and other economists of Chicago especially *Saldon* have empirically experimented in this relation. According to it the variables on which demand of money depends the evidences of those effect are following:

- In relation with income Friedman found that there is very high leveled correlation in the long term changes of money-stock per capita and actual income per capita. But flexibility of money-demand for the changes in per capita income is more than unit. Friedman found about America that this flexibility is 1.8 from which he concluded that this behavior of demand of actual remaining is similar as the behaviour of demand of luxury goods.
- 2. Friedman's study tells about the circular behaviour of income that in the expansion of economy the actual stock of money and actual income both increase, and decrease in contraction, but the rank of change in actual stock is lesser instead of actual income. This means that the ratio of income velocity of money to money stock of income, increase in expansion stage, and decreases in contraction stage.
- 3. The cost of holding money, i.e., related to interest rate Friedman on the basis of empirical evidence concluded that interest rates definitely affects the demand of money but this effect is not heavy in size. *Second*, no agreement on that are short term or long term interest rates related with intimacy with demand of money. But this evidence is clear that in the form of absolute price there is lesser flexibility in short term instead of long term. *Third*, approximately all the estimations, whether they are related with long term or short term rates, show lesser flexibility than unit in absolute price. The *last*, the change in actual income instead of changes in interest rates, are found the most important reasons of changes in demand of money.



Task

Express your views about Friedman theory.

#### **Self Assessment**

#### **Multiple Choice Questions:**

3.	The main source of wealth in	capacity of humans.	
	(a) productive	(b) editorial	
	(c) financial	(d) none Of These	
4.	Income can do the of indicator of wealth.		
	(a) rebel	(b) work	
	(c) plan	(d) none of these	
5.	The printed rate of return can be		
	(a) zero	(b) lesser	
	(c) more	(d) none of these	

6.	Except liquidity the preference	Notes	
	(a) Invariable	(b) Variable	

(c) Good variable (d) None of these.

# 15.3 Friedman Vs Keynes

The demand function of money of Friedman is different from Keynes from many ways which is discussed following:

- In comparison to Keynes, Friedman uses a descriptive definition of money for explaining
  the demand function of money. He considers money as an asset or capital good which has
  the capacity to work of a temporary residence of purchasing power. It is held for delivering
  the income outflow and consumable services. On the other side, in the Keynes definition of
  money, demand deposits and government interest-free credits are included.
- 2. Friedman produces such demand function of money which is absolutely different from Keynes. According to that, demand of money towards the asset holders is a multivariable function. These are  $-R_m$ —yield on money;  $R_b$ —yields on Bonds;  $R_e$ —yield on securities;  $g_p$ —yield on physical assets; and  $\mu$  (Mu) showing other variables. In Keynes Theory, the demand of money in the form of assets in limited till bonds, where interest rates are the relative costs of money holding.
- 3. There is also difference in money instrumentation of Keynes and Friedman how changes in money affects the financial action? According to *Keynes*, monetary changes by bond prices and interest rates affect the financial action indirectly. Monetary officials increase the money supply on purchasing the bonds which increases their prices and reduces the yield on them. On the other side, the monetary changes in Friedman's Theory affect the prices and productions of all typed commodities directly and straightly. Because people will sell and buy any assets they have. Friedman focuses on the thing that the market interest rates are smaller parts of total spectrum of those rates with which these are related.
- 4. There is also the difference about the aims of holding the money remaining in both the approaches. Keynes divides money remaining in 'active' and 'inactive' series. In first transaction and caution objective are included and in second, the speculative objective of money holding. On the other side, Friedman doesn't do any such division in money remaining. According to him money is held for many different objectives which money determines the total quantity of physical assets, total asset human asset and securities like general preference, interests and expectations.
- 5. Friedman explains his theory by permanent income and nominal income in his analysis. Permanent income is that which quantity a asset holder consumes. On keeping his asset as entire for some time. Nominal income is measured in the current units of currency. It depends on the quantity and price both of trading commodities. On the other side, Keynes doesn't show any such difference.

#### Self Assessment

State whether the following statements are True or False:

- 7. The interest flexibility of long term demand function of money is negligible.
- 8. The demand function of trade is approximately same.
- 9. Friedman considered money as constant.
- 10. The supply of money is mostly exogenous.

# Notes 15.4 Summary

• 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 it's determiners, then in the resulting of it the sufficient change in prices or nominal incomes occurs because of changes in supply money always approximately.

# 15.5 Keywords

- Constraints Regulator.
- Capitalized With Capital.

# 15.6 Review Questions

- 1. What do you understand by Friedman's Theory?
- 2. Interpret the Empirical Evidence of Friedman's Theory of Money.
- 3. Write the comment on 'Friedman *Vs* Keynes'.

#### Answer:s Self Assessment

1. capital	2. Asset Theory	3. (a)	4. (b)
5. (a)	6. (b)	7. True	8. True
9. False	10. False		

# 15.7 Further Readings



Books

- 1. Macroeconomics S. K. Chakravarti, Himalaya Publishing House, 2010.
- **2. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E Hall and David H. Paipel, Vaina Books, 2010.*
- **3.** Macroeconomics: Theory and Policy H. L. Ahuja, S. Chand Publisher, 2010.
- **4. Necessity of Macroeconomics:** *H. S. Nath, Cyber Tech Publication,* 2012.

# Unit-16 Money Supply: Definition and Importance of Money

Notes

#### Contents

Objectives

Introduction

- 16.1 Money Supply: Meaning and Definition
- 16.2 Two main Components of Money Supply Currency and Demand Deposits
- 16.3 Monetary Aggregates and Money Supply Measures in India
- 16.4 Factors Influencing Supply of Money: A Theoretical Prescription
- 16.5 Summary
- 16.6 Keywords
- 16.7 Review Questions
- 16.8 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know the Money Supply,
- · Study of money Multiplier,
- · Know the Algebraic Expression,
- Know the limits of credit creation.

#### Introduction

After knowing the meaning, working and qualities of money in last chapter, you may have the curiosity to know the answers of many questions. As you would curious to know that how the money can come in trend in economy. How the quantity of money supply is determined in economy? Is there any role of commercial banks and people in the relation of quantity of money supply in economy? What should be the components of monetary aggregates? Etc. We'll try to answer sufficiently to these entire questions in this chapter. The contribution of commercial banks in money supply (which is also known as the name of credit creation of commercial banks) is also discussed in this chapter. Except it, the current condition of money supply in India is also discussed briefly.

# 16.1 Money Supply: Meaning and Definition

The purport of money supply is to the quantity of money available in economy. This is a stock perception which is measured in a time. The addition of total quantity of current currency and total quantity of demand deposits in economy in a definite time is called as money supply. Currency is the addition of current coins and notes in economy. Demand deposit or cheque deposit is called those bank

deposits which depositor can get on demanding or can take from the bank by cheque. But economists are not unanimous on the general definition of money. There are different approaches about money. Many economists consider the currency and money deposit as two components of money supply while other economists consider the term deposits as the third component of money supply. In actual, if only current currency and demand deposits will be included in money supply then we'll bound money till the media of exchange only. The base of store of value is also an important work of money. On interpreting this work, currency, demand deposit, term deposits and other financial instruments should be included which work as the base of store of value.

- According to Milton Friedman: Money supply should also include saving and term deposits besides currency in circulation and demand deposits.
- As per Edward Shapiro: Supply of money is dollar amount of all those things which are
  generally acceptable by the public in payment of goods, services and other valuable assets
  and for discharge of debts.
- According to J.G. Gurley and E.S. Shaw, Money should include all those things which are
  it's close substitutes.

#### Why include term deposits in the supply of money?

These deposits are for definite time period. The interest rate on it is constant according to time. These can't be converted into cash by the cheque, because of which these deposits are different from money deposits. So they can't be called cash-in-hand. Question arises that if these deposits are not liquid as currency than why are these included in the supply of money? Undoubtedly, the receipt of fixed deposit is not used in exchange medium for current and future payments; then also the economists as Milton Friedman are in the favour of including these receipts in the supply of money. His advice is that term (fixed) deposit can be converted into demand deposit on high discount rate. The conversion of term deposit into demand deposit takes the equal time as the payment of high discount rate to the bank. Therefore, fixed deposits should also be considered as a part of supply of money similar to demand deposits.



Notes

The conversion of term deposit into demand deposit takes the equal time as the payment of high discount rate to the bank.

#### **Self Assessment**

#### Fill in the blanks:

- 1. Currency is the addition of current coins and ...... in economy.
- 2. The base of store of value is also an important work of ......

# 16.2 Two main Components of Money Supply – Currency and Demand Deposits

The two main components of Money Supply are (1) Currency and (2) Bank Deposits. The detailed explanation is as following:

(1) Currency Notes

The purport from currency is the coins and notes in circulation.

- (i) Coins: Now a days the coins are released in every country by the government, though in old era private institutions were also using to release the coins. Government used to restrict the private institution coins in the matters of weight of coins and purity of metal used in coins so that people could save from the fraud. There were two types of coins under the value of gold and silver—Full-bodied Standard Coins and Token Coins. But prevalent now a days under the Managed Currency System, there is no importance of Full-bodied Standard Coins. So those are not in circumstances now. Indian Rupee is neither a full-bodied Standard Coins nor a Token Coin. The 50-paisa, 25 paisa, 10 paisa, 5 paisa, 2 paisa and 1 paisa coins are the Token Coins. The Token coins are not important components of money. Though a large quantity of small coins are in circulation because of poverty in India then also this is only 3.5 % part of total money supply. In the developed countries like America, Token coins are lesser than 2 % of total money supply.
- (ii) Currency Notes: An important part of money supply are the currency notes. Now a days currency notes are released by either Reserve Bank of country or Government itself. The One Rupee note by Indian Government and the all other notes are released by Reserve Bank of India. There can be many ways to release (issue) the note; as, representation, proportional, minimum fund, variable, constant, etc. In the era of metal value, paper money was the representative. In other words, the metallic base was kept beside these notes. If Central Bank was releasing the notes of one crore then it had to keep the gold or silver valued one crore in the treasure. The two main objectives to release the currency representation letter was such - (i) Saving of the cost of minting coins, (ii) protection from the loss from rubbing the metal. But this system of note release was inflexible because the supply of currency letter was dependent on metal stock. It could not be more than metal stock. For removing the weaknesses of currency representation letter Proportional Method was adopted. Reserve Bank was releasing the Notes on the base of Proportional Reserve System, till 1956 A.D. According to this system the 40 % of the value of Entire Notes was kept in gold, silver, foreign assets and foreign currencies. After 1956 A.D., Minimum Reserve System was adopted. According to this method, it is compulsory that Reserve Bank has to keep the minimum fund of 200 crores in reserves, in which the gold should be of 115 crores. There on the base of minimum fund of 200 crores Reserve Bank can release the notes until any limit. This system is very flexible but the fear of expansion of many notes occurs. Currency notes can be variable or constant. Under the variable currery exchange monetary authorities have to change the currency note with metal. Under the constant currency paper, Reserve bank (Monetary Authorities) gives the guarantee to change the paper notes into token coins or other notes, but not to change in gold or silver. Currently, the unchangeable method to release the notes is circulated in all the countries of the world. Notes are actually promissory notes. Monetary authority promises to give coins or other notes in exchange of it. In resulting of this method the importance of Monetary paper policy and Monetary management has very increased. Now note release does not depend upon the stock of gold or silver. The monetary authority on keeping in the mind the needs of economy does the supply or determination.

#### (2) Demand Deposits

The people in all the countries deposit their money in banks. Bank Deposits are of two types—(i) Fixed Deposits and (ii) Demand or Current Deposits. Fixed Deposits are of a definite time period. The cheque cannot withdraw these Deposits. But the amount of Demand Deposits can ever be withdrawn by the depositor. So the cash in demand deposit form is as liquid as money. In western countries, 90 %

payments are done by the banks. The importance of demand or current deposits is continuously increasing in India.

It is very safe and convenient to make the payment by the cheque from current or demand deposit account. The payment by cheque is so convenient because however amount of cash can be withdrawn by the cheques. The use of high value notes can be unsafe. Banks have the evidence of payments by cheques because these are noted in the bank accounts. If there would be a problem related to payment then it can be solved by the investigations.

**Keynes** has included the demand deposits in supply of money in his book "A Treatise on Money" (1930 AD). At that time, the economists as *Parker Wills* had objected on it. But currently the demand deposits are started to be include in supply of money in every country approximately because goods and services can also be purchased by demand deposits. But this thing is remarkable that it is not compulsory by the law to accept the payment by cheque. Any of the person can deny accepting the cheque. But to pay in cash form is a legal obligation

Banks give the loan on the basis of money deposited to them. Fro own experiences, Banks have the knowledge of this thing that all the depositors never withdraw their entire deposits at the same time. So if they keep in them a definite proportion of total deposits and give the remaining amount as credit then they can fulfill the needs of depositors. This is the reason that banks are in the situation that however totals deposits they are having many times greater than that they can credit to people. This activity of banks is called as 'Credit Creation'. The credit created by banks is also included in supply of money because it is a part of demand deposits.



Did You Know?

Money supply should also include saving and term deposits besides currency in circulation and demand deposits.

## **Self Assessment**

#### **Multiple Choice Questions:**

3.	Money should include all those things wh	ich are it's close
	(a) substitutes	(b) installation
	(c) are not	(d) none of these
4.	The two components of money supply are	: <b>-</b>
	(a)Currency and Bank Deposits	(b) Wealth and assets
	(c) House and Shop	(d) None of these
5.	The purport from currency is the coins and	d in circulation.
	(a) wealth	(b) notes
	(c) rupee	(d) none of these
6.	are the important part of	money supply.
	(a) Banks	(b) Currency Notes
	(c) Citizens	(d) None of these

# 16.3 Monetary Aggregates and Money Supply Measures in India

**Notes** 

Whereas there is the question is of the history of money supply measures in India, only one supply measure M of money was being used by RBI till 1967-1968. M was including people demand deposits and currencies. M was traditionally called as narrow money supply measure. From 1967-1968 till 1977 A.D., a detailed money supply measure was used that was called as 'Aggregate Monetary Resources - AMR'. In AMR, currency, demand deposits, and term deposits were included. In 1977 A.D., Reserve Bank of India had propounded four new measures of money supply; these are  $M_1$ ,  $M_2$ ,  $M_3$  and  $M_4$ . The detailed description is as following:

M₁ = Currency of public + Demand Deposit of Banks + Other Deposits of RBI

 $M_2$  = Currency of public + Demand Deposit of Banks + Other Deposits of RBI + Deposits in Saving Plans of Post Office

 $M_3$  = Currency of public + Demand Deposit of Banks + Other Deposits of RBI + Term Deposits of Banks

 $M_4$  = Currency of public + Demand Deposit of Banks + Other Deposits of RBI + Term Deposits of Banks + Total Deposit of Post Office (Except NSC)

#### Tou please note it

In narrow mean money supply measure is not equal to  $M_1$  of new series of M 1977, though the component of these sets is same.  $M_1$  includes the money deposits of all the central, state and primary cooperative banks while M only includes the term deposits of state cooperative banks.

M₃ of new series includes the term deposits of all cooperative banks while Aggregate Monetary Resources (AMR) dose not includes the term deposits of any cooperative banks.

In 1998 A.D., the Executive Committee of RBI advised two new measures as  $NM_2$  and  $NM_3$ . Beside this committee also advised for three liquidity measures as  $L_1$ ,  $L_2$  and  $L_3$ . These three are called as Monetary and Liquidity Aggregates. The detailed explanations of these measures are as following:

- NM₂ = Currency of public + Demand Deposit + Other Deposits of RBI + Short Term Deposits
- 2. NM₃ = NM₂ + Long term Deposits + Short Term Fund of Financial Institutions
- 3.  $L_1 = NM_2 + Deposits of Post Offices$
- 4.  $L_2$  = Term Monetary Receipts + Certificate of Deposits + Term Deposits
- 5.  $L_3 = L_2 + Social Deposits of Non-Banking Financial Institutions.$

#### Other Deposits

It shows the deposited amount in RBI besides the Government and Commercial Banks. The Demand Deposits of International Organizations, Foreign Central banks, Foreign Government and Financial Organizations etc. are included in it.  $M_3$  of new series includes the term deposits of all cooperative banks.



Task

Express your views about money supply.

## Notes Self Assessment

State whether the following statements are True or False:

- 7. Notes are actually Promissory paper.
- 8. The people in all the countries don't deposit their money in banks.
- Currently, the unchangeable method to release the notes is circulated in all the countries of the world.
- 10. Banks give the loan on the basis of money deposited to them.

## 16.4 Factors influencing Supply of Money: A Theoretical Prescription

According to Prof. Chandler the supply of money in an economy depends on the following elements—

# (1) Size of the Monetary Base

It is called as High Power Money or Outside Money or Reserve Money. High Power Money or Outside Money is said to that money which Reserve bank or Government releases and which Public and Banks keep in themselves. In other words,

$$H = R + C$$

(Here, H: High Power Money, R: Total Reserves of Banks, C: Currency in circulation) In other words,

High Power Money = Total Reserves of banks + Currency of Public (Notes and Coins)

The difference in money and high power money is that money includes demand deposits besides the currency while high power money includes cash reserves of banks besides the currency. The supply of money then increases when there is an increment in high power money. The size of supply of money depends upon money multiplier. The money multiplier is the ratio of high power money and the sum of total of currency, required reserves of the banks and other deposits of the banks with the Central bank.

## (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 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, as-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 the 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 from multiplying the quantity of Money with circulation velocity. In other words,

Supply of Money = MV

# 16.5 Summary

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 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.

# 16.6 Keywords

- Money Supply Supply of Money.
- Creation of Credit -- Secondary deposit.
- Outside Money Creation of outside money.

# 16.7 Review Questions

- Express the meaning and definition of money supply. 1.
- 2. Which are the two main components of Money Supply?
- 3. Determine Monetary Aggregates and Money Supply measures in India.
- Describe the factors influencing supply of Money.

#### **Answers: Self Assessment**

1. paper money	2. money	3. (a)	4. (a)	5. (b)
6. (b)	7. True	8. False	9. True	10. True

# 16.8 Further Readings



- **1. Necessity of Microeconomics –** *H. S. Nath, Cyber Tech Publication,* 2012.
- **2. Macroeconomics** S. K. Chakravarti, Himalaya Publishing House, 2010.
- 3. Macroeconomics: Economic Growth, Fluctuations and Policy Robert E. Hall and David H. Paipel, Vaina Books, 2010.
- **4. Macroeconomics: Theory and Policy** H. L. Ahuja, S. Chand Publisher, 2010.

# Unit-17: Money Multiplier and Credit Creation by Commercial Banks

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- 17.3 Some Basic Concepts
- 17.4 Process of Credit Creation or How do Banks Create Credit?
- 17.5 Limitations of Credit Creation
- 17.6 Competitive Banking and Credit Expansion
- 17.7 Do Banks Really Create Credit?
- 17.8 Money Supply in India
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- 17.10 Does Supply of Money in the Economy Depend on the Discretion of the Central Bank?
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## **Objectives**

After studying this unit, students will be able to:

- Know the Money Multiplier,
- Know the Algebraic Expression,
- Know the Supply of Money in India,
- · Know the Limitations of Credit Creation

#### Introduction

Through credit creation, banks increase the supply of money in the economy which has a direct impact on production, consumption and level of investment and along with it process of development and prosperity is influenced.

# 17.1 Money Multiplier

Money multiplier is the ratio of change in supply of money to the change in monetary base. Monetary base is the sum of currency in circulation and cash reserve of the banks. Consider that if as a result of a change of  $\mathfrak{T}$ . 10 crores in monetary base, there is a change of  $\mathfrak{T}$ . 30 crores in the supply of money

then money multiplier will be 3. Coefficient of Money multiplier may be known from the below mentioned formula:

Notes

$$\label{eq:Money Multiplier} \begin{split} & \textbf{Money Multiplier} = \frac{\textbf{Money Supply}}{\textbf{High Powered Money}} \\ & \text{OR} \\ & m = \frac{M}{H} \\ & \dots \text{(i)} \end{split}$$

(Here, m = Money Multiplier, M = Supply of Money (currency in circulation and bank's demand deposits), H = High power money)

Total Supply of money is the sum of currency and demand deposits.

$$M = C + D \qquad \dots(ii)$$

(Here C = Currency, D= Demand Deposits)

#### Difference between M and H

M = Supply of money in which currency and demand deposits are included.

H = High Powered money which includes currency and reserves of commercial banks.

In cash reserve only includes required minimum reserves of the commercial banks and excess reserves.



Notes

Money multiplier is the ratio of change in supply of money and change in monetary base

Total supply of high powered money is equal to the sum of currency, required reserves of the banks, other deposits of the banks and excess reserve with the central bank.

$$H = C + RR + ER \qquad ...(iii)$$

(Here H: High powered money, C: Currency, RR: Required reserve of the commercial banks, ER: Excess reserve with the central bank)

If in equation (i) we substitute M and H we will get the below mentioned equation:

$$M = \frac{M}{H} = \frac{C + D}{C + RR + ER}$$

Divide the right side of the equation with D (Demand deposits)

$$m = \frac{M}{H} = \frac{\frac{C}{D} + \frac{D}{D}}{\frac{C}{D} + \frac{RR}{D} + \frac{ER}{D}} \qquad ...(iv)$$

If in equation (iv), in place of  $\frac{C}{D}$ , we write c, in place of  $\frac{RR}{D}$ , we write r and in place of  $\frac{ER}{D}$ , we write e, then

(a) Money Multiplier

$$m = \frac{M}{H} = \frac{1+C}{c+r+e}$$
 (v)

(b) Supply of Money= Money Multiplier X High Power Money

$$m = \frac{M}{H} = \frac{\frac{C}{D} + \frac{D}{D}}{\frac{C}{D} + \frac{RR}{D} + \frac{ER}{D}}$$
 ....(vi)

(c) High Powered Money

$$H = \frac{M}{m} \qquad ....(vii)$$

In short, supply of money is influenced by money multiplier.

#### **Self Assessment**

Fill in the blanks:

- 1. Monetary base is the ...... of currency in circulation and cash reserve of the banks.
- 2. By giving loans, banks want to earn more and more ......

# 17.2 Expansion of Credit Money or Credit Creation

According to the above mentioned discussion, money supply in an economy depends on circulation of currency and demand deposits of commercial banks. Due to any increase in these two components, money supply in the economy increases. Quantity of currency is decided by the central bank which depends on the government's nature of spending whereas deposit constituent of money supply is influenced by commercial banks. Commercial banks influence the money supply in the economy by credit creation or expanding credit money. Credit expansion capacity of commercial banks depends on their cash reserve ratio. In the words of **Lipsey** and **Chrystal**, "Banks can create money by issuing more promises to pay (deposits) than they have cash reserve available to pay out".

In the words of **Newlyn**, "Credit Creation refers to the power of commercial banks to expand secondary deposits either through the process of making loans or through investment in securities."

As per G.N. Halm, "The creation of derivative deposits is identical with what is commonly called the creation of credit."



Did You Know?

Quantity of currency is decided by the Reserve bank.

Before analysing the process of credit creation knowledge of some basic concepts will be useful for the readers.

# 17.3 Some Basic Concepts

1. Those deposits of the bank, which the depositor may withdraw anytime by drawing a cheque, are known as demand deposits. It s also known as 'Chequing deposits' or 'Chequable deposits'. Its detailed classification is as follows:

- (i) **Primary or Cash Deposits:** The amount of money which is deposited by the people in form of cash in the banks is known as Primary or Cash Deposit. It is also known as passive deposits because banks have no role in developing these deposits. Amount of these deposits completely depends on the will of the depositor.
- (ii) Derivatives or Secondary Deposits: When a person takes a loan from the bank, bank does not give him this loan in form of cash but opens an account in his name and gives him a right to withdraw money from it through cheque. Such deposit is known as Derivative or Secondary deposit. Hence each loan given by bank creates a new deposit. Secondary deposit is the result of primary deposit because banks create secondary deposit by keeping a part of primary deposit itself in reserve. According to Halm, "Creation of secondary deposit is credit creation; larger the amount that a bank advances greater is the creation of secondary deposits or loans created." That is why it is said, "loans create deposits and deposits create loans."

#### Demand Deposits = Primary Deposits + or Secondary Derivative Deposits

- 2. Cash Reserve Ratio: No doubt that banks want to earn more and more profits by giving loan but it does not mean that it may lend its entire cash. The people who deposit their money in bank may withdraw it anytime because it is their money. hence banks alsways keep a part of net deposits in form of cash reserve with them, so that the requirement of the depositors may be fulfilled. That part of net deposit which banks keep with themselves as cash is known as Cash Reserve Ratio.
- **3. Excess Reserves:** The amount with the bank which is more than the required cash reserve ratio (CRR) is known as Excess Reserve. In reality, it is this excess reserve which becomes the base of credit creation.
- 4. Credit Multiplier: Ratio of increase in primary deposit and increase in total deposit is known as credit multiplier. If as a result of an increase of Rs. 1000 in primary deposits, there is a credit creation of Rs. 10,000, credit multiplier will be 10. Inverse relation between credit multiplier and Cash Reserve Ratio(CRR) may be expressed in form of following equation:

Credit Multiplier = 
$$\frac{1}{\text{Cash Reserve Ratio}}$$

#### Difference between money multiplier and Credit Multiplier

Money multiplier: It is the ratio of supply of money and high powered money.

$$m = \frac{1+c}{c+r+e}$$

**Credit Multiplier:** It is the ratio of increase in total deposits and increase in primary deposits of the banks or is the reciprocal of Cash Reserve Ratio (CRR).

$$\frac{\Delta D}{\Delta P} = \frac{1}{r}$$

Credit multiplier

Here, r= Reserve ratio, D = Total Deposits, P = Primary deposits.

### **Self Assessment**

#### **Multiple Choice Questions:**

- 3. Creation of secondary deposit itself is
  - (a) Credit creation

(b) Credit

(c) Deposit

(d)None of these

4. Loans do of deposits –

(a) Selection

(b) Creation

(c) Credit

(d) None of these

5. Ratio of increase in primary deposits and increase in total deposits is called –

(a) Credit multiplier

(b) Credit

(c) Multiplier

(d) None of these

Excess reserve itself becomes of the credit creation —

(a) Base

(b) Budget

(c) Multiplier

(d) None of these

# 17.4 Process of Credit Creation or How do Banks Create Credit?

Commercial banks' method of credit expansion is based on the following conditions:

- (i) Stability in Cash Reserve ratio of banks: Cash reserve ratio of net commercial deposits of banks, remain constant during the period of credit creation process.
- (ii) No flow of cash: Excessive flow of cash should not happen from the banking system i.e. people should keep a designated amount of currency with them for exchange.

Study of process of credit creation can be done in two parts:

(1) Single Banking System (2) Multiple Banking System

# (1) Credit Creation in a single banking system

It is just an easy assumption that in an economy only one bank does all the banking business. Assume that MR. X deposits ₹. 1000 in the bank. In form of primary deposit, this amount is demand deposit of the bank. On this assumption that CRR is 10%, Bank's balance Sheet will look like this:

		heet of the Bank deposit being ₹ 1000)	
Liabilitie	es	Assets	
Demand Deposits	.₹ 1000	Cash = ₹ 1000	
(Primary Deposit)		Cash Reserve fund = ₹ 100 (10% of 1000) Excess Reserve = $1000 - 100 = ₹ 900$	
	Total = ₹ 1000	Total =	= ₹ 1000

Without liquidity or security risk, bank can give a loan of ₹ 900. If bank does so, its explanation will be as follows:

	(When initial excess r	et of the Bank reserve is converted to an)		
Liabi	lities	Ass	sets	
(i) Demand Deposits (P	rimary Deposit) ₹. 1000	(i) Cash received		= ₹ 1,000
(ii) Demand Deposits	= ₹900	Cash Reserve fund (10%	6 of 1000)	=₹100
(Secondary and deri	vatives deposits)	Excess Reserve = 1000-	100	= ₹900
		(ii) Loan		=₹900
	Total = ₹ 1,900			Total = ₹ 1,900

Where does the loan amount of ₹ 900 go? If the person taking the loan give the cheque of ₹ 900 to some other person (who has an account in the same bank), then there is no disturbance in bank's cash reserve of ₹ 1000. Bank's demand deposit becomes 1900 for which it needs cash reserve fund of ₹ 190  $\left(\frac{10}{100} \times 1,900\right)$ . In such situation, bank is left with an excess reserve of ₹ 1000 - 190 =

₹810. For bank it will be possible to give another loan of ₹810. Accordingly, bank's demand deposit will increase to Rs.1000 + 900 + 810 = 2710. If the person taking the loan gives the cheque of ₹810 to another person (who has an account with the same bank), there will be again no disturbance in bank's cash reserve of ₹1000. Bank, by keeping ₹271 (10% of 2710) in cash reserve fund, for demand deposit of ₹2710, will be able to give its excess reserve of ₹729 (1,000 – 271) in form loan to some other person. This process of giving loan by the bank will go on until excess reserve becomes zero. At the end bank's balance sheet will be as follows:

			t of the Bank ve ends completely)			
Liabil	Liabilities Assets					
Demand Deposits			(i) Cash received	= ₹	1,000	
(i) Primary Deposit	= ₹	1,000	(ii) Loan	= ₹	900	
(ii) Secondary and derivat	ives deposit = ₹	900		= ₹	810	
	₹	810		= ₹	729	
	₹	729				
Th	is cycle will go on ι	until exce	ess fund does not become ze	ro		
	Total =₹	1,0000	<u> </u>	Total =	₹1,0000	

In this manner, on the basis of cash received of ₹ 1,000, bank created demand deposits of ₹ 1,0000.

$$\left(\frac{1}{\text{CRR}} \times 1,000 = \frac{1}{10\%} \times 1000 = \text{Rs.}10,000\right)$$
 because in this example, credit multiplier is 10.

Credit multiplier = 
$$\frac{1}{CRR} = \frac{1}{10\%} = 10$$

There is an increase of ₹ 10000 in supply of money/ credit in the economy.

**Conclusion:** On an initial increase of ₹1,000 in bank's demand deposit (in form of primary deposit) and on the basis of assumption of CRR to be 10%, bank's demand deposit (sum of primary and secondary deposits) will increase to ₹1,0000.

# **Algebraic Expression**

Algebraic expression of credit creation process as following:

$$\Delta D = \Delta P + \Delta P (1 - r) + \Delta P (1 - r)^{2} + \Delta P (1 - r)^{3} + \dots$$

$$= \Delta P \{1 + (1 - r) + (1 - r)^{2} + (1 + r)^{3} + \dots \}$$

Where,  $\Delta D$ : Net change in demand deposit because of initial change of primary deposit.

ΔP: change in Primary deposit

r: Cash Reserve Ratio (CRR)

**Notes** 

Continuing the above example where  $\Delta P = ₹ 1,000$  and r (CRR)= 10%, process of credit creation will be as such:

$$\Delta D = \Delta P + \Delta P (1 - r) + \Delta P (1 - r)^{2} + \Delta P (1 - r)^{3} + \dots$$

$$= 1,000 + 1,000 (1 - 10\%) + 1,000 (1 - 10\%)^{2} \dots$$

$$= 1,000 + 1,000 \times \left(\frac{9}{10}\right) + 1,000 \times \left(\frac{9}{10}\right)^{2} + \dots$$

$$= 1,000 \left\{1 + \frac{9}{10} + \left(\frac{9}{10}\right)^{2} + \dots\right\}$$

$$= 1,000 \times \frac{1}{1 - \frac{9}{10}} = 1,000 \times \frac{1}{\frac{10 - 9}{10}}$$

$$= 1,000 \times 10 = ₹ 1,000$$

In this way an initial primary deposit of ₹ 1000, creates a credit of ₹ 10000 in the economy, here cash reserve ratio is 10 percent and there is no excess (unnecessary) flow of cash from the banking system. This process of credit creation is shown through figure 17.1.

In Figure 17.1 axis X deposits and axis Y measure various deposit rounds happening due to primary deposit. Primary deposit is ₹ 1,000 in the first round and net deposit is also ₹ 1,000. Initial deposit of ₹ 1,000 creates deposit of ₹ 9,00 in second round and ₹ 8,10 in third round. In this manner, this round of deposit creation will go on until all primary deposits are not divided in cash reserve ratio.

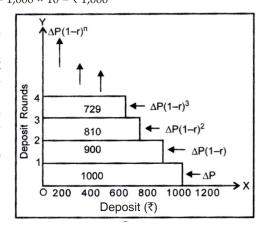


Figure 17.1

# (2) Credit Expansion in Multiple Banking system

Credit expansion process in multiple banking system, though the medium of providing loan, is like single banking system only, which we have discussed earlier. Will ananlyse credit expansion by using the visualized equilibrium letter (Kalpit santulan Patra) of various commercial banks. Here banking system increases it multiple credit creation when all banks increase their deposit amounts with each other. In comparison to single banking system, credit expansion Process in multiple banking system is more realistic.

Assume that in an economy, A, B, C, D many banks are found. Firstly as person deposits ₹ 1,000 as primary deposit in bank A. In such situation, balance sheet of bank A will be as follows:

	Initial Balance Sheet of Bank 'A'			
Liabilities	₹	Assets	₹	
Deposits	1,000	Reserves	1,000	
Total	1,000	Total	1,000	

Bank A, keeping the cash reserve fund of 10%, gives  $\stackrel{?}{\stackrel{\checkmark}{=}}$  900 as loan. In such situation, final balance sheet of bank A will be as follows:

Notes

	Final Balance S		
Liabilities	₹	Assets	₹
Domocito	1000	Reserves	100
Deposits	1000	Loans	900
Total	1000	Total	1000

Assume that a person takes a loan of ₹900 from bank 'A' and gives a cheque of ₹900 for paying off debt, to another person who has an account on bank B. then initial balance sheet of bank B will be made as follows:

	- Initial Balance		
Liabilities	₹	Assets	₹
Deposits	900	Reserves	900
Total	900	Total	900

Bank B, after keeping 10 % of primary deposit of  $\ref{thmost}$  900 as cash reserve ratio, gives balance  $\ref{thmost}$  810 as loan. The final balance sheet of the bank will be as follows:

	Final Balance S		
Liabilities	₹	Assets	₹
Deposits	900	Reserves	90
Deposits	700	Loans	810
Total	900	Total	900

A person borrows ₹810 from bank 'B' and for repayment of debt, gives a cheque of ₹810 to some other person who has an account with bank C. in such situation, initial balance sheet of bank C will be made as such:

	Initial Balance S		
Liabilities	₹	Assets	₹
Deposits	810	Reserves (CRR)	810
Total	810	Total	810

Bank C, after keeping 10 % of primary deposit of ₹810 as cash reserve ratio, gives balance ₹729 as loan. The final balance sheet of bank C will be as follows:

	Final Balance S		
Liabilities	₹	Assets	₹
Deposits	810	Reserves	81 729
Total	810	Loans Total	810

This process of credit expansion will go on until primary deposit of ₹ 1000, does not get distributed in the complete banking system in form of reserve fund. All banks will collectively create a new deposit worth ₹ 9000 and deposit of total banking system will be ₹ 10000 as is shown by table 17.1

		Table 17.1	
Bank	New Deposits	CRR	New Loans
	1,000	100	900
A	900	90	810
В	810	81	729
С	729	-	<u>-</u>
Other bank	-	-	-
Total for the Banking System	1,0000	1,000	9,000

Change in Total Deposit = Primary Deposit X Credit Multiplier

Credit Multiplier 
$$\frac{1}{CRR} = \frac{1}{10\%} = 10$$

Change in total deposit =  $1,000 \times 10 = 1,0000$ 

In short, total deposit of complete banking system, because of the primary deposit of ₹ 1,000, will become ₹ 1,0000.



Task

Express your thoughts in relation to money multiplier.

## 17.5 Limitations of Credit Creation

Banks cannot create credit in unlimited quantity. There are many limitations to the credit creation power of commercial bank, details of which are as follows:

Cash Reserve Ratio: Power of credit creation mainly depends on cash reserve ratio (CRR).
 There is a mutually inverse relation between credit creation and cash reserve ratio. As much cash reserve ratio will be more, creation of credit will be as less. As opposed to this,

as much less will the cash reserve ratio be that much more will the creation of credit be. For example,

Notes

Cash Reserve Ratio (r)	Primary Deposit	Increase in Total Deposit $\left(\Delta D = \frac{1}{r}\Delta P\right)$	Credit Creation
10%	1,000	10,000	10,000 - 1,000 = 9,000
5%	1,000	20,000	20,000 - 1,000 = 19,000
20%	1,000	5,000	5,000 - 1,000 = 4,000

(Here,  $\Delta P$ : increase in primary deposit;  $\Delta D$ : increase in total deposit; r = cash reserve ratio.)

It is clear from the above example that when cash reserve ratio (r) will be 10 percent, then increase in total deposit will be  $\stackrel{?}{\stackrel{?}{\stackrel{}}{\stackrel{}}{\stackrel{}}}$  1,0000. When cash reserve ratio will increase to 20 percent, then increase in total deposit will be just  $\stackrel{?}{\stackrel{}{\stackrel{}}{\stackrel{}}}$  5,000. Opposed to this, when cash reserve ratio decreases to 5 percent then increase in total deposit will be  $\stackrel{?}{\stackrel{}{\stackrel{}}{\stackrel{}}}$  20,000.

2. Amount of Primary Deposits: Expansion of Credit creation depends on the quantity of primary deposit. There is a direct relation between credit creation and primary deposit. If quantity of primary deposit is more, creation of credit will also be more and if quantity of primary deposit is less, creation of credit will also be less, even if cash reserve ratio remains constant. For example, if

$$\Delta P = ₹ 1,000; r = 10\%$$
  $\Rightarrow$   $\Delta D = ₹ 10,000$   
 $\Delta P = ₹ 5,00; r = 10\%$   $\Rightarrow$   $\Delta D = ₹ 5,000$   
 $\Delta P = ₹ 2,000; r = 10\%$   $\Rightarrow$   $\Delta D = ₹ 20,000$ 

If Cash reserve ratio (r) is 10%, then form a primary deposit of ₹ 1,000, total deposit of ₹ 10,000 may be obtained. At the other end, primary deposit just left to be ₹ 5,000, total deposit can only increase to ₹ 5,000. If primary deposit is ₹ 2,000, total deposit may increase up to ₹ 20,000. Hence we reach the conclusion that if cash reserve ratio (r) remains constant, then there is a mutual direct relation between primary deposit and total deposit.

- 3. Banking Habits of the People: Bank's power of creating credit also depends on banking habit of the people. If people do their business mainly through cheque, they will need to keep very little cash with them. As a result cash with the banks will increase because of which, their power of credit creation will also increase. In developed countries of the world, it happens the same way. But in undert-developed countries, people mainly do their business through cash. As a result, their demand for cash is always more. Because of this, cash balance of banks reduces and along with it their power to create credit also reduces.
- 4. Credit Policy of the Central Bank: Power of commercial banks to create credit also depends on credit Policy of the central bank of the country. If the central bank follows cheap credit policy (credit expansion policy), credit creation power of the commercial banks increases; as opposed to this, if the central bank follows expensive credit policy (controlled credit policy), credit creation power of the commercial banks reduces.
- 5. Policy of Other Banks: Power of credit creation by one bank also depends on credit policy adopted by other banks. If all banks work in the same tune then their power of credit creation will be more. But if one bank expands credit but other banks do not co-operate with it then process of credit creation will be limited.

- 6. Confidence of Depositors: Power of commercial banks to create credit is also influenced by the confidence of the depositors. If depositors have full faith on the banking system then they will let their money lie in the bank. It will increase the credit creation power of the banks. As opposed to this, if people do not have faith in the banking system then they will not keep their savings in banks. Less amount of cash balance with the banks reduces their credit creation power.
- 7. Availability of Good Borrowers: Availability of borrowers worth credit also influences credit creation power of the banks. If such borrowers are available in big numbers then more credit will be created. If good borrowers are not available banks will hesitate in giving loans and credit creation will be limited.
- 8. Commercial and Industrial Conditions: During the period of recession, businessmen's and industrialists' demand for loan is very less. Hence not much credit is created by banks in form of secondary deposits. But during boom period, giving loans is profitable for the banks and they create more credit in form of secondary deposits.

#### Two principal parameters that Delimit the Credit Creation Capacity of the Commercial Banks

Two principal parameters that delimit the Credit Creation Capacity of the Commercial Banks are as follows:

- **(i) Primary deposits of commercial banks or cash reserves:** As much more will be cash reserves that much more will be the power of the banks to create credit.
- (ii) Cash reserve ratio determined by the central bank: It is compulsory for the commercial banks to follow the orders of the central bank, relating to Cash Reserve Ratio (CRR). If CRR is increased as in situation of inflation, credit creation power of banks is contracted. As opposed to this if cash reserve ratio is reduced, as in the condition of recession, then credit creation power of the banks increase a lot.

### **Self Assessment**

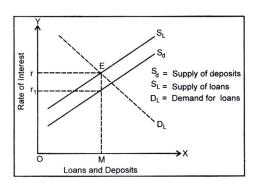
#### State whether the following statements are True or False:

- Money Supply in an economy depends on velocity of currency and demand deposits of the bank.
- 8. Credit expansion capacity of commercial banks depends on their cash reserve ratio.
- 9. That deposit of the bank is called the demand deposit which the depositors cannot withdraw anytime by issuing a cheque.
- 10. Supply of money and high powered money is retio.

## 17.6 Competitive Banking and Credit Expansion

Like Joint stock companies commercial banks also work for profit. According to the perspective of credit expansion, commercial banks through the medium of credit expansion, want to maximise their profits. But credit expansion is not always possible. If people decide to make an increase in their primary deposits then, commercial banks will be able to increase their secondary deposits. Banks, with the help of the primary deposits of the people, increase secondary deposits and expand credit. But in current competitive age, commercial banks, in order to maximise their profits and for expanding credit try other measures. Banks keep excess reserves with them which fulfil the increasing credit requirement in money market. For expanding credit and increasing profits commercial banks plan their policies demand and supply Parameters of money market.

In competitive banking system quantity of credit of banks is determined by demand for loans and supply of loans. Demand for loan depends on the prevailing interest rates and supply of loan depends on quantity of deposit and spread of interest rates What interest rate banks give for accepting deposits from people and what interest rate banks charge for giving loans to the people, the difference between it is known as spread of interest rates. Spread of interest rate is decided by loan supply line and deposit supply line. Demand for loan is inversely related with interest rates. Excessive interest rate reduces demand for loan and less interest rate increases demand



**Figure 17.2** 

for loan. In this manner loan demand curve is a downward falling line. Supply of loan and supply of deposit is directly related to rate of interest. On high interest rates banks do a greater supply of money and people deposit more cash in banks. Slope of both loan supply and deposit supply line is upwards.

In figure 17.2,  $S_L$  is line for supply of loan;  $S_d$  is line for supply of deposit.  $D_L$  is the demand curve of loan. Balanced Rate of interest is Or where  $D_L = S_L$ . It is that rate of interest which bank receives for giving loan to the people.  $Or_1$  is that rate of interest which bank gives to the people on deposit amount. Difference between both interest rates  $rr_1$  (spread of interest rate) determines the quantity of loan supply by the banks.

In the figure, interest rate spread is assumed to be constant that is why loan supply curve and deposit supply curve are mutually parallel. Quantity of loan supply by the banks depends on interest rate spread and deposit supply. Undoubtedly, when there is a boom in money market then for adjusting supply of loan and demand of loan, excess reserves of the bank have a very important role.

# 17.7 Do Banks Really Create Credit?

There is a difference of opinion found among the economist that in reality whether credit is created by banks or depositors. **Walter Leaf** and **Cannon's** opinion is that banks do not themselves create credit. Depositors do the job of credit creation who through their deposits, provide monetary resource to the banks. One part of this deposit is given by the banks as loan. This loan is helpful in credit creation. If depositor does not deposit his money in bank, bank will not be able to create credit. Bank may be compared to a cloak room. Assume that, in a party 50 guests come with simmilar overcoats which they deposit in a cloak room. Also assume that party will continue till 12 O' Clock. Watchman of the cloak room keeps 10 overcoats with himself and gives the rest 40 overcoats to other people on rent for until 11:30 at night. He has kept 10 overcoats with himself because if some people want to go from the party before 12 O'Clock then he may give them these coats. Thus in this manner, by giving 40 overcoats for rent, has the watchman created 40 new overcoats? It is absolutely wrong. In the same way bank also by lending the money of the depositors, does not create credit. Keeping this in mind, **Cannon** has said, "The talk of credit creation by banks is all moon-shine and that every practical banker knows that he is not a creator of credit or money or anything else but a person who facilitates the lending of resources by the people who have them, to those who can use them."

But according to modern economists, above thought of Walter Leaf and Cannon is not correct, because banks lend money more than primary deposit. That is why, it will have to be accepted that banks create credit. Hartley Withers have rightly said, "Loans make deposits and the initiative of creating them goes to the banks."

**Notes** 

**Lipsey** and **Steiner** also believe that expansion of credit is not automatic. It depends on decisions of banks. If banks do not use the increase in cash reserve fund, expansion of credit may not happen.

# 17.8 Money Supply in India

Since 1977, RBI in india is using four monetary aggregate measures which are  $M_1$ ,  $M_2$ ,  $M_3$ ,  $M_4$ .  $M_1$  is a narrow measure while  $M_3$  is a detailed measure of money supply. Since the first five year plan till today, there is a rapid increase in both  $M_1$  and  $M_2$ . In currency component and bank deposit components of money supply, in both there has been a rapid increase. In the initial years of the plan, increase in currency component was more that deposit component. But at present time, in comparison to currency component, increase in demand deposit component is much faster; its main reason is extensive increase in banking services. Table 17.2 shows increase in  $M_1$  and  $M_2$  aggregates of money supply.

	Table 17.2 Money Supply $(M_1 \text{ and } M_2)$		
Year (1)	M ₁ (2)	M ₃ (3)	
1970-71	7,321	10,958	
1980-81	23,117	55,358	
1990-91	92,892	2,65,828	
2000-02	4,22,843	14,98,355	
2004-05	6,46,263	22,33,164	
2005-06	8,26,375	27,29,545	
2006-07	7,65,195	33,10, 278	

(Source: RBI Bulletin 2006, Statistical Outline of India, 2007-08)

From table 17.2 it is clear that from 1970-71 to 2006-07, increase in  $M_1$  and  $M_3$  happened with a rapid speed. Rapid increase of  $M_3$  (approximate 302 times) happened due to increase in time deposits. Extensive increase of  $M_1$  happened due to increase in demand deposits.

Knowledge of Supply of money in India during various plan periods, national income and percentage increase in price levels can be obtained through table 17.3:

	Percentage Growth Rate in Mo and Pric		
Period	Growth Rate in Money Supply (M ₃ )	Growth Rate in National Income	Growth Rate in Price- Level
First Plan	2.2	3.7	-3.6
Second Plan	5.3	4.1	+6.3
Third Plan	9.1	2.4	+5.8
Fourth Plan	15.5	3.3	+9.0
Fifth Plan Sixth Plan	17.9	5.0	+6.3
Seventh Plan	16.7	5.4	+9.7
	17.5	5.7	+6.7
Eighth Plan Ninth Plan	13.8	5.8	+6.6
Tenth Plan	14.2	5.6	+3.9
(2002-03)	16.4	8.7	+5.2

(Source: Statistical Outline of India, 2007-08)

This general belief has been found that there is an intense relation between supply of money and price level. When there is an increase in supply of money then through increase in demand prices also increase. Undoubtedly, supply of money has a direct influence on prices but it is difficult to agree with this opinion of **Irving Fisher**, the main supporter of Quantity Theory of Money, that there is a direct and proportionate relation between quantity of money and price level. For example, in the above given table it is shown that during the period of first plan, there was a fall in price level whereas money supply increased. During the period of ninth plan, in price level there was an increase of only 3.9 percent, whereas in supply of money, there was an increase of 14.2 percent. In an under developed country like India, a large pat of the economy is un-monetized. In this field, all transactions are done on the basis of exchange of goods. If one part of supply of money is used for monetization of this field then demand will increase by this but there will be no increase in prices. Hence in under developed countries like India, if increase in supply of money is used for increasing production and for monetization of non-monetized areas, then prices will not increase.

Form the above table, it is known that supply of money does have in influence on prices but there is no special relation between these two. How increase will be there in prices, as a result of increase in supply of money, this depends on many factors, especially on increase in production in the economy. According to **Prof. B.N. Pandit**, almost a time lag of one year is found in increase in supply of money in India and its influence on prices. During the period of plans, average rate of increase in supply of money was 14 per cent whereas rate of growth (on increase in national income) was 4.1% and increase rate (growth rate) of price level had been 6.6%.

# 17.9 How does Money Get into the Economy?

How does a unit of money get into the economy? It is an important question which a student of economics should understand. In most countries of the world central bank issues notes and coins. For a general person, central bank (RBI in India) prints money and introduces it in the economy. But on which conditions and under what circumstances central bank prints money and introduces it, this question is not as easy as a general person thinks.

Government, for fulfilling budgetary loss, takes loan from the central bank (RBI) by giving its security. Central bank, by printing more money, gives loan to the government and government spends this loan on various developmental and non-developmental works. People may find their income in form of tax (Lagan), labour, profit and interest, from expense done by the government on various projects. In this form currency is introduced in the economy.

As per **Lipsey and Chrystal**, 'The central bank gets high powered money into the economy simply by buying securities (usually government debt instruments). It pays for these purchases with newly issued high powered money."

# 17.10 Does Supply of Money in the Economy Depend on the Discretion of the Central Bank?

No, Supply of Money in the economy does not depend on the discretion of the central bank. No doubt that the central bank (RBI) of the country is officer for issuing the currency of the country. But net sypply of money does not only depend upon the discretion of the central bank. Nte supply of money in an economy depends on the nature and will of the below given factors of the economy:-

- (i) Central bank of the country (ii) Commercial bank of the country (iii) General Public.
  - Deciding the quantity of high power money which does the job of money multiplier, central banks does determines its supply.

Notes

- By determining its Cash reserve ratio (CRR), which is the base of credit multiplier, commercial banks influence the supply of money.
- General public, by determing their preference for liquididty, influence the supply of money.
   It determines the cash reserve ratio of commercial banks and their power to create credit.

Velocity of money should not be ignored. It means that how many times, one unit of money (like a note or a coin) is used as a means of exchange. If velocity of money is measured in form of per unit time-period or in form of flowing concept then, it will also be an important determinant of money supply.

### **Ideal Supply of Money**

Supply of money has an influence on net expenses. Consequently, trade activities, production and employment, all are affected by this. The question arises that for purchasing products produced by

an economy will full employment, in which not source of production is wasted, how much money is needed? this supply of money itself is known as ideal supply. As a result of this supply, it becomes possible to completely utilize the production capacity of the country. In a situation of full employment, if supply of money exceeds ideal supply, condition of inflation arises and prices will rise sharply.

Students are advised that they read this paragraph carefully so that they may have knowledge about how supply of money affects the financial activities in an economy.

As opposed to this, if supply of money is less than ideal supply then prices will start declining, depression will be there and unemployment will be there all around. Hence supply of money should be such so that in the country, all those goods which are being produced may be purchased so that condition of inflation or deflation may not be created.

It must be kept in mind that influence of supply of money on total expense will only be there when people will spend money and not keep it with themselves in form of cash. In reality, by change in supply of money there is also a change in liquidity of the people. People keep their assets in form of monetary, financial and actual fund with themselves. As a result of change in supply of money, changes also happen in monetary assets of the people. If due to change in monetary assets people will want to spend more money on actual assets like house, car, TV set etc, then total expense, and along with it national income will increase. As opposed to this, if people will want to spend their money on financial assets like shares, securities etc. then their prices will rise and rate of interest will decline. Low rate of interest will encourage investment and national income will rise. But if people will prefer to keep their increased monetary assets in liquid form, then there will be no change in total expenditure and nor will the national income change. Hence only by change in supply of money objective of price stability or full employment cannot be achieved. Calculating people's demand for money is equally important.

## **Key Points**

- **Money Supply:** It shows the quantity ofmoney available in the economy for business. It is a stock concept which is measured on a definite time.
- Components of Money Supply: (i) Currency (ii) Demand deposits.
- Monetary Aggregates used in India: According to old measures it is M₁, M₂, M₃ and M₄. According to new measures it is NM₂, NM₃, L₁, L₂, and L₃.
- Factors Influencing Money Supply: (i) Size of monetary base (ii) Ratio of cash and demand (iii) Velocity

Money Multiplier: It is the ratio of change in money supply and change monetary base.

- Notes
- **High Powered Money:** It is that money which is issued by central bank or government and is kept with themselves by the public or commercial banks.
- Credit Multiplier: It is the ratio between change in total deposit and change in primary deposit.
- **Demand Deposit:** It is that amount kept by the people with the bank, which may be withdrawn any time through cheque.
- Primary Deposits: Amount deposited as cash by the people in the bank is known as primary deposit.
- **Derivatives or Secondary Deposits:** Derivative deposit is the result of primary deposit because commercial banks, keeping a part of primary deposit in form of money, create secondary deposit.
- Cash Reserve Ratio: That part of total deposit which commercial banks keep with themselves as cash is known as cash reserve ratio.
- Excess Reserve: Cash reserve that remains with the bank in excess of cash reserve ratio is known as excess reserve.
- Limitations of Credit Creation: (i) Cash reserve ratio: on cash reserve ratio being more, quantity of credit creation redues. (ii) Amount of primary deposit: more primary deposit shows more credit creation capacity (iii) Banking habit of the people: by more use of banking services by people, more credit will be created. (iv) Credit policy of central bank: cheap credit policy of central banks provides the facility of more credit creation (v) Credit policy of other banks: is all banks work united, more credit will be created (vi) Confidence of depositors (vii) Availability of good borrowers (viii) Commercial and industrial conditions.
- Principle Parameters that Delimit the Credit Creation Capacity of Commercial Banks: (i) cash reserve of commercial banks (ii) cash reserve ratio of central bank.

### **17.11** Summary

 Velocity of money should not be ignored. It means that how many times, one unit of money (like a note or a coin) is used as a means of exchange. If velocity of money is measured in form of per unit time-period or in form of flowing concept then, it will also be an important determinant of money supply.

## 17.12 Keywords

- Discretion Will.
- Non- Monetized where there is no money.

## 17.13 Review Questions

- 1. What do you understand by money multiplier?
- 2. Describe the limitation of credit creation.
- 3. How does money get into the economy?
- 4. Does supply of money in the economy depend on the dicretion of the central bank?

Notes Answers: Self Assessment

 1. sum
 2. profit
 3. (a)
 4. (b)

 5. (a)
 6. (a)
 7. True
 8. True

9. False 10. True

# 17.14 Further Readings



1. Macroeconomics – Mohan Srivastava, DND Publications, 2010.

**2. Macroeconomics** – S.K. Chakravarty, Himalaya publishing House, 2010.

# **Unit-18: IS - LM Analysis**

**Notes** 

#### Contents

Objectives

Introduction

- 18.1 IS Curve and Its Derivation (Product Market Equilibrium)
- 18.2 LM Curve and Its Derivation (Money Market Equilibrium)
- 18.3 Summary
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# **Objectives**

After studying this unit, students will be able to:

- Know the derivation of IS Curve,
- Know the derivation of LM Curve.

#### Introduction

Now we'll analyse the simultaneous determination of equilibrium GDP interest rate. Besides from equilibrium interest rate, equilibrium GDP presents a partial approach of complex economy equilibrium. Interest rate affects the investment level so to actual GDP level also. Similarly GDP level affects the interest rate in the economy by the demand of money. When interest rate is increasing then on special rise in investment, an economy can't make a rise the GDP level till diversified range. Similarly interest rate can't be reduced till the limit of extent of increase in money supply because increase in money supply (by low interest rate and high investment) and high GDP make an increment in supply of money, which means the increment in interest rate. Therefore, the Traditional/Classical view that interest rate is a real phenomenon and is determined by savings and investment only. And J. M. Keynes view that it is only a monetary phenomenon and it is determined by supply and demand of money, these both views are challenged. J. R. Hicks and Hensen have established a new approach by IS-LM Analysis, which integrates the real and monetary phenomenon both. The simultaneous determination of interest rate and actual GDP and the alternative derivation of AD curve is the cornerstone of IS-LM Analysis. In the determination of Actual GDP and Interest rate, because J. R. Hicks and Hensen synthesise both the real and monetary phenomenon, so their approach is called as Hicks-Hensen Synthesis. The equilibrium of IS-LM Curves means the determination on the equilibrium level of actual GDP and equilibrium interest rate by equality between investment and saving and equality between supply and demand of money. This approach of interest determination is called as the Modern Theory of interest rate determination. Current chapter explains how the IS and LM Curves are derived and how the balanced actual GDP and interest rate are determined. Besides it

we also derive the Aggregate Demand Curve from IS-LM Analysis and will concentrate on the thing that how the shift in IS or LM brings the shift in Aggregate Demand Curve.



Notes

Interest rate affects the investment level.

# 18.1 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 and investment. According to, Lipsey and chrystal "The IS Curve is the locus 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.

Two situations come in derivation of IS Curve. In first situation, the relation between investment and interest rate is established by investment demand function and in second situation; we'll explain how the change in investment spending affects the actual GDP. On combining the interest rate and actual GDP, we'll establish the equilibrium in commodity market.

#### I. The Investment Demand Function

# Relationship between r and I

It means the inverse relationship between investment and interest rate. The desired rate of investment will be low on the high interest rate, and will be high on the low interest rate. The working relationship between investment and interest rate can be written as following-

$$I = I_a - br, b > 0$$

[Here I: Investment; I_a: autonomous investment; r: interest rate; b: the responsiveness of investment spending from interest rate.]

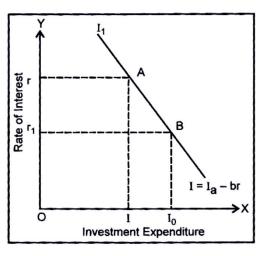
The above investment function shows that the means of low interest rate is high investment or viceversa.

In **figure 18.1**,  $II_1$  is the investment demand curve, which shows the negative relationship between investment and interest rate. On the low interest rate ' $Or_1$ ', investment spending is ' $OI_0$ ' and on high interest rate 'Or', it is 'OI'. If there is any change in the autonomous component ' $I_a$ ' of investment, then there is a shift in investment demand. Rise in ' $I_a$ ', rise in  $II_1$  Rise in ' $I_a$ ' will shift the  $II_1$  Curve towards right and the reduction in it ( $I_a$ ) will shift the  $II_1$  towards left.



Did You Know?

The change in investment spending affects the actual GDP by the change in investment spending.



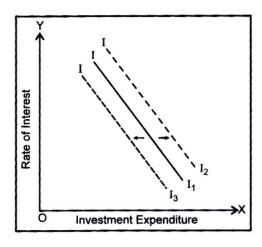


Figure 18.1

Figure 18.2

**Figure - 18.1** shows that on the change in autonomous investment there is a shift in investment demand function. The rise in autonomous investment will convert the investment curve  $II_1$  into  $II_2$  on making a shift in it and the reduction in autonomous investment will convert the investment curve  $II_1$  into  $II_3$  on making a shift in it.

# II. How investment affects Aggregate Expenditure and the level of GDP when 'r' happens to change?

Because of change in investment spending, there happens the change till the diversified range in total expenditure. According to Investment Multiplier Theory if the interest rate remains constant then the change in I can become the cause of the change in Total Spending (AE) and GDP. But if interest rate (r) doesn't remain constant (As in IS-LM Model) then the process of investment multiplier would not be as easier. It is shown in **figure 18.3** how the interest rate 'r' impacts on I and so impacts on total spending AE and the level of GDP.

The parts (A) and (B) of figure 3 show the relationship between equilibrium actual GDP and investment spending with the change in interest rate. Initial equilibrium is on point E where the rising in investment expenditure from I I to  $I_1I_1$ , the total expenditure in part A become  $AE_1$  on shifting from AE in AE = Y (Part A) and S = I (Part B). According to it, new balanced GDP should be  $OY_1$  where  $AE_1 = Y$  and  $S = I_1I_1$ . But the rise in level of GDP increases the demand of money and so becomes a rise in 'r' in the situation of rise in interest rate, investment expenditure becomes low and so investment curve shifts from  $I_1I_1$  to  $I_2I_2$  towards backside. According to it, in part A, actual total expenditure on rising becomes  $AE_2$  instead of  $AE_1$ . Actual GDP becomes  $AE_2$  instead of  $AE_1$ . Actual GDP becomes  $AE_2$  instead of  $AE_1$ . Actual GDP becomes the total expenditure. If interest rate falls then vice-versa will be there. Therefore, the change in interest rate, by the change in investment expenditure, affects actual GDP.

#### **Self Assessment**

#### Fill in the blanks:

- 1. We also derive the ....... demand curve from IS-LM Curve.
- 2. Because of change in investment spending, there happens the ...... till the diversified range in total expenditure.

# III. Relationship between different levels of r and GDP on the one hand

# and the quality between S and I on other: IS Curve

We see that the balanced level of GDP is analogous to every level of 'r' that tells the homogeneous equality as similar to saving (S) and investment (I). You should be determinant that the work of high level of 'r' is the lower level of GDP and saving (S) and investment (I) is the analogous equality. On the other hand, the mean of the lower level of 'r' is the high level of GDP (Which happens by the high level of AE and I) and being the analogous equality between S and I.

In figure 18.4, the IS curve is shown which is derived from figure 18.4 (A). The IS curve shows that combination of actual GDP and Interest rate where the desired expenditures of economy are equal to total product. On the interest rate 'Or' given in Part-B, balanced actual GDP level is OY which is determined on making the line AE in part A and aggregate product line equal. This combination (OY, Or) of actual GDP and interest rate is shown by point A in part B. similarly point B is the combination of OY, actual GDP level and Or, interest rate in part B. The actual GDP level on Or, interest rate is OY, which is shown by point c in part B. We get the IS curve on joining these all combination points (as A, B, C) of actual GDP and interest rate. There every point on IS Curve shows the equilibrium in commodity market.

The points situated on the right or left of IS curve, show the imbalance in commodity market. If we take point M (In figure18. 4B) it is right from IS curve. It is known from this point that there is imbalance between AE and Y in part A. So total production is greater than total expenditure or the saving is greater than investment (Y > AE,  $\Rightarrow$  S > I). Similarly, any point on left of IS Curve, as point N, indicates

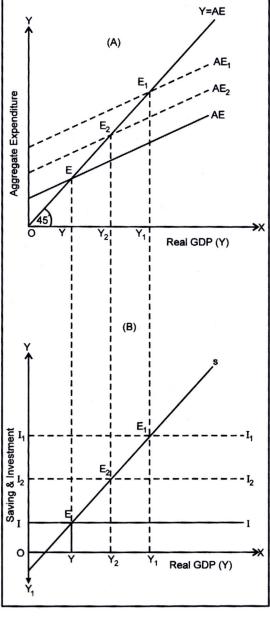


Figure 18.3

that combination of GDP and Interest rate where total expenditure is greater than total production and investment greater than saving (AE > Y,  $\rightarrow$  I > S).

# Slope of IS Curve

The IS Curve is derived from the combination of actual GDP level and interest rate. It's 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 of 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 an specified change of interest rate then the IS Curve will be flatter. And if investment is less sensitive from an specified change of interest rate then the IS Curve will be steeper. The price of multiplier also determine to be steeper or flatter of IS Curve. In the situation of high multiplier price, because of an specified change in investment, the senstivity is larger (on a given interets 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 also respectively steeper.

In figure 18.5, 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 IS₁. The IS Curve is steeper for the low price of multiplier or insensitive investment as IS₂.

# Two parameters impacting slope of IS Curve

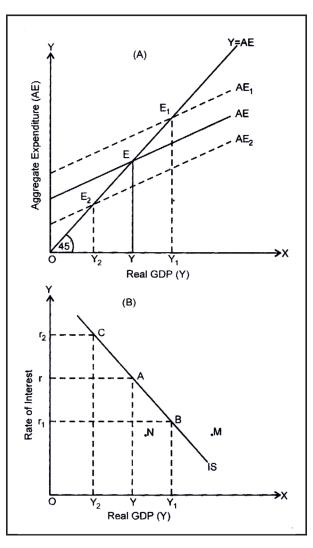


Figure 18.4

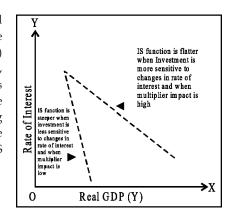
- (i) Sensitivity of I to r: The sensitivity of I to r is as higher i.e., the responsiveness of investment towards the change in interest rate the IS Curve will be as flatter and vice-versa.
- (ii) Value of Multiplier: The value of Multiplier is as higher i.e., because of rise in investment there is as rise in Aggregate Expenditure.

# 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. It's cause is easy. The rise in analogous investment expenditure shifts the AE Curve parallely upward. The upward shift of AE Curve shifts the IS Curve towards right.

**Notes** 

Part B of **figure 18.6** shows that IS Curve becomes  $IS_1$  and  $IS_2$  on shifting from IS. The rise in exogenous expenditure (the analogous investment given by the government) shifts line AE (in part A) upward on AE₁. Consequently, (On the constant interest rate Or) the IS Curve becomes  $IS_1$  on being shifted from IS (in part B). On reducing the analogous expenditure, the AE Curve becomes  $AE_2$  on being shifted downward from AE (in part A). Consequently, the IS Curve becomes  $IS_2$  on being shifted backward from IS (in part B).



### Self Assessment

### **Multiple Choice Questions:**

- Figure 18.5
- 3. If there is a change in analogous component Ia of investment, then there will be a/an ....... in investment demand curve.
  - (a) shift

(b) inclination

(c) change

- (d) none of these
- 4. How investment impacts Aggregate Expenditure and the level of GDP when 'r' happens to change?
  - (a) PGP

(b) GDP

(c) ADP

- (d) Nome of these
- - (a) easier

(b) harder

(c) variable

- (d) none of these
- 6. The IS Curve is .....from the combination of actual GDP level and interest rate.
  - (a) born

(b) derived

(c) established

(d) none of these

# 18.2 LM Curve and Its Derivation (Money Market Equilibrium)

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. Hance 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 consistant with the equality of money demand and money supply."

The derivation of LM Curve makes the study of all three relationships mandatory: (i) We establish the relationship between money demand and interest rate. (ii) We explain this thing how the change in GDP by the change in demand of money impacts the interest rate. (iii) On one hand, We establish the relationship between the different values of 'r' and GDP and on the other hand, establish the equality between demand of money and supply of money.

(i) Demand of money and interest rate: The purport from demand of money is the demand of real balance by the people. Real balances mean money balance or normal balance which are

combined with the changes occuring in the prices. So when price level becomes double then people keep the money in double quantity in themselves firstly so that their real balances (or purchasing power) remain constant. The demand of real balances in economy depends on two facts: (i) The GDP level and (ii) Interest rate. The GDP level is the clear determinor of real balances, because people keep the money to themselves for purchasing the goods and services. The high level of GDP means the high demand of real balances and vice-versa. The mean of interest rate is the oppurtunity cost of keeping the money himself. Because when you keep a fixed amount of money in cash form then you have to be deprived from that income gotten in interest form which you could get if you had invested this money in bonds purchase. In other words, the demand of cash balances are inversely related with interest rate (r) on a fixed GDP level.

The impact of 'r' and GDP in the reference of real balances is shown in **figure 18.7.** 

The line  $L_1$  shows that demand of money is inversely related with 'r'. On a fixed GDP level the high 'r' means the low damand of money (and vice-versa). Therefore when  $r = Or_1$  then the demand of money = OK and when 'r' becomes  $Or_2$  on reducing then the demand of money becomes  $OK_1$  on increasing. When 'r' remains constant, and there is a rise in GDP, then  $L_1$  – line becomes  $L_2$  on being shifted, it means that the rise in demand of money on a fixed level of 'r'. So though 'r' =  $Or_2$  then also demand of money becomes  $OK_2$  on increasing from  $OK_1$  then GDP increases as shown by the shift of line L from  $L_1$  to  $L_2$ .

# (I) Impact of GDP changes on interest rates

Now we have known that the changes in actual GDP that the determination of interest rate done by the demand and supply of money. This fact that GDP level

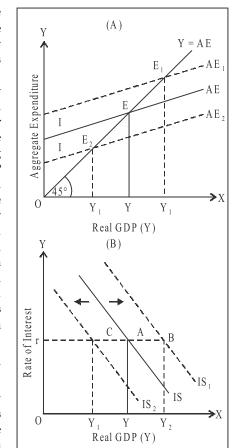


Figure 18.6

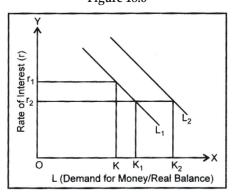


Figure 18.7

impacts on the demand of money and demand of money affects the interest rate, the contained GDP of these all is the found of situation of inter-relation between interest rate and demand of money. In **figure 18.8**, the stirring of this inter-relation is shown.

**Note:** The supply of money (Line M) is shown constant because it's determination is independently done by monetary officials. It shows the real balances in economy. It is based on this recognition that price level remains constant.

**Notes** 

The balanced interest rate (Or) is determined on a fixed demand of money (L) and supply of money (M) on that point where L = M.

The demand rises with the rise in GDP, consequently the demand of money curve becomes  $L_2$  on being shifted from  $L_1$ . Consequently the interest rate becomes  $Or_1$  on incresing from Or. Similarly, if there is reduction in GDP, then there will also reduction in demand of money, because of which the demand of money curve bacomes  $L_3$  on being shifted backward from  $L_1$ . Consequently, the interest rate becomes  $Or_2$  on decreasing from Or. So the change in GDP, becomes the cause of change in interest rate by the change in demand of money.

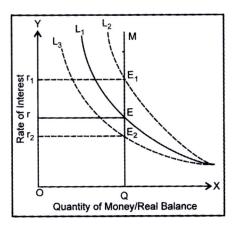


Figure 18.8

Here the considerable thing is that the impact of change

in GDP occurs only on the transaction demand of money not on speculative demand of money. We know that there is no any direct relationship between transaction demand of money and 'r'; then why is 'r' being affected from the change in GDP? The fact for this is so: when transaction demand of money rises (because of rise in GDP) then when does the money come from? Because it is our recognition that supply of money remains constant (as shown in the vertical straight line in the figure). The pressure of transaction demand of money makes a pressure on speculative investment of money. To fulfil the increasing transaction demand people sell their assets/bonds. The rise in sale of bonds falls their prices, the interest rate rises accordingly. So rise in GDP - rise in the demand of money for transaction - the pressure of selling assets/bonds, so that the cash balances could be increased for transaction purpose - fall in price of bonds - rise in interest rate.

# (II) Relationship between different levels of r and GDP on the one hand and equality between L and M on the other: LM Curve

Because there become a change in demand of money and interest rate because of change in GDP, for each level of GDP the interest rate should be such which bring the equality in demand of money and supply of money, on considering that price level and wealth level remain constant. On joining the different combinations of interest rate and actual GDP, we get the LM Curve. *Figure 18.9* shows the derivation/getting of LM Curve from money market balance.

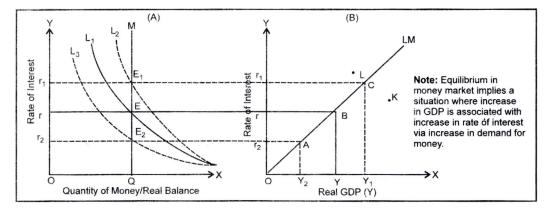


Figure 18.9

Part (A) of figure 18.9 shows the monye market balance of different levels of GDP. The high level of L (demand of money) is analogous to high level of GDP. Part (B) joins the different GDP levels and interest rates which keeps the equality between demand of money and supply of money. Part (A) of figure 18.9 shows the monye market balance of different levels of GDP. The high level

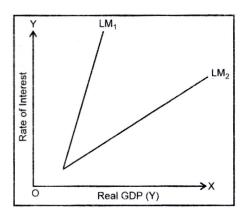
of Md is because of high level of GDP. Part (B) joins the different GDP levels and interest rate and gives LM Curve. On OY level of GDP (in part B), the interest rate is Or where  $L_1$  = M (Part A). The combination of OY level of GDP and Or interest rate gives the point B in part B. In part B, as the GDP level rises from OY to OY₁, there is rise in demand of money which increases money curve upward from  $L_1$  to  $L_2$  and the rate of similar interest (in part A) become Or₁ on increasing from Or. The combination of actual GDP OY₁ and interest rate Or₁ gives point C in part B. Similarly, as the actual GDP level falls from OY to OY₂, then the shifting downward of money curve i.e., on being  $L_1$  to  $L_2$ , the interest rate becomes Or₂ on reducing from Or. The actual GDP OY₂ and interest rate Or₂ gives point A in part B. On joining the A, B, C etc. actual GDP and these combinations of interest we (in part B) get the LM Curve. Therefore this curve shows the combinations of GDP and interest rates which makes the demand of money and supply of money equal with each other. It's contained is the balance in money market.

The money market will be imbalanced when demand of money is not equal to supply of money. Such points are situated either the right or left to LM Curve. For example, in **figure 18.9** (B), point K shows that combination of actual GDP and interest rate where the demand of money is greater than supply of money, (L > M). Similarly, in **figure 18.9** (A), point L which is situated on the left of LM Curve, shows that combination of actual GDP and interest rate where the supply of money is greater than demand of money, (M > L). Therefore, any point on right of LM Curve shows the imbalance in that money market where demand of money, is greater than supply of money and any point on left of LM Curve shows the imbalance in that money market where demand of money, is greater than supply of money and any point on left of LM Curve shows the imbalance in that money market where supply of money, is greater than demand of money.

## Slope of LM Curve

The slope of LM Curve is upward from left to right which shows the positive relationship between actual GDP and interest rate. The mean of high level of actual GDP is the high interest rate and the mean of low level of actual GDP is the low interest rate. As the GDP level rises demand of money increases. On given supply of money, the high demand GDP money means the high interest rate. With the fall of actual GDP, interest rate falls. Low GDP means low demand of money. If supply of money is given, then the low demand of money means low interest rate.

The steepness and flatness of LM Curve depends on the senstivity of money demand from the change of actual GDP and the senstivity of interest rate because of change in demand of money. If the



**Figure 18.10** 

proportion of demand of money is greater than the change in actual GDP, then LM Curve should be steeper, and If the proportion of demand of money is less than the change in actual GDP, then LM Curve should be flatter. If the interest rate responsiveness is less than change in demand of money, then LM Curve should be steeper and if is greater then LM Curve should be flatter.

Notes

In figure 18.10, the related steepness and flatness of LM Curve is shown.  $LM_1$  Curve is comparatively steeper in comparison to  $LM_2$  Curve and  $LM_2$  Curve is comparatively flatter. In the case of  $LM_1$  Curve, money demand is very sensitive from change in actual GDP and the interest rate is less sensitive from the change in demand of money. In the case of  $LM_2$  Curve, money demand is less sensitive from change in actual GDP and is more sensitive from the change in interest rate.



Task

Express your view about IS Curve and it's derivation.

## Shift in LM Curve

It is considered while tracing the LM Curve that Price level and supply remain constant. If any one of these considerartion is removed then there will be a shift in LM Curve. We concentrate on supply of money. We'll want to see how LM Curve shifts on the rise or fall in supply of money. It is shown in figure 18.11 (A and B).

#### Two parameters affecting slope of LM Curve

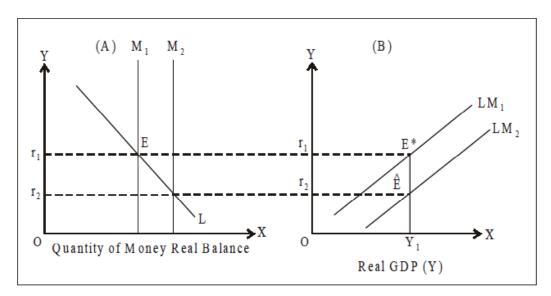
1. The sensitivity of money demand for the changes in GDP: The sensitivity of money demand for the change in GDP will be as higher; LM line will be as steeper and vice-versa. Because the mean of more sensitivity of money demand for the change in GDP is the more shift of L curve towards right. It's mean is the steepness of LM line and the more rise in r because of a definite change in GDP.

**Note:** Here the implication of more sensitivity for the changes in GDP is the situation of Marginal Propensity to Consume – MPC, because the demand of money rises for the deals of transaction on the rising in GDP not for speculative purpose.

2. The sensitivity of money-demand for changes in 'r': The sensitivity of money demand for changes in 'r' means the slope of L curve. Clearly, the slope of L-curve affects the slope of LM curve. The sensitivity of money demand for changes in 'r' is as larger the L-curve will be as flatter. L-curve is as much flatter as low change in 'r' is there; for any horizontal shift of L curve. (Because of changes in GDP, no doubt, as low changes in 'r' LM Curve will be as flatter.) In brief, as higher will be the sensitivity of money demand for changes in 'r' the LM Curve will be as flatter and vice versa.

**Note:** About the slope of L curve money demand is the demand of money for speculative purpose because only for speculative purpose the demand of money is directly related with r, not for the deals of transaction demands.

In part (A) of figure 18.11, the initial balance of money market is on point E, where the supply of real balances is equal to demand of real balances. Point E* similar to point E in part (A), shows the balance of money market which is from a fixed level of the balanced interest rate  $r_1$  and GDP (= $y_1$ ). When supply of money raises then line M shifts from  $M_1$  to  $M_2$ . On being other things constant it means the fall of the balanced interest rate from  $r_1$  to  $r_2$ . It is such situation where the low balanced interest rate is found and which is similar as that level of GDP. The part B is shown by point E in this situation. Accordingly LM Curve shifts towards right (LM $_1$  to LM $_2$ ) so that could pass through point E. The rise in money supply **creates such situation where, on each level of GDP, lower interest rate is circulated in the market which is shown as the right shift of LM Curve.** Similarly, when there is a fall in money supply and line M shifts towards left, then the interest rate should be increased according to each level of GDP, i.e., the left shift of LM Curve.



**Figure 18.11** 

## **Self Assessment**

State whether the following sentences are True or False:

- 7. We establish the relationship between money demand and interest rate.
- 8. The changes in actual GDP impact on the demand of money.
- 9. The demand of money rises on rise in GDP.
- 10. There becomes no change in demand of money and interest rate because of change in GDP.

# 18.3 Summary

 Current chapter explains how the IS and LM Curves are derived and how the balanced actual GDP and interest rate are determined. Besides it we also derive the Aggregate Demand Curve from IS-LM Analysis and will concentrate on the thing that how the shift in IS or LM brings the shift in Aggregate Demand Curve.

## 18.4 Keywords

- Derivation origin and growth.
- Equilibrium Communize, Balance.

# 18.5 Review Questions

- 1. Describe the IS Curve and it's Derivation.
- 2. Define the LM Curve and it's Derivation.

**Notes** 

Notes Answers: Self-Assessment

 1. aggregate
 2. change
 3. (a)
 4. (b)

 5. (a)
 6. (b)
 7. True
 8. True

9. True 10. False.

# 18.6 Further Readings



1. Macroeconomics – S.K. Chakravarti, Himalaya Publishing House, 2010.

**2. Macroeconomics** — **Theory and Policy** — *H. L. Ahuja, S. Chand Publisher,* 2010.

3. Macroeconomics – Mohan Srivastava, DND Publications, 2010.

# Unit-19: Equilibrium in Product and Money Market

Notes

#### Contents

Objectives

Introduction

- 19.1 Simultaneous Equilibrium in Product and Money Market
- 19.2 How would Equilibrium be Achieved?
- 19.3 Summary
- 19.4 Keywords
- 19.5 Review Questions
- 19.6 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know the Simultaneous Equilibrium in Product and Money Market,
- Study 'How would equilibrium be achieved.

#### Introduction

An economy can come in equilibrium from non-equilibrium by **Automatic Adjustment Process**. Adjustment process can bring the change in actual GDP or interest rate or in both. There can be either excess demand for goods or excess demand for money or excess supply for goods or excess supply for money or excess for both on any imbalance point.

## 19.1 Simultaneous Equilibrium in Product and Money Market

On equalling the IS and LM functions, the simultaneous equilibrium in both the product and money market is found. According to the equilibrium in product market, the IS function shows the different coincidences of actual GDP and interest rate (r). According to the equilibrium in money market, the LM function shows the different coincidences of actual GDP and interest rate (r). The Simultaneous Equilibrium in both the product and money market is found on point E in figure 19.1 where IS curve is Intersecting the LM Curve. In other words, the equality between the IS and LM Curves show that one coincidence of actual GDP and interest rate which clear both the product market and money. OY income and Or interest rate is that coincidence which equals the IS and LM functions. The equilibrium between IS and LM curves shows the simultaneous equilibrium in product and money market.



Notes

On equalling the IS and LM functions, the simultaneous equilibrium in both the product and money market is found.

## Notes Disequilibrium

Except point E, no any point shows the equilibrium in product market or money market or both. All the points as A, B (except point E where IS = LM) on IS curve in figure 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 equals 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 figure 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 equals the demand for money and supply of money. Which are neither situated on LM Curve nor on IS curve, they indicates 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,  $\Rightarrow$ 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 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,

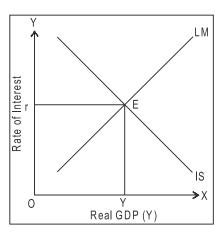


Figure 19.1

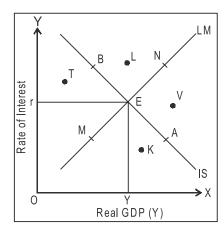


Figure 19.2

show the disequilibrium in either product market or money market or both.



Did You Know?

An economy can come in equilibrium from non-equilibrium by Automatic Adjustment Process.

### **Self Assessment**

#### Fill in the blanks:

- 1. Adjustment process can bring the ...... in actual GDP or interest rate or in both.
- 2. Investment expenditure will decrease which means that the many times ...... in level.

## 19.2 How would Equilibrium be Achieved?

Real GDP (Y)

Figure 19.3

An economy can come in equilibrium from non-equilibrium by **Automatic Adjustment Process**. Adjustment process can bring the change in actual GDP or interest rate or in both. There can be either excess demand for goods or excess demand for money or excess supply for goods or excess supply for money or excess for both on any imbalance point. The excess demand for product increases the GDP level and deficient demand reduces the GDP. Similarly, the excess demand for money increases the interest rate and deficient demand for money reduces the interest rate. The effect of the change in interest rate on actual GDP brings the economy back from disequilibrium in equilibrium.

#### **Self Assessment**

Multiple Choice Questions:

- 3. The ..... will increase because of investment multiplier.
  - (a) income

(b) expenditure

(c) profit

- (d) loss
- 4. The high level of income means high ......
  - (a) demand

(b) money demand

(c) money

- (d) profit
- 5. The excess demand of product increases the ......
  - (a) GDP level

(b) PDP level

(c) ADP level

- (d) CD level
- 6. The equilibrium between IS and LM curves shows the Simultaneous ...... in Product and Money Market.
  - (a) equilibrium

(b) disequilibrium

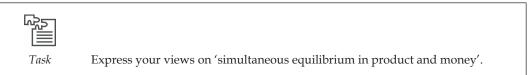
(c) profit

(d) loss

In figure 19.3, the simultaneous equilibrium is shown on point  $E_1$  both the money market and product market meet. Assume that current income is  $Y_1$  instead of  $Y_2$ . It's mean is such situation in which demand of money has reduced and the balanced interest  $(r_2)$  rate in money market is on lower level which is similar to point  $E_2$  on LM curve. Now when interest rate has reduced the plan to more investment in economy will be made. There will be rise in income because of the process of investment multiplier. Now economy will be shifted to  $E_3$  and income will be  $Y_3$  on increasing. But the high level of income means the high money demand and accordingly the found of high balanced interest rate in money market. Accordingly, investment expenditure will reduce which means many times fall in this level. This process of arrangement will be go on until the economy doesn't reach till it's initial equilibrium point  $E_{1\prime}$  where product market and money market are balanced simultaneously i.e., the equilibrium level of  $r_1$  interest rate and that of  $Y_2$  income.

## Notes Shift in the IS and LM Curve and change in Equilibrium

The change in equilibrium of real and monetary fields will then happen when there will be a shift in IS curve or LM curve or both. As we have shown previously that the IS curve shifts towards right because of rise in autonomous components of total expenditure. The IS curve shifts towards left because of fall in autonomous components of total expenditure. 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. The low equilibrium comes from the coincidence of actual GDP and interest rate because of left shift of IS curve. The LM curve shifts towards right because of rise in money supply and towards left because of reduction in money supply. Because of right shift of LM curve on given IS curve, the actual GDP rises and interest rate decreases and because of left shift of LM curve, the actual GDP reduces and interest rate rises. Figure 19.4 (A) shows that the actual GDP and interest rate change because of shift in IS curve. Initial Equilibrium is shown on point E where IS = LM. As the investment expenditure increases, IS curve becomes IS, on shifting. New equilibrium point is on E₁. Similar to the equilibrium point E₁d, the actual GDP and interest rates are OY₁ and Or₁ respectively which are more than initial actual GDP and interest rate. On being the autonomous investment low IS Curve becomes IS, from IS on shifting. Equilibrium also becomes E, on being shifted from E. Similar to this, the actual GDP level and interest rates are OY, and Or, respectively which are less than initial actual GDP and interest rate.



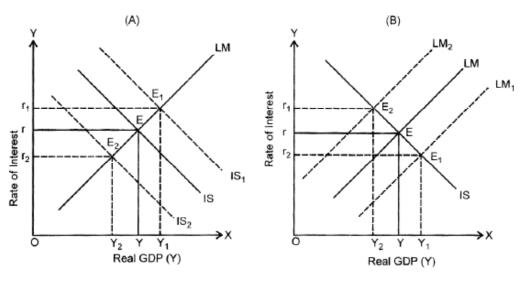


Figure 19.4

Figure 19.4 (B) shows that how the shift in LM curve affects the actual GDP and interest rate. Initial equilibrium is on point E. on rising in the money supply; LM curve becomes  $LM_1$  on shifting. New equilibrium point is  $E_1$  which shows the high level of GDP and low level of interest rate equal to  $OY_1$  and  $Or_2$  respectively. On being money supply lesser; LM curve becomes  $LM_2$  on shifting. Equilibrium point comes on  $E_2$  on shifting which shows the lower level of GDP and high level of interest rate equal to  $OY_2$  and  $Or_1$  respectively.

Self Assessment Notes

### State whether the following statements are True or False:

- 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.
- 8. Because of right shift of LM curve on given IS curve, the actual GDP rise.
- 9. An economy can come in equilibrium from disequilibrium by Automatic Adjustment Process.
- 10. Adjustment process can bring the change in actual GDP or interest rate or in both.

## 19.3 Summary

The change in equilibrium of real and monetary fields will then happen when there will be
a shift in IS curve or LM curve or both. As we have shown previously that the IS curve shifts
towards right because of rise in autonomous components of total expenditure. The IS curve
shifts towards left because of fall in autonomous components of total expenditure.

## 19.4 Keywords

- Excess Supply More Supply.
- Excess Demand Excess of Demand.

## 19.5 Review Questions

- 1. Please interpret the Simultaneous Equilibrium in Product and Money Market.
- 2. Write a comment on 'How would equilibrium be achieved?'

### **Answers: Self Assessment**

1. change	2. fall	3. (a)	4. (b)
5. (a)	6. (a)	7. True	8. True
0 Truo	10 Truo		

## 19.6 Further Readings



Rooks

- 1. Macroeconomics S.K. Chakravarti, Himalaya Publishing House, 2010
- **2. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E. Hall and David H. paipal, Vaina Books* 2010.
- **3. Macroeconomics: Theory and Policy** *H. L. Ahuja, S. Chand Publisher,* 2010.
- **4. Necessity of Economics** *H. S. Nath, Cyber Tech Publications,* 2012.

# Unit-20: Effect of Monetary Policies Under Different Cases in IS-LM Framework

#### Contents

Objectives

Introduction

- 20.1 Derivation of Aggregate Demand Curve from IS-LM Model
- 20.2 What Happens if there is Autonomous Change in Money Supply, Independent of Change in Price Level?
- 20.3 Summary
- 20.4 Keywords
- 20.5 Review Questions
- 20.6 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the Derivation of Aggregate Demand Curve from IS-LM Model,
- Study the change in Price Level.

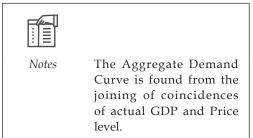
#### Introduction

On the given equilibrium between IS and LM, if there is rise in price level, LM curve shifts towards left and there is fall in price level, LM curve shifts towards right. It's reason is that real money supply decreases from the rise in price level. On being money supply low, LM curve shifts towards left. On shifting the LM curve towards left, there comes a barrier in the initial equilibrium of real and monetary fields.

## 20.1 Derivation of Aggregate Demand Curve from IS-LM Model

We had told in chapter 18 that the Aggregate Demand Curve is found from the joining of coincidences of actual GDP and Price level. It's slope is downward which means that the inverse relationship between price level and actual GDP. The IS-LM Model presents an alternative technique of derivation of AD curve. It becomes possible only then if we allow the effect of change in price level on LM curve. On the given equilibrium between IS and LM, if there is rise in price level, LM curve shifts towards left and there is fall in price level, LM curve shifts towards right. It's reason is that real money supply decreases from the rise in price level. On being money supply low, LM curve shifts towards left. On shifting the LM curve towards left, there comes a barrier in the initial equilibrium of real and monetary fields. A new equilibrium is found from the lower level of GDP and higher level of interest rate. Similarly, because of right side shifting of LM curve from the fall in price level, with the higher level of GDP and lower interest rate, a new equilibrium is established. If we combine the different price

levels and actual GDP then we get the AD curve. The AD curve derived from IS-LM Equilibrium is shown in figure 20.1



In figure 20.1 (A), the initial equilibrium in money and product market is shown on point E where IS curve intersects the LM curve. According to it, the balanced actual GDP level is OY and interest rate is Or. According to OY actual GDP the price level is OP which is shown in part (B) of figure 20.1 by point A. As there is a rise in price level, LM curve becomes LM, on being shifted. New equilibrium point is E, where IS curve cuts LM curve. According to new equilibrium lower actual GDP is equal to OY, and higher interest rate is equal to Or₁. Lower GDP (= OY₁) and higher price level OP₁ are shown by point B in the part (B) in figure. With the reduction in price level, LM curve becomes LM, on being shifted according to which higher actual GDP is equal to OY, and lower interest rate is equal to Or,. The coincidence of higher actual GDP (= OY₂) and lower price level OP, is shown by point C in the part (B) in figure. On joining A, B and C points, we get the AD curve, which is downward sloped, and is inverse related with price level.

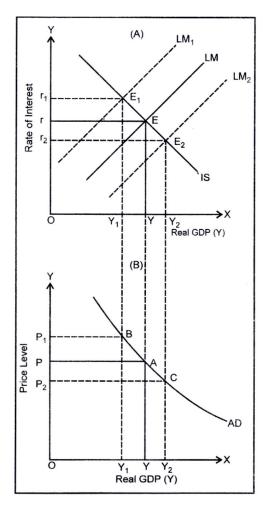


Figure 20.1

The slope of AD curve depends on the slopes of IS and LM curves which further depends on the interest rate, the sensitivity of investment from the change in interest rate, coefficient multiplier and the sensitivity of money demand from the change in actual GDP.



Did You Know?

A new equilibrium is found from the lower level of GDP and higher level of interest rate.

## **Self Assessment**

## Fill in the blanks:

- 1. On being money supply low, LM Curve shifts towards ......
- 2. The IS-LM Model presents an ...... of derivation of A.D. curve.

# 20.2 What Happens if there is Autonomous Change in Money Supply, independent of Change in Price Level?

The purpose with autonomous change in independent money supply from the change in price level is from that situation in which supply of money increases or decreases on the circulated price level. in such situation, according to increase or decrease in money supply, LM curve will shift towards right or left respectively. But price level remains constant, AD will shift on shifting of LM curve: AD will shift towards right on right shifting of LM curve (because of rise in money supply, on price level remaining constant): AD will shift towards left on left shifting of LM curve (because of fall in money supply, on price level remaining constant). These situations are shown in figure 20.2.

## **Self Assessment**

#### **Multiple Choice Questions:**

3.	If different price levels and actual GDP are joined then we get the	
	(a) AD Curve	(b) GDP Curve
	(c) CD Curve	(d) None of these
4.	A is found from the joint level of interest rate.	ing of lower level of actual GDP and the higher
	(a) equilibrium	(b) new Equilibrium
	(c) eisequilibrium	(d) none of these
5.	On shifting the LM curve towards left, the of real and monetary fields.	re comes a in the initial equilibrium
	(a) barrier	(b) interest
	(c) price	(d) none of these
6.	The is found from the level.	joining of coincidences of actual GDP and Price
	(a) curve	(b) aggregate demand curve
	(c) demand Curve	(d) none of these



Notes

Express your views about derivation of Aggregate Demand Curve from IS-LM Model.

From the initial equilibrium point E, the shifting of LM curve to  $LM_1$  (because of the rise in the money supply on circulated price level) converts the balanced GDP by changing from Y to  $Y_1$  (in figure 20.2A). Similar to it (in figure 20.2B) point A becomes point C on being shifted, which shows the rise in actual GDP or AD, while the price level remains constant on point P. Therefore, the AD curve becomes AD₁ on being shifted, which means the high level of aggregate demand on circulated price level. Similarly, the shifting of LM curve to  $LM_2$  (because of the reduction in the money supply on circulated price level) converts the balanced GDP by reducing from Y to Y₂ (in figure 20.2 A) which is intended from the similar shift from point A to point B. The Figure 20.2 B i.e., the reduction in actual GDP or AD, while price level remains constant on P. Therefore, AD Curve becomes AD₂ on being shifted.

## **Self Assessment**

State whether the following statements are True or False:

- 7. Because of right side shifting of LM curve from the fall in price level, with the higher level of GDP and lower interest rate, a new equilibrium is established.
- 8. The reduction in actual GDP or AD, while price level remains variable on P.
- 9. The slope of AD curve depends on the slopes of IS and LM curves.
- 10. As there is a rise in price level, LM curve becomes AM₁ on being shifted.

## 20.3 Summary

 The slope of AD curve depends on the slopes of IS and LM curves which further depends on the interest rate, the sensitivity of investment from the change in interest rate, coefficient multiplier and the sensitivity of money demand from the change in actual GDP.

## 20.4 Keywords

- Aggregate Total.
- Curve Sinuous.

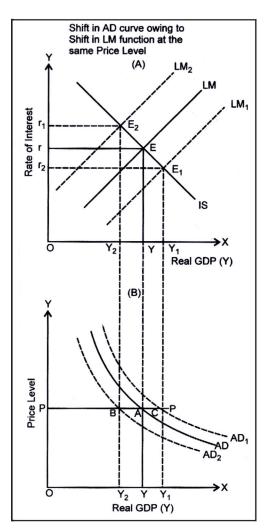


Figure 20.2

## 20.5 Review Questions

- 1. Describe the derivation of Aggregate Demand Curve from IS-LM Model.
- 2. What happens if there is autonomous change in money supply, independent of change in Price Level?

## **Answers: Self Assessment**

1. left side 2. alternate technique 3. (a) 4. (b) 5. (a) 6. (b) 7. True 8. False

9. True 10. False

## Notes 20.6 Further Readings



Books

- **1.** Macroeconomics: Theory and Policy H. L. Ahuja, S. Chand Publisher, 2010
- **2. Macroeconomics:** S.K. Chakravarti, Himalaya Publishing House, 2010.
- **3.** Necessity of Macroeconomics H. S. Nath, Cyber Tech Publications, 2012.

# Unit-21: Effect of Fiscal Policies Under Different Cases in IS-LM Framework

Notes

#### Contents

Objectives

Introduction

- 21.1 Monetary and Fiscal Policy
- 21.2 Monetary Policy and AD
- 21.3 Monetary Policy and Shift in the AD Curve
- 21.4 Fiscal Policy and Shift in the AD Curve
- 21.5 Summary
- 21.6 Keywords
- 21.7 Review Questions
- 21.8 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the Monetary and Fiscal Policy.
- Know the Monetary Policy and AD.
- Know the Monetary Policy and shift in the AD Curve.

#### Introduction

We study such situation in which Monetary Authorities, in the form of equipment of monetary policy determine the rate of interest (instead of money supply). When interest rate is reduced then it is the indication of expansionary monetary policy and when interest rate is increased then it is the indication of contractionary monetary policy. We have known from IS-LM Model that the rise in 'r' is related with the reduction in money supply while the reduction in 'r' is related with the rise in money supply. Therefore, when 'r' is increased then it indicates the contraction in money supply in economy when 'r' is reduced then it indicates the expansion in money supply.

## 21.1 Monetary and Fiscal Policy

The IS-LM Model can be used in the study of the effect of Monetary and Fiscal Policy. To get economic stability, we'll interpret the thing how Monetary and Fiscal Policy affect the level of AD (In the reference of IS-LM Model).

## Notes Self Assessment

#### Fill in the blanks:

- Monetary Authorities, in the form of equipment of monetary policy ...... the rate of interest.
- 2. From the rise in money supply, LM curve shifts towards ......

## 21.2 Monetary Policy and AD

We study such situation in which Monetary Authorities, in the form of equipment of monetary policy determine the rate of interest (instead of money supply). When interest rate is reduced then it is the indication of expansionary monetary policy and when interest rate is increased then it is the indication of contractionary monetary policy. We have known from IS-LM Model that the rise in 'r' is related with the reduction in money supply while the reduction in 'r' is related with the rise in money supply. Therefore, when 'r' is increased then it indicates the contraction in money supply in economy when 'r' is reduced then it indicates the expansion in money supply. From the rise in money supply, LM curve shifts towards right side and it shifts the AD curve towards right side on the definite price level. Similarly, 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.



Notes

From the rise in money supply, LM curve shifts towards right side and it shifts the AD curve towards right side on the definite price level.

## Self Assessment

## **Multiple Choice Questions:**

3.	When AD shifts towards left then there is	in actual GDP.	
	(a) reduction	(b) excess	
	(c) rise	(d) none of these	
4.	In Contractionary Fiscal Policy, the IS Curve shifts		
	(a) backward	(b) forward	
	(c) upward	(d) downward	
5. The purpose with the investment demand function is from thebetween investment and interest rate.		unction is from the relationship	
	(a) favorable	(b) inverse	
	(c) deep	(d) none of these	
6.	The IS curve from the change in any of the autonomous components of total expenditure.		
	(a) faces a barrier	(b) shifts	
	(c) leakage	(d) none of these	

## 21.3 Monetary Policy and Shift in the AD Curve

**Notes** 

The reduction in interest rate from Or to  $Or_2$  shifts LM Curve to  $LM_1$  (Part A of figure 21.1). From the shift of LM Curve on definite IS Curve, AD Curve is shifted left from AD to  $AD_1$  while price level OP remains constant (Part B). Similarly, the rise in interest rate shifts LM Curve to  $LM_2$ , which further shifts the AD Curve from AD to  $AD_2$ . Therefore, the AD curve is shifted on the change in interest rate and is helpful to bring the stability.



Did You Know?

The shift occurs in AD Curve from the change in Fiscal policy of Government

## 21.4 Fiscal Policy and Shift in the AD Curve

The shift occurs in AD Curve from the change in Fiscal Policy of government (Government policy related to tax, expenditure and loan). Expansionary Fiscal policy (To reduce the tax rate and increase the social expenditure) shifts the IS Curve towards right side which further shifts the AD Curve (By the increase in actual GDP) towards right on the circulated price level. Similarly, in Contractionary Fiscal policy (High tax rate and low social expenditure), the IS Curve is shifted backward which further shifts the AD Curve towards left. Figure 21.1 explains these situations. In the part B of figure 21.1, initial equilibrium is shown by the point E where IS = LM. From the Expansionary Fiscal policy of government, the IS Curve becomes IS, on being shifted. New equilibrium actual GDP level is OY₁. While AD becomes AD₁ on being shifted on the circulated price level and constant money supply. Undoubtedly, interest rate becomes Or, on increment, which is against the government adopted Expansionary Fiscal policy. In such situation, Monetary Authority can permit to rise in money supply after which the LM Curve becomes LM, on being shifted and the interest rate, on returning, stays on it's initial level Or. The mean of shift of LM Curve is the becoming of AD Curve into AD, on shift. According to initial interest rate Or, the IS-LM equilibrium is established on E₂ and the level of AD is shown by E₁ which is similar to circulated price level OP. The actual GDP becomes OY, after increasing. So if Monetary Authority increases the money supply for keeping the interest rate on it's

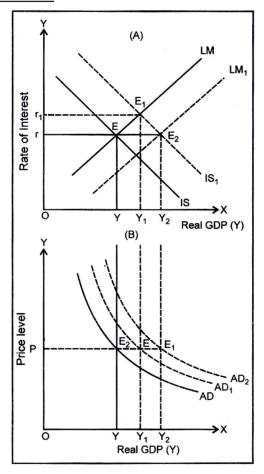


Figure 21.1

initial level (Before the increment in government expenditure what he do in the form of full attempt of his expansionary fiscal policy). Then there will higher AD and actual GDP be found in the economy

with the condition that the interest rate should be left as it is and If the government has to adopt the Contractionary fiscal policy then vice-versa.



Task

Express your views about the Monetary and Fiscal Policy.

## **Key Points**

- **IS Curve:** It shows the coincidence of interest rate and actual GDP which brings the equality between saving and investment or total expenditure and total production.
- Steps to derive the IS Curve: (i) The relationship between investment and interest rate, (ii) The relationship between investment expenditure and actual GDP.
- Investment Demand Function: The purpose with it is from the inverse relationship between
  investment and interest rate.
- **Slope of IS Curve:** The slope of IS Curve is downward which shows the negative relationship between interest rate and actual GDP. It is measured on taking the ratio of change in the interest rate to change in GDP.
- Shift in the IS Curve: The IS Curve shifts from the change in any of the autonomous components
  of total expenditure.
- **LM Curve:** It shows those different coincidences of actual GDP and interest rate which bring the equality between demand of money and supply of money.
- Steps to derive the LM Curve: (i) The relationship among money supply, interest rate and actual GDP, (ii) The equality between demand and supply of money.
- Slope of LM Curve: This curve bend toward upside which indicates negative impact between GDP and rate of Interest. This is calculated by difference in rate of interest and ratio of difference in real GDP.
- **Shift in LM Curve:** The shift in LM Curve happens because of the change in demand of money or in supply of money.
- Simultaneous Equilibrium in Product and Money Market: The Simultaneous Equilibrium in
  Product and Money Market occurs on that point where the IS and LM Curves cut each other. It
  shows the coincidence of actual GDP and interest rate, which equals the demand and supply
  of product and the demand, and supply of money.
- Derivation of AD: The IS-LM Model is helpful in derivation of AD Curve. The Real money
  supply decreases after the rise in price level, which means the backward shift of LM Curve,
  and accordingly the lower level of balanced actual GDP, which means the lower level of AD.
  Therefore, the derivation of AD is the result of inverse relationship between price level and
  actual GDP.
- **Monetary Policy and AD:** The LM Curve shifts towards right because of Expansionary Monetary Policy. It is intended to forward shift of AD on the circulated price level.
- **Fiscal Policy and AD:** The IS Curve shifts towards right because of Expansionary Fiscal Policy. It is intended to forward shift of AD on the circulated price level.

Self Assessment Notes

### State whether the following statements are True or False:

- 7. The IS-LM Model is helpful in derivation of AD Curve.
- 8. The Real money supply decreases after the rise in price level.
- The derivation of AD is the result of inverse relationship between price level and actual GDP.
- 10. The LM Curve shifts towards left because of Expansionary Monetary Policy.

## 21.5 Summary

Similarly, 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.

## 21.6 Keywords

- Fiscal Policy Financial Policy.
- Monetary Related to money.

## 21.7 Review Questions

- 1. Define the Monetary and Fiscal Policy.
- 2. Explain the Monetary Policy and AD (Aggregate Demand).
- 3. What do you mean from the Monetary Policy and shift in the AD Curve?
- 4. What do you mean from the Fiscal Policy and shift in the AD Curve?

## **Answers: Self-Assessment**

1. determines	2. right	3. (a)	4. (a)
5. (b)	6. (b)	7. True	8. True
0 Truo	10 Falso		

## 21.8 Further Readings



Books

- 1. Macroeconomics Mohan Srivastava, DND Publications, 2010.
- **2. Macroeconomics** S.K. Chakravarti, Himalaya Publishing House, 2010.
- **3. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E. Hall and David H. Chapel, Wina Books, 2010.*

## **Unit-22: Inflation**

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## **Objectives**

After studying this unit, students will be able to:

- Know the Inflation,
- Know the Inflationary Gap,
- Know the Effects of Inflation,
- Know the Control of Inflation.

### Introduction

Money's power to make the goods and services of the people worth buying provides it value. In this way, value of money reflects the right of money on the goods and services. It may be expressed in form of purchasing power of money. Change in value of money is reflected in change in value level. As has been explained in previous chapter of quantity theory, value of money and price level is inversely related. With increase or decrease of value of money, price level decreases or increases respectively. According to it, condition of inflation or deflation is created. Because this change of value influences all those people, who trade with the help of money, hence it is important to understand the event of inflation or deflation.

### 22.1 Inflation

Word inflation has been used in many expressions. It is very difficult to give a generally acceptable, precise and scientific definition of this word. When representative note money (Pratinidhi Patra Mudra), completely supported by gold and silver was in circulation, then inflation was considered to be such condition, in which quantity of money in circulation supporting it is more than quantity of reserves. Slowly this concept of inflation was left and inflation was started to be known as a condition in which

quantity of money in circulation, by increasing faster as compared to increase in production, becomes the cause of increase in prices. **Coulbourn** also means this when he defines inflation as, 'Too much money after too less goods.' **Kemmerer** also believes that inflation will be there when quantity of money in the country will be more than physical quantity of goods and services. That is why according to quantity theory; quantity of money is responsible for increase in prices through decrease in value of money. This definition based on quantity theory of money was prevalent until when in the decade of 1930 the great depression introduced the limitations of quantity theory. As a result of the revolution of **Keynes**, this definition was changed accordingly. **Keynes**' contemporary economist, **Pigou** had defined inflation in relation to changes in monetary income. In his opinion, when monetary income is increasing in a greater ratio than accumulation activity, inflation is maintained.

**Keynes** connected the concept of inflation with the incident of full employment. Like **Pigou**, **Keynes** has related inflation with the condition of increase of price level, which comes in existence after the situation of full employment. As per him, relation of inflation is with that increase in price level which happens after achieving the level of full employment. In this situation of price rise, production will not increase.

Keynes has considered inflation to be different from increase in prices due to increase in production. If an economy is working below the level of full employment, then unemployed people and unused resources are present in large numbers. In such condition, increase in demand as a result of expansion of money will not only increase the price level in the system but also increase the quantity of production. This increase in price level is put in the class of reflation or partial inflation. In situation of reflation, prices rise in a slow and steady speed, because influence of increase of prices is negated by rise in production. Generally as much more is unemployment that much more is the possibility of increase in money supply increasing production as compared to prices.



Notes

According to **Kemmerer** inflation will be there when quantity of money in the country will be more than physical quantity of goods and services.

According to **Keynes**, till the stage of full employment initial increase of prices is needed for the country, because due to it, production and employment also increases. It keeps the economy free of the serious results of depression. It is possible through deliberate anti deflationary measures taken by the government, when prices fall to reach the minimum level. It is possible that, after the level of full employment increase in prices is not good for the economy, because there is no favourable increase in production or employment. It is important to note that the word inflation may be used for an underdeveloped economy like India where along with inflationary rise of prices, unemployment of people and resources is existent. It happens due to the obstacles of limited quantity of capital, land, machinery, infrastructure and lack of technical knowledge. Because of these obstacles, it is possible that, beyond a definite stage increase in price level does not cause increase in production, though may be the country had not attained the stage of full employment.

It is worth paying attention that the word inflation may be used for developing countries like India, where along with inflationary increase of prices, unemployment of people and resources is existent. Industries like textile, textile machine, steel, tyre, tractor, business vehicles, and general engineering etc. had been some examples. It had happened due to obstacles like limited quantity of capital, land, machinery, and infrastructure and due to lack of technical knowledge. Due to these obstacles, as a result of increase in price level after a certain limit, increase in production is not necessary, even when the country has not attained the condition of full employment. Problem of increasing inflation along with increasing stagnancy (or unemployment) is often known by the name of stagnation or slumpflation.

The word stagnation was connected to the economic literature in the decade of 1970 due to rise in oil prices, unfavourable conditions of business, increase of labour power and rigidity in wage structure. It is a coincidence of stagnant and inflation, where word stagnant is taken from stagnancy and word inflation is taken from money inflation. Stagflation is also known as inflationary slump because here along with slump, high rate of inflation is also found. Yeh sfiti utpann karti hui vastu baazar me atirek maang ke saath ardhvyaavastha me berojgaari utpann karti hui shram ki kam maan ke kaaraN se hai.

It is clear from the description done in this chapter that meaning of inflation for various economists may be different in relation to the causes responsible for it. As far as final results are related, they almost mean one, that is, increase in general price level.

An economy that tries to develop faster than the required rate of progress will have to face inflation. When at prevalent price level, government decides to take more than resources released by the economy then the result may be inflation. A country may suffer from inflation when various classes of economy, in comparison to increase in productivity, try to improve their income level parts. It may also arise if due to possibilities, demand for goods and services is increasing faster as compared to extension of production by the economy.



Did You Know?

Relation of inflation is with that increase in price level which happens after achieving the level of full employment.

#### Self Assessment

## Fill in the blanks:

- 1. Inflation is ...... and heavy increase in general level of monies after full employment.
- 2. During the initial stage of inflation prices ........... at very slow less rate.

## 22.2 Types of Inflation

Inflation is continuous and heavy increase in monies after full employment. Merely an increase of 0.2 or 0.3 percent in the price level of an economy in a year is not worth describing as inflation, because it is not sufficient. In the same way, an year in one quarter of which piece levels rise by 2 percent and in 2nd quarter, drop by 3 percent, increase by 4 percent in the third quarter and drop by 5 percent in the 4th quarter then, it can be hardly described as an inflationary period. And then increase in prices of almost all things must be experienced. Increase in price of some goods, while there is a decline in prices of other goods will be hardly worth calling inflation.

After understanding the minute meaning of inflation, it will be important to know various types of inflation on various bases:

#### 1. On the basis of rate of Inflation:

On the basis of intensity of price rise, inflation may be classified in three types, i.e. (a) Creeping inflation (b) Running Inflation (c) Hyper Inflation.

a. Creeping inflation: During the initial stage of inflation, price rise at a very slow rate. This slow rate of money may be considered as creeping inflation. Though it is difficult to tell

its quantity, some economists have told the inflation of up to 3 percent per year in form of creeping inflation. According to many economists, slow increase in price levels is a necessary condition for economic progress. Prices rising as a slow speed may provide motivation for investment. They prevent the economy from falling in a stagnation trap.

- b. Running Inflation: If slow creeping inflation is left uncontrolled for a long time, then increase in price level will become more marked and alarming with time. It adopts to form of running inflation. In such situation, prices rise with a fast rate of 8-10 percent per year. Running inflation is a warning signal. At this stage, required necessary measures to stop inflationary tendencies are important. If these steps are not taken on time then running inflation may, through saving capacity and in this manner through reduction in long term investment plans, may exterminate the economy.
- **c. Hyper Inflation:** When monetary authorities lose control on running inflation, it is result of hyper inflation. It is the last stage of inflation, where there is no limit of price rise. In this stage, prices rise at a very high speed.

In hyper inflation, people expect the prices to rise more and hence become conscious of inflation and they spend money at a very high rate, because of which circulation rate increases. Since people spend on consumption at the cost of saving, hence lending from the savings is unsuccessful in supplying anti inflationary resources for controlling inflation. Government has to take the help of deficit financing, which is again inflationary.

Hyper inflation must be avoided at any cost. It creates a huge disorder in economic process. It may put the very survival of present social and economic process in danger due to which widespread experience of injustice and dissatisfaction arises.

The worst form of hyper inflation was seen during the period of civil war. Price rise was wobbling, unless this war did not become ten lacs times of previous level. All forms of income and property lost value overnight. This inflation destroyed thousands and lacs of people in Germany, even destroyed the middle class of Germany.

## 2. On the Basis of Degree of Control

On the basis of degree of control, inflation may be classified in open and suppressed inflation.

- **obstacle or control.** In words of **Milton Friedman**, "It is an inflationary process in which prices are allowed to increase without stopping through governmental price control and mixed techniques." At the end, it may end in hyper inflation. According to **A.C. L. Dey**, Open inflation is initiated by some change, which makes it impossible to satisfy the whole of the demand that may be forthcoming at existing prices resulting in initial price rise. Further, rise in the prices is induced by the reactions of the transactors.
- b. Suppressed inflation: Under such kind of inflation, though there are conditions of prices rising, but by use of government policies like price control and rationing, price level is not allowed to increase. Leaving a few abnormal conditions, where any inflationary pressure is not building for the future, as soon as control measures are removed, prices may increase. There are two meanings of suppressed inflation, means place of consumer spending and deviation of demand.

When policies are executed for stopping present price rise then, suppressed inflation induces postponement in consumption expense. During the period of war, for postponing the adverse effects of price rise, government takes the support of rationing and other controls. Consequently, consumer and firms collect savings, because they are incapable of buying those things, which they want at the prevalent price or income levels. Pent up demand of the transactors is fulfilled by buying those goods

and services when they are available. Long period of control increases the pent up demand so much that control becomes ineffective and black market is created. Hence under suppressed inflation, prices are stopped from increasing in an unstable manner, though the volcanic powers increasing the prices are present. They may erupt any moment, if they find an opportunity to do so, result of which will be open hyper inflation.

Due to suppressed inflation there may be deviation in demand from one kind of product to another kind of product. Since it is not possible to ration and control each product, hence excess money saved may be spent on uncontrolled and non-rationed objects. In some circumstances, it may deviate expense to those paths also which are considered to be unproductive.

There are many risks of suppressed inflation. **First** is created by administrative problems, especially when administration is incapable and corrupt, as a result of which black marketing happens. **Second**, it induces unreasonable deviation of productive resources of the country from industries producing necessary products in a stable manner, to industries producing unnecessary products (whose prices are not controlled). **At the end**, control increases the attraction towards leisure. When a person, with his present income, cannot freely purchase all those things that he wants to buy, then reduction in its production and inflation will be created.

#### 3. On Basis of Causes

On the basis of causes, inflation is of five types-

- a. Credit inflation: Banks create credit on the basis of derivative deposits created from primary deposits of the customers and loans and advances given by the banks. Without increase in production extending supply of credit money, banks create credit inflation.
- b. Currency Inflation: Inflation created by excessive flow of currency is called currency inflation. It is found when without favourable and justified demand for purchasing goods and services, government issues more currency.
- c. Deficit induced inflation: When government's expense is more than its inflow, then this difference is filled by deficit financing. Through it increase in money supply will be created, no matter what technique is applied for achieving this objective. Inflation happening as a result of increase in prices is known as budget inflation.
- d. Demand Pull inflation: The most general and important cause of inflation is the pressure of ever increasing demand on stable of slowly increasing goods and services. On supply remaining constant, increase in group demand will raise the prices. Demand pull inflation is created when on present prices, in comparison to available supply, excess demand is there. It has been made clear in figure 22.1. Here axis X shows the income or production, whereas axis Y measures the price level. Collective supply curve moves upward from the right, unless it does not become vertical at full employment level at OF production, since due to increase in demand, collective demand curve moves upwards from D₁ to D₂, D₃, D₄ and D₅. Price level increases from OP₁ to OP₂, OP₃, OP₄ and OP₅. It is seen that initially price and production, both increase. Once collective supply curve attains the full employment level at point C, further increase in collective demand curve from D₄ to D₅ will happen only through price level. This is known as demand pull inflation. Various factors are responsible for demand side inflationary pressure.

The main source of inflation is increase in quantity of money. As a result of increase in demand deposits and extension of credit by the banks, quantity of money increases, because of which level of income increases. Such increase increases the price of goods. Money supply may also increase when government takes support of deficit financing for financing its developmental schemes by taking loans from the central and commercial banks. Extension in collective demand may happen as a result of fast

increasing private business expenses or war or increasing government expenses for economic development. Heavy expenses, without favourable increase in supply of actual production, will create huge monetary income and in this manner create demand. It is clearly inflationary in nature. During the Second World War, because of the increase in government expense on an unprecedented scale, almost all the nations of the world had to face demand pull inflation.

Apart from this, for increased income, foreign expense on domestic goods and services is another responsible factor. This factor is important for that country, which maintains an export surplus. But if the created income is spent on imports or is accumulated, it will not have an inflationary effect on the economy.

when because of raw material, intermediate goods and increase in labour costs of productions of the industries increase. Because of it, there will be an increase in consumer goods. When production cost increases, then collective supply curve, showing this that at prevalent prices, less amount will be supplied, has shifted to the left. Downward shifting of the supply curve from S₁ to S₂, S₃ and S₄ has been shown in figure 22.2. Assuming the collective demand curve to be stable, decrease in supply increase the price level upwards from OP₁ to OP₂, OP₃ and OP₄ respectively. Many factors are responsible for upward movement in costs.

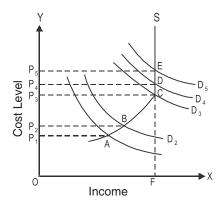


Figure 22.1

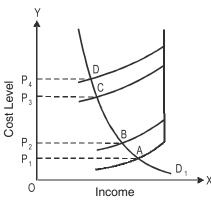


Figure 22.2

- (i) Higher Wage rates: Along with development of powerful trade unions, labours successfully attain high wages for themselves. These wages may be more then the increase in their productivity. When firms realize that their labour cost is increasing then, to save the high cost they increase prices. Increase in price of goods induces high cost of living and reduction in actual wages. For neutralising this reduction, labours demand for further increase in their wages. Under any circumstance, final load of increase in prices has to be borne by the consumer. The cycle of increase in wage rates consequently, increase in costs creates an inflationary pressure in the economy (Wage-Price-Spiral), which is known as Cost Push Inflation. Such inflation is found in imperfectly competitive market. Where labours are unorganised or is suppressed by powerful industrial authorities, there it (this inflation) is not possible.
- (ii) Higher Profit Margins: Cost may also be increased by setting higher profit margins by monopolist producers, stockists, and traders. They are in a condition to increase the prices more than sufficient for indemnifying any loss. Other people in the market are at the mercy of the monopolist, they have no choice but to accept them (the costs). Since demand is more than the supply, hence producers have profit. But in freely competitive market, possibility of cost push inflation is banned. It is true for the markets of agricultural products. But, when prices of agricultural products are fixed by the government, then organised farmers lobby may have some control on that price, at which it sells the agricultural produce. Farmers' lobby in India has been successful to quiet an extent in compelling government in keeping

- the sub-prices determined, which became the main cause of Profit pushed inflation. Profit pushed inflation may also happen as a result of wage driven inflation. It is comparatively easy to bring down profit pushed inflation, but once never ending Wage- Price-spiral surfaces, it is difficult to remove wage rate inflation.
- (iii) Higher Taxes: Government, by presenting taxes full of variations and by increasing the rate of present taxes, especially the excise duty or indirect taxes like sales tax, may increase the cost. Producers, by increasing the price of goods, pass the burden of tax on the consumers.
- (iv) Availability and prices of Basic Inputs: When there is lack of favourable and basic raw material and other inputs, their prices increase suddenly. Many important inputs are controlled by the government and other authorities. Their prices are managed by supplying agencies. For example, price of crude oil is determined by OPEC. Since for many industries, oils take the form of a basic input, upwards revision of its prices by OPEC affects all these industries. Hence increase in prices of a basic input is sufficient to increase the general level of prices and may be a source of cost push inflation in the economy.
- (v) Other factors: Fall in agricultural production due to natural calamities like insufficient, excessive, irregular rain or flood, drought, famine etc may reduce collective supply; and increases the price of agricultural goods. Similarly because of strikes, lockouts, disruption of power supply etc industrial production may fall. Government's domestic or foreign policy may shift above the supply curve, because of which urdhavgaami (upward) behaviour starts in the prices.

Demand pull and cost push inflation are interrelated and remain together in the economy. Increase in cost of resources creates cost push inflation. Cost push inflation may also be successful when demand stops increasing. But, it may not be maintained until excess demand is not there. At the other side, demand pull inflation happens as a result of increase in demand for final goods, which creates a rise in their prices. These price rises may increase the demand for resources of production, which may again increase the prices of resources. Demand pull inflation and cost push inflation may exist together. Of the two, cost push inflation is worst because it cannot be controlled by monetary and treasury measures too.

#### Self Assessment

## **Multiple Choice Questions:**

3.	According to economists, slow increase in p	price levels is afor economic progress.
	(a) necessary condition	(b) unnecessary condition
	(c) favourable condition	(d) adverse Condition
4.	When monetary authorities lose control on	running inflation, it isof hyper inflation.
	(a) bad result	(b) result
	(c) stage	(d) last stage
5.	Worst form of hyper inflation was seen dur	ing
	(a) periods of civil wars	(b) during Slump
	(c) during progress	(d) none of these.
6.	Due to suppressed inflation there may be another kind of product.	from one kind of product to
	(a) deviation	(b) deviation of demand
	(c) control	(d) demand control.

## 22.3 Inflationary Gap

Notes

Demand pull inflation of **Keynes** may be present as inflationary gap. It is related to excess of demand as compared to available production, at full employment level. If at the level of present prices, sufficient goods are available, then this gap will end.

Inflationary gap has been explained in figure 22.3. In this figure axis X shows gross national product or income of the economy. Axis Y represents total expense included in consumption expense (C), private investment expense (I) and in government expense (G). In the figure, economy is in balance at point E, where total supply of goods and services (OY $_{\rm f}$  income) is equal to their demand reflected by total expense (C + I + G). The C + I + G curve intersects the 45° line at point E. It also pictures full employment income at Present pre-inflation prices. At this level of income, there is no excess demand.

Now assume that due to government expense increasing equivalent to the amount EA for reasons like war or development, demand curve moves up. New collective expense increase up to C + I + G', as a result of which there is an excess demand of EA, equivalent to amount of increase in government expense. Since economy would be working on full employment, hence this excess demand of EA cannot be erased. This gap between the collective demand and available supply is called inflationary gap which moves the prices up. New collective expense is  $AY_f$  whereas national income at present prices is  $OY_f$ . Monetary demand for  $OY_f$  production is

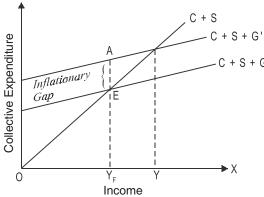


Figure 22.3

not EY_f, but AY_f. Here EA is inflationary gap, which is found because in comparison to production of goods or services, expense increases at a faster speed. Hence, at a high price level, for making expense equal to money of production, prices increase. Unless amount of disposable income with the people is more that the amount of goods (kept) with them, inflationary gap will surface.

Inflationary gap emerges because of the extra expense by the government. During the war or during the period of economic development, reduction in government expense is not necessary for reducing inflationary gap. Inflationary gap may be met (like this):

- (i) For reducing effective demand, wilful increase in savings by the society.
- (ii) For reducing C + I by amount equal to increase in government expense, by using tax methods excess purchasing power with people may be wiped off.
- (iii) Increasing the production of goods and services for meeting excess demand; though because of lack of unused resources, there is little scope here.

#### 22.4 Effects of Inflation

Most economists have the opinion that slow inflation is not only required but also an important condition for economic development. It is especially true for undeveloped countries like India, where human power is unemployed. And provides support in consolidating other resources, which will otherwise not be available. When inflation runs fast and takes the form of hyper inflation, entire economy is disturbed. In such condition, planning process is disturbed and process of economic development may stop. Effects of inflation may be studied under three heads:

### Notes 1. Effects on Production and Economic Activities

Creeping like inflation may have a powerful effect on production, employment and in this manner, on economic activities. For an economy suffering from lack of demand, wheels of industries are well greased for increasing the production from the increased expense and for generating employment. Because of increased prices, increased amount of profits induce the firms for more investment, because of which unemployed human power and unused resources may get employment. As a result of this more income will be generated, by which increase in demand will be induced. Under any circumstance, at least initially losses of fixed income group will be less than the profits of rest of the community. Employment of labours may make them better also.

Along with time, when inflation goes beyond the limits, it creates a chaos in the economic system. It may result in reduction in production and increase in unemployment, because in future for earning more profit, firms consider accumulation to be more profitable instead of production. There may be obstacle in production due to labour strike of those labourers whose actual income had declined during the inflation period. Sometimes, for earning more profits, producers may reduce the quality of goods and services produced.

#### 2. Effects on Distribution of Income

Inflation does not affect all sections of the society equally. Some people attain profits by inflation, other people incur losses; how badly people suffer losses, it depends on that amount of income or property that inflation takes away from them. If all prices had risen in the same direction and to the same limit, then effects of inflation would not have been noted. If increase in price of goods and services, like 20 percent, had been equated by proportionate increase in wages, rent, profits etc, then people's purchasing power and because of this lifestyle would have been unaffected. Practically, all prices are not changed at the same rate. Hence inflation causes profit to some (people) and loss to some (people). Effects of inflation on various classes of the society may now be explained:

- a. Producers: Here in the class of producers, manufacturers, traders and farmers are included. They all obtain profits during the period of inflation. Prices of goods increase at a faster rate than the cost of production. There is always a time gap between increase in prices of goods and increase in cost of inputs like wages, interest, rent, insurance premium etc. that is why their profit margins may also increase. Producers and traders also may reap huge profits by creating an artificial scarcity of goods, because of which prices increase further. Along with marketable surplus, big farmers also have profits from price rise, especially those farmers who produce inflation sensitive crops. Generally price of these crops rise at a faster rate as compared to manufactured goods. Inflexible demand for agricultural goods motivates farmers to stock goods, so that they may be sold at a higher price in the future. Small farmers who are engages in livelihood earning farming are not much affected by inflation.
  - Because of uncertainty created by the continuously increasing price level, inflation induces the activities of speculation. For earning higher profits, producers and traders also instead of investing more money in production activities, are engaged in speculation. In this way, producers earn huge profits during inflationary period.
- b. Debtors and Creditors: Debtors are those people who borrow money and repay it in future along with the interest. As a result of inflation debtors are at profit because, actual value of money that they pay back falls down because of inflation. Apart from this, they by repayment during inflation make less sacrifice in form of goods and services, because inflation reduces the value of money and in this way its purchasing power. It can be understood with the help of an easy example. Assume that today Nihit takes a loan of ₹ 100 on an interest @ 10% p.a. if after a year at the time if repaying the loan and interest economy is in inflation, then value of

both the principal amount of ₹100 and interest amount of ₹10 will fall. If loan is interest free then too ₹100 will be less valuable at the time of inflation in comparison to that at the time of taking loan. Things that who could buy in ₹100 at the time of taking the loan, it will cost him more than ₹100 when inflation will take place. In this way, increasing prices provide profit to debtors. As opposed to it, creditors suffer loss due to inflation because the amount that they had lent, they receive comparatively less purchasing power than it.

- **c. Investors:** Because on inflation generally investors of shares receive profit. During inflation, firms receive huge profits. That is why shareholders at one side receive profit shares, at the other side; because of increase in share prices they may also obtain capital gain.
  - Investors of bonds and debentures paying stable returns incur losses because during inflation, actual income from such investments falls. When inflation is intense, then because of value falling down, hard earned savings are completely finished. Maximum damage is caused to small investors, who keep their savings in fixed deposits or savings bank accounts and insurance schemes. This is the reason why people prefer to spend on consumer goods. They are reluctant of saving. Declining savings have an adverse effect on capital building and loans. Consequently, investment in productive economic activities has to suffer a setback. It has a serious reaction on the economic activity of under developed country like India, where more than three fourth parts of savings is created from the domestic area.
- d. Fixed income earning class: People earning wages, salary or other people with fixed income are badly hurt by inflation. Among other people, pensioners and those receiving fixed interest or rent are included. Their monetary income is almost fixed, whereas the prices of those goods and services which they are thinking to buy are increasing rapidly. Since the purchasing power of their income falls, hence they suffer loss. Increase in salaries through annual increment and untimely payment of dearness and other allowances fail to match steps with price rise.

Labourers employed in huge organised sectors may be successful in compelling the management to increase the wages. But labourers employed in small areas are incapable in doing so. They are incapable of determining escalation clause of wage contracts, so that (they) they may compel their employer for compensating the labourers for reduction in their real income due to price rise.

#### 3. Other Effects

Summary of other effects of inflation may be presented like this:

- (i) Inflation creates uncertainty in economic activities. Businessmen dislike taking business risks. Consequently they invest in real properties and speculation. That is why production is adversely affected.
- (ii) Resources are deviated from production of necessary goods to industries of luxury goods, as a result of which there is lack of necessary consumable for general public. Consequently, prices of these goods shift more high.
- (iii) High cost economy adversely affects the competitive base of the country in the international market. Because of increasing demand (consequently demand pull inflation) and/ or because of increasing prices, quantity of export declines. That is why; foreign trade is adversely affected by inflation (demand pull or cost push). People lose faith in domestic currency. And for protection of their well being, they rush towards comparatively more stable foreign currency.

- (iv) Because of inflation (demand pull), personal investment increases many folds. Capital building is induced by real capital investment. Investors for receiving more profits, start stocking goods, because of which black marketing emerges. With globalisation and open door policy, foreign direct investment is motivated.
- (v) Tax inflow of the government increases, from which increasing public expenses are managed. Apart from this, actual load of public debt is reduced.

#### Self Assessment

State whether the following statements are True or False:

- 1. Slow inflation is not only required but also an important condition for economic development.
- 2. Inflationary gap is not created due to extra spending by the government.
- 3. Due to inflation investors of shares generally earn profits.
- 4. Small farmers engaged in livelihood earning farming are not much influenced by inflation.

### 22.5 Control of Inflation

It is important to control inflation from the very beginning itself otherwise it completely destroys the economy, (when) it once takes the form of hyper inflation. For avoiding the catastrophic results of inflation, various anti-inflationary measures have been suggested. Most of these measures try to reduce the collective demand for goods and services. These measures may be explained under three heads in the name of monetary measures, Fiscal measures and other measures.

## 1. Monetary Measures

Increase of inflation during the time after the Second World War revived the faith in power of monetary policy, though as per Keynes, it proves un-influential in controlling the slump. Monetary policy is the policy of the central bank (RBI) of the country, which is the highest monetary power. Monetary measures try to control the money in the economy. For stopping inflation, increase in quantity of currency should be postponed. If there is excess of black money, high value currency should be invalidated. In place of old currency, new currency can also be issued. Bank deposits, which provide power to credit creation, become a big part of money supply. That is why; main relation of monetary measures should be with controlling bank loans. For this objective, central bank uses various quantitative and qualitative (selective) control measures. Quantitative measures like Bank rate policy, open market operations, and variable reserve requirement ratio affect the cost and availability of loan.

Central bank by increasing the bank rate may easily by raising the interest rates, make investments less attractive. By suppressing excess demand inflationary increase in prices may be stopped. Bank rate policy is influential, if banks to not have an easy access to other sources of funds. Under Open market operations, money supply may be reduced by sale of government securities. This measure is better than bank rate policy, because it directly influences the money supply. It its success in controlling credit and in this manner, controlling inflation, depends on attractiveness of these securities and on existence of organised money market. Variable reserve requirement ratio is most successful measure in controlling inflation, but because of its hard influences, it is often not used. By increasing cash reserve ratio central bank can reduce the amount of (that) loan, which banks may create.

In selective control measures because of the rising of consumerism, control of consumer credit become very general. During inflation, by increasing immediate payments on selective basis and reducing the payment time, consumer credit facilities are cut down. Central bank according to the purpose, may determine high margin requirements for loans. For controlling undue monetary expansion apart from directives, moral suasions, publicity, direct actions etc. these selective measures may be used.

Effectiveness of monetary measures depends on the quantity of control used by the central bank and support extended by commercial banks and other factors of money market. In a developing country like India, there is lack of most of these factors. That is why monetary policy is less important here. Apart from this, when inflation happens due to extension of monetised money (for financing of war or development plans), then fiscal measures are more useful, towards which we will now turn.

#### 2. Fiscal Measures

Since in almost each economy if the world government expenditure has become a big part of group expenditure, hence government may influence money supply and because of it inflation in an important manner. For mopping up excess purchasing power from the economy below mentioned anti inflationary fiscal measures may be used:

- a. Public Expenditure: For controlling price rise, government may reduce its expenditure. This measure will reduce public money from the market and because of this will reduce demand for goods and services. Reduction in public expenditure must be used carefully as an anti-inflationary measure. Reduction of security and developmental expenditure of the government is almost suicidal. Apart from this there is no gain in leaving the projects under various plans. Hence government must keep the unnecessary expenditure to be minimal.
- b. Taxation: Taxes determine the disposable income in the hands of the people. Introduction of new taxes and increase in rate of taxes at one side, reduces the purchasing power of the people and at the other side, it creates resources for the government to face inflation. In this manner, objective of anti-inflationary tax policy should be to reduce disposable income, which is otherwise spent on consumption. Tax revenue received by the government should be used for maintaining requirement expenditure.
  - Government must use a good composition of direct and indirect tax. Income tax, property tax, expenditure tax etc direct taxes reduce disposable income and create pressure on demand. Indirect tax, along with extra profit of extensive extension, may also create general influences. But indirect taxes prove very heavy for fixed income earners who had already suffered huge loss due to inflation. By introducing merchandise tax or other similar taxes on luxury goods, this discriminating effect may be corrected. These things are consumed only by the high income class in the economy. But indirect tax is not useful, because it increases cost push inflation by increasing the price of the goods.
- c. Public Borrowing and Debts: Like taxes, main objective of public debt is to reduce the excess purchasing power, which if left free, puts an upward pressure on the demand. If this voluntary borrowing does not create desired results, government may take support of compulsory borrowing. Compulsory debt, one form of compulsory saving has been used in Norway, Belgium and Holland.

For stopping the increase of money extension, government must postpone the repayment of any of its previous debts. Part from this, if it is possible, for reducing the present purchasing power of the people, it should defer a part of the salary of its employees. When inflation ends or there is expectation of slump in the economy, deferred purchasing power may be taken out. Similarly, during inflation, instead of cash payment of pay revision arrears, they must be transferred to provident fund accounts. During the period of peace, generally compulsory saving and deferred payments should be postponed.

## Notes 3. Other Measures

For opposing inflation, for completing monetary and fiscal measures other non-monetary measures must be adopted.

a. Price controlling and Rationing: It is a useful popular direct measure of controlling price rise. Meaning of price control is to establish a legal maximum price, beyond which prices of special things are not allowed to rise. On the other side job of rationing is distribution of goods of short supply in a justified manner, for creating conditions supportive in price stability. Price control and rationing generally go side by side. But applying such anti inflationary measures is difficult. Because of unskilled and corrupt management, this control may induce black marketing of things kept under control. Apart from this, due to the practical difficulty of arranging distribution of necessary consumer goods in sufficient number under rationing system, utility of rationing is limited. This measure also limits the freedom and well being of the consumers.

During war, price control is possibly the most impactful measure, when other measures to control inflation go wasted. During the Second World War, many countries adopted price control and continued it after the war! During this war, due to intense inflation, many necessities went beyond the reach of weaker sections of the economy. Because of the hope of further increase in their prices, traders stocked these goods. Only price control can provide relief to the victims of inflation.

b. Wage Policy: High wages induce high cost and at the end high price, as a result (of which) cost push inflation is created. It is suggested that wages, salaries and profit amount should not be controlled through income freezing. wage freezing is supported by the traders. They do not support any such measure that influences their profits.

## 22.6 Summary

Keynes connected the concept of inflation with the incident of full employment. Like Pigou,
Keynes has related inflation with the condition of increase of price level, which comes in
existence after the situation of full employment. As per him, relation of inflation is with that
increase in price level which happens after achieving the level of full employment. In this
situation of price rise, production will not increase.

#### 22.7 Keywords

- Precise Particular.
- Inversely—in reverse.
- Reflation Partial inflation.

## 22.8 Review Questions

- 1. What is meant by inflation? Clarify.
- 2. How many types of inflation are there? Explain.
- 3. What do you understand by inflationary gap?
- 4. Comment on "control of inflation".

**Answers: Self Assessment** 

Notes

1. continuous

2. increase

3. (a)

4. (b)

5. (a)

6. (b)

7. True

8. False

9. True

10. True

# 22.9 Further Readings



Book

- **1. Macroeconomics** Theory and Policy: H.L Ahuja, S. Chand Publisher, 2010.
- **2. Macroeconomics** S.K. Chakravarty, Himalaya Publishing House, 2010.

# **Unit-23: Phillips Curve Analysis**

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Objectives

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- 23.1 The Phillips Curve: Relation between Unemployment and Inflation
- 23.2 Friedman's View: The Long-run Phillips Curve
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## **Objectives**

After studying this unit, students will be able to:

- · Know the relation between unemployment and inflation,
- Know the Long term Phillips Curve,
- Know the Rational Expectation and Phillips Curve.

#### Introduction

Many economists have extended the Phillips analysis till the situation of trade-off between rate of unemployment and rate of change in price level or inflation rate. They take this assumption that when wages will increase faster than labour productivity, then prices will change. If rate of increase of monetary wages is more than the rate of increase of labour productivity, then price will rise and vice versa. But if labour productivity rate increases equal to money wage rates then prices will not rise.

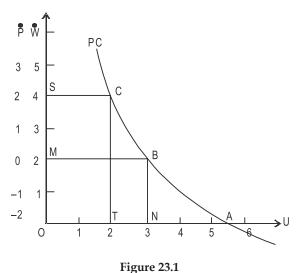
## 23.1 The Phillips Curve: Relation between Unemployment and Inflation

Phillips curve investigates relation between rate of unemployment and rate of change in money wages. England's economist A. W. Phillips had first recognised it that is why it is known as Phillips Curve. This curve tells that there is an inverse relation between rate of unemployment and rate of increase of money wages. By basing his analysis on the data of England he presented this experience born inference that when unemployment is too much then rate of increase in money wages is low. It happens because, "when demand for labour is less and unemployment more, then, labours do not agree to render their services at less than the current rates". As opposed to this, when unemployment is less then rate of increase in money wage rate is high. Its cause is this that, "When demand for labour is more and unemployment is very less, then we must hope that masters will increase the wages very often."

Second reason influencing this inverse relation between money wage rates and unemployment is nature of trade activities. In the period of increasing trade activities when unemployment will be falling along with increasing demand of labour, then masters will increase the wages. As opposed to this, during the period of reducing trade activities when demand for labour will be falling and unemployment increasing then masters do not get ready to increase wages. Instead they reduce wages. But labourers and organisations dot not agree to accept cut in wages in these periods. As a result, masters are compelled to fire the labours from the job. In this manner when labour market goes under recession, then it will bring little cut in wages and more increase in unemployment.

Phillips on the basis of above mentioned reasoning took out the inference that on showing the relation between rate of unemployment and changes in money wages in a figure, it will be non-linear. Such curve is known as Phillips curve.

In figure 23.1 curve PC is a Phillips curve. It tells the relation of percentage change in money-wage rate (W) on the vertical axis and rate of unemployment (V) on the horizontal axis. This curve is convex to the central point which shows that when rate of employment falls the percentage change in money wages increases. In the figure when money wage rate is 2% then unemployment rate is 3%. But when wage rate increases to 4%, then unemployment rate decreases to 2%. In this manner, trade-off takes place between rate of change in money wages and rate of unemployment. It means that when wage rate is high then unemployment rate reduces and vice versa.



Original Phillips curve was an investigated statistical relation which Lipsey had described theoretically in form of result of behaviour of labour market in imbalance through more demand.

Many economists have extended the Phillips analysis till the situation of trade-off between rate of unemployment and rate of change in price level or inflation rate. They take this assumption that when wages will increase faster than labour productivity, then prices will change. If rate of increase of monetary wages is more than the rate of increase of labour productivity, then price will rise and vice versa. But if labour productivity rate increases equal to money wage rates then prices will not rise.

This trade-off between inflation rate and unemployment rate has been described in figure 23.2. Here inflation rate (p) has been taking with rate of change in wages (w). Assume that labour productivity increases at the rate of 2% and if money wages also increase at the rate of 2%, then prices-level will remain stable. In this manner, on curve PC point B, percentage change in money wages (M) and unemployment rate of 3 percent (N) are equal at zero (0) percent inflation rate (p) at vertical axis. Now assume that economy is working on point B. If now entire demand is increased then it will reduce unemployment rate at OT (2%) and increases wage rate up to OS (4%) per year. If labour productivity keeps increasing at 2% per year then price level will also on OS in the figure at the rate of 2%. Now economy works at point C. In change of economy from point B to point C, unemployment reduces to point T (2%). Like this, when increase in money wage rate will be more than labour productivity, it will bring inflation. For stopping inflation, for keeping wage rise at the level of labour productivity (OM), ON rate of unemployment will have to be tolerated.



Notes

When demand for labour is less and unemployment more, then, labours do not agree to render their services at less than the current rates.

Shape of curve PC further suggests this also that when rate of unemployment is less than  $5\frac{1}{2}$  % (i.e. towards the left side of point A) then demand for labour is more than the supply for labour and by this money wage rates will increase. At the other side when unemployment rate is more than  $5\frac{1}{2}$  % (towards the right side of point A) then supply of labour is more than the demand which reduces wage rates. Meaning that at the OA rate of unemployment which is  $5\frac{1}{2}$ % per year, wage rates will be stable.

It must be remembered that PC is conventional or original downward sloping Phillips curve which represents a stable and inverse relation between rate of unemployment and rate of change of wages.

#### Self Assessment

#### Fill in the blanks:

- 1. Phillips curve investigates relation between rate of unemployment and rate of change in.......
- 2. When unemployment is too much then rate of increase in money wages is ......

## 23.2 Friedman's View: The Longrun Phillips Curve

Economists have criticised Phillips curve and have also amended at many places. They believe that Phillips curve is related to short term and does not remain stable. It shifts along with changes in expectations for inflation. In long term, trade- off does not take place between inflation and employment. These views have been established by Friedman and Phelps and their theory is famous by the name of Accelerationist or Adaptive Expectations Hypothesis.

According to Friedman for describing trade-off between unemployment and inflation there is no need to assume a stable downward right sided Phillips curve. In reality, this relation is a short term event. But many variables are there which of Phillips curve moves in long term. The most important variable of these are the expected rate of inflation. As long as there is difference between the expected rate and actual rate of inflation till then there will be right side downward sloping Phillips curve. But when this difference ends in long term, Phillips curve becomes vertical. For describing it Friedman presents the concept of 'natural rate of unemployment'. It is that rate of unemployment at which economy often stay at because of its structural errors. It is that unemployment rate below which inflation rate increases and above which inflation rate decreases. At this rate, tendency of inflation rate is of neither increasing nor decreasing. In this manner, Natural rate of unemployment may be defined as such rate of unemployment at which actual rate of inflation and expected rate of inflation are equal. Hence it is a balance rate of inflation towards which economy goes in long term. In long term, at natural rate of unemployment Phillips curve is a vertical line. This natural or balanced rate of unemployment is not decided for always. But it is determined by goods markets inside the economy and many structural attributes of the labour. These may be minimum ages rule, insufficient employment information, and shortcomings in man power training, cost of labour velocity or other market incompletes. But for which reasons, Phillips curve moves in long term, it is the expected rate of inflation. Its relation is with the fact that labours may correctly forecast inflation to some extent and he may adapt wages according to the forecast.

**Notes** 

Assume that economy is moving at a slow rate of inflation of 2% and natural rate of unemployment (N) is 3%. In Figure 23.3 at point A of Phillips curve SPC₁, people expect the same rate of inflation to remain in future. Now assume that government, for reducing the rate of unemployment from 3% to 2%, in order to increase total demand adopts monetary-fiscal programme. When actual inflation rate (4%) is more than the expected inflation rate of 2% then economy moves from point A to point B on SPC, curve and unemployment rate temporarily falls till 2%. It happens because labourer has been deceived. He had an expectation of inflation rate of 2% on which his wage demand was based. But at the end labourers start understanding that actual inflation rate is 4% which now becomes their expected rate of inflation. When once this happens, short term Phillips curve SPC, shifts rightward to SPC,. Now labourers, because of the high rate of inflation of 4% demand for increase in money wages. They demand for higher money wages because they understand that present money wages, in real meaning are insufficient. In other words, they want to stay with high prices and want to do away with fall in actual wages. Consequently, actual labour costs increase, firms will remove labourers and along which change of curve SPC, to curve SPC, unemployment will rise from point B(2%) to point C (3%). At point C, natural rate of unemployment re-establishes, which is the higher rate (4%) of both, the actual and the expected inflation.

If government's decision is to maintain unemployment level of 2% then it may do so only at cost of high rate of inflation. At curve SPC₁, from Point C through increase in total demand unemployment may once again be reduced up to 2%, until we do not reach point D. At point D, along with 6% inflation and 2% unemployment, expected rate of inflation for labourers is 4%. As soon as they will adjust their expectations to new situation of 6% inflation rate, short term Phillips curve again shifts

upwards towards  $SPC_3$  and unemployment will again increase at its natural rate of 3% at point E.

If point A, C and E are joined, then at natural rate of unemployment a vertical short-term Phillips curve LPC is drawn. On the curve trade-off between unemployment and inflation does not happen instead at points A, C and E, from many rates of inflation, any one rate matches with natural unemployment rate of 3%. Any other cut in unemployment rate below its natural rate will bring a fast rising and at the end an explosive inflation. But it is possible only temporarily until labourers forecast inflation rate to be less or more. In long term, economy will be forced to establish on natural rate of unemployment.

That is why except for short term, trade-off between unemployment and inflation does not happen. Its reason is this that inflationary expectations are amended according to what has happened in the past. That is why when actual rate of inflation in figure 23.2 will increases

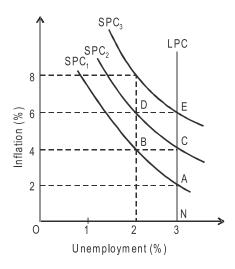


Figure 23.2

till 4% then labourers for some time keep expecting 2% inflation and only in long term they amend their expectation above 2% till 4%. Since they adapt their expectations, this is why it is also known as "Adaptive expectations hypothesis". According to this hypothesis expected rate of inflation always remains behind actual rate of inflation. But if actual rate remains stable, then expected rate will in the end be equal to it. Form it, this is inferred that there is short term trade-off between inflation and unemployment but between both, long term trade-off does not happen unless a constantly rising inflation is not tolerated.

## Notes Criticism

Accelerationist hypothesis of Friedman has been criticised on the following bases:

- Vertical long term Phillips curve is rate related to steady rate of inflation. But is not a correct thought without tendency of reaching a stable stage, economy always passes through the categories of imbalance situations. In such situation, expectation may fail from year to year.
- 2. Friedman does not give any new theory that how are expectations made which are free of theoretical and statistical biases. By this his situation remains unclear.
- 3. By vertical long term Phillips curve it is meant that all expectations are satisfied and people are correctly guessing the inflation of the future. Critics have to say that people are not able to correctly guess the inflation rate, specially, when it is almost determined for some prices to rise faster than others. Because of the uncertainties of future, imbalance between demand and supply and increase in unemployment rate is definite. Removing unemployment is a far off dream, it may make the situation worse from bad.
- 4. In one of his articles, Friedman has himself accepted this possibility that long term Philips curve cannot be absolutely vertical, instead with increasing quantities of inflation it may be bent down towards right side which will bring increasing inflation.
- 5. Some economists say that at high rate of unemployment, wage rate have not increased.
- 6. It is believed that there is money illusion in labourers. They are more worried about increase in their money wage rates as compared to actual wage rates.
- 7. Some economists understand that natural rate of unemployment is mere illusion because Friedman has made no attempt to give its clear definition.
- 8. Saul Hyman has estimated that long term Phillips curve is not vertical but is sloped negatively. Hyman's view is that if we are ready to accept increase in inflation rate then rate of unemployment may be reduced permanently.



Did You Know?

There is short term trade-off between inflation and unemployment.

## **Self Assessment**

#### **Multiple Choice Questions:**

<ol> <li>Second reason influencing this inverse relation between money wage rates</li> </ol>		etween money wage rates and unemployment
	is	
	(a) Nature of trade activities	(b) Labour
	(c) Money	(d) None of these
<ol> <li>In the period of increasing trade activities when unemployment will be falling alon increasing demand of labour, then masters will increase the</li> </ol>		1 1
	(a) wages	(b) labour
	(c) time	(d) none of these
5. If labour productivity rate increases equal to money wage rates then will r		noney wage rates then will not rise.
	(a) rate of labour	(b) prices
	(c) rate of wages	(d) none of these

Notes

(a) sloping Philips curve

(b) curve

(c) labour

(d) none of these

## 23.3 Rational Expectations and the Phillip Curve

In accelerationist hypothesis of Phillips curve presented by Friedman there is a short term trade off between unemployment and inflation but long term trade-off is not there. Its reason is that inflationary expectations are based on previous tendencies of inflation which may not be forecasted absolutely correctly. Because expected rate of inflation always remains behind its actual rate that is why always an observed error is found.

Economists good at rational expectations have denied the possibility of trade-off between inflation and unemployment during long period also. As per them, this concept hidden in his saying is unrealistic that price expectations are primarily made on the basis of experience of previous inflation. When people put their price expectations on this basis, then they are irrational. If they think so during rising prices, they will find that they were wrong. But rational people will not make such mistake, instead they will in comparison to future inflation, will use the entire available information for more accurate prediction.

In relation to Phillips curve, thought of rational expectation has been presented in figure 23.3. Assume that rate of unemployment is 3% and rate of inflation is 2%. We will start from point A on curve SPC1. For reducing unemployment government increases the rate of money supply, because of which prices start rising. According to Ratex hypothesis, firms in comparison to general price level, have more information about the prices of their industry. Their mere thinking this is a mistake that increase in prices has happened due to increase in demand of their goods. As a result of it, for increasing production they employ more workers, by which unemployment reduces. Workers also make the mistake of considering the rise in prices to be related to their industry. But when demand for labourers increase, wages increase and workers consider increase of monetary wages to be an increase of actual wages.

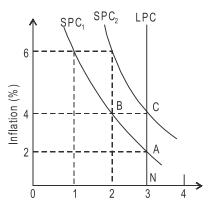


Figure 23.3

In this manner economy, on short term Phillips curve  $SPC_1$  moves upwards from point A to point B. But soon firms find that in all industries there has been an increase in prices and wages. Firms also find out that their costs have increased. With an increase of 4% in inflation rate workers feel that their actual wages have reduced and they put pressure for increasing wages. In this manner, because of monetary policy of the government, inflation rate increases in the economy. Consequently, on curve  $SPC_2$  it moves from point B to point C where inflation rate is 3% which is equal to that before the adoption of expansive monetary policy by the government.

When government again tries to reduce employment by increasing money inflation then it cannot make a fool of those workers and firms who will now keep an eye on activities of costs and prices in the economy. If firms expect increase in prices along with cost of their goods then they will not try to increase their production as happened in case of curve SPC₁. As far as workers are concerned, labour organisations will demand for increasing wages according to increasing prices. When government keeps monetary expansion (or fiscal) policy on, workers and firms get used to it. Their experience only

becomes their expectations. Hence when government again adopts such policy then firms increase their prices for making the expected inflation ineffective so that it does have an influence on production and employment. In the same way, in expectation for inflation workers demand for more wages and firms do not give much jobs. In other words, firms and workers make their expectation in labour so that in the actual rate of unemployment and natural rate, even in short term also, there is no difference.



Task

Express your thoughts on rational expectations.

#### Self Assessment

State whether the following statement are true or false:

- 7. In long term, trade-off between inflation and employment does not happen.
- 8. In long term, at natural rate of unemployment, Philips curve is a vertical line.
- 9. Except for short term there is a trade-off between unemployment and inflation.
- 10. In long term, economy will not be forced to establish at natural unemployment rate.

## 23.4 Implications of the Phillips Curve Policy

Policy implications of Phillips curve are important. They suggest that without high level of unemployment, for stopping inflation to what extent can the monetary and fiscal policies be used. In other words, it guides the officers' class in this relation that when level of unemployment is given, then what rate of inflation may be tolerated.

For this meaning, it is necessary to know the correct situation of Phillips curve. As has been shown in **figure 23.4**, if curve is PC₁ where at point E productivity of labour and wage rate are equal, then full employment and price stability will be possible. Then a curve at the left side of the point (not shown in the figure) tells that full employment and price stability are joint policy objectives (sangat Neeti uddeshya). It means that low level of inflation may be traded-off with low level of unemployment. On the other side, if the curve is PC, as has been shown in the figure it tells that officers will have to choose any one from price stability or more unemployment. In this way by looking at the condition of Phillips curve, officers may make this decision that which type of monetary and E I fiscal policies should be adopted. For e.g. if officers see this that

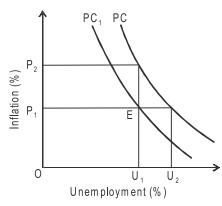


Figure 23.4

inflation rate  $P_2$  of figure 23.4 does not match with rate of unemployment  $U_1$ , then they will adopt such monetary and fiscal policies which will shift Phillips curve PC to the left to the position of  $PC_1$  curve. By this best trade-off between the same level of unemployment  $U_1$  and comparatively lower inflation rate  $P_1$  will be achieved.

Describing the natural rate of unemployment, Friedman had targeted that chance of public policy influencing the level of unemployment, staying consistent with the Phillips curve, is only in short term. Because of vertical Phillips curve, he rejected this possibility that long term rate of unemployment

may be influenced. But economists do not agree with Friedman. Their opinion is that by the medium of labour market policies natural rate of unemployment may be reduced as a result of which labour market becomes more able. Hence by shifting the long term Phillips curve to the left natural rate of unemployment may be reduced. But policy implications of Phillips curves are not as easy as they seem to be. When officers' start deciding about such inflation rates which match with some specific rate of unemployment, then they have to face obstacles. In this way problem of trade off between inflation and unemployment is problem of selecting under obstacles. It has been shown in figure 23.5. Obstacle is to express selection between given Phillips curve PC and indifference curves I₁, I₂, I₃, I₃, I₃, I', I'. Indifference curve is concave to point of origin

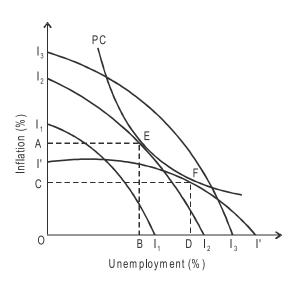


Figure 23.5

because if officers want reduce unemployment then they will have to increase inflation and if they want to increase unemployment then inflation will have to be decreased. That is why this curve expresses negative usage. But in comparison to  $I_1I_1$  curve,  $I_2I_2$  curve expresses much higher welfare- level of public welfare. Its reason is this that in comparison to higher curve, any point on the lower curve expresses lower rate of unemployment and inflation. Best point of trade-off is E where indifference curves  $I_2I_2$  touches Phillips curve PC where there is trade-off between OA rate of inflation and OB rate of unemployment. But if officers adopt such monetary and fiscal policies by which they wish to reduce inflation and increase unemployment, then indifference curve will become I'I'. This I'I' curve touches Phillips curve at point F and trade-off take place between OC inflation and OD unemployment.

Some economists have suggested that there is a loop around Phillips curve based on observation values of inflation and unemployment. It has been shown in **figure 23.6**. In the first step of expansion in trade cycle, in unemployment-inflation loop decreasing inflation and increasing production is found. Its reason is that as a result of expansive monetary or fiscal policy demand pull inflation occurs. In this step of the cycle general relation between inflation and unemployment suggested by

Phillips curve is maintained. It has been shown from below the Phillips curve by movement of arrows, when rate of unemployment falls and rate of inflation increases. If increase of total demand continues and inflationary pressures gain advantage, then dotted loop crosses the Phillips curve at point A. In adopting expensive monetary and fiscal policy, total demand will fall. But expectation of increase in prices will bring increase in wages and previous rate of inflation will only be maintained. This is why unemployment will increase and prices will not decrease. This fact is expressed by the upper part of loop situated to the right of Phillips curve. But when more demand gets controlled and production increases then along with rate of unemployment falling, inflation rate starts

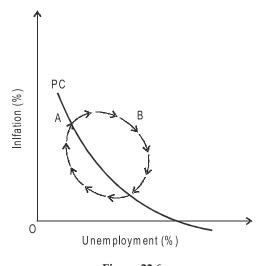


Figure 23.6

falling from point B. In this manner we see that because of expansive monetary and fiscal policy in the initial cycle of trade cycle Phillips' inferences are correct. But in lower stages trade-off between inflation and unemployment foes against Phillips curve.

Johnson does not agree that in making economic policy, Phillips curve may have behaviour. It has two reasons- "At one side Phillips curve presents just statistical description of procedure of adjustment in labour market and rests on the easy model of dynamism behind which there is no general or well tested monetary policy is there on the other side, this curve describes the behaviour of labour market in combination of periods of economic up and down and changing inflation rates, while these are such conditions which have possibly influenced labour market itself. That is why this doubt is correctly only that if through economic policy economy is tried to be nailed at any point of this curve then will this curve retain its shape or not."

### 23.5 Summary

According to Friedman for describing trade-off between unemployment and inflation there
is no need to assume a stable downward right sided Phillips curve. In reality, this relation
is a short term event. But many variables are there of which Phillips curve moves in short
term. The most important variable of these are the expected rate of inflation. As long as there
is difference between the expected rate and actual rate of inflation till then there will be right
side downward sloping Phillips curve. But when this difference ends in long term, Phillips
curve becomes vertical.

### 23.6 Keywords

- Unemployment Without employment.
- Long run Of long period.

### 23.7 Review Questions

- 1. Tell the relation in unemployment and inflation according to Phillips curve.
- 2. Express Friedman's thoughts on long term Phillips curve.
- 3. Comment on "Rational expectations and Phillips curve."
- 4. What are the implications of Phillips curve policy Tell.

#### **Answers: Self Assessment**

1. money wages	2. low	3. (a)	4. (a)
5. (b)	6. (a)	7. True	8. True
9. False	10. False		

### 23.8 Further Readings



- **1. Macroeconomics** *Mohan Srivastava, DND publications, 2010.*
- 2. Macroeconomics: Theory and Policy H.L Ahuja, S. Chand Publishers, 2010.

# **Unit-24: Trade Cycles: Meaning and Types**

Notes

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### **Objectives**

After studying this unit, students will be able to:

- Know the types of Trade cycles,
- Know the Phases of Trade cycles,
- · Know the Theories of Business cycles,
- Know the Hicks's Theory of Trade cycle.

### Introduction

Trade cycle is a part of capitalistic economy. It is related to cyclical booms and depressions. In trade cycle there are wave like ups and downs of total employment, income, production and price levels. Various economists have defined trade cycle in various forms. Definition given by **Prof. Haverlar** is very easy. According to him, "In general meaning, trade cycle may be define like this that it is interchange of periods of prosperity and depression of good or bad trade." Definition given by **Keynes** in his book **Treatise of Money** is more clear- "Trade cycle is built by those periods of good trades whose attributes are rising prices and low percentage of unemployment and those periods which do interchanges with periods of bad trade inclusive of falling prices and high percentage of unemployment." According to **Prof Estey**, "Attribute of cyclical ups and downs is interchange of waves of expansion and contraction. They do not have any fixed rhythm, but they are cyclical in this meaning that phases of expansion or contraction come again and again on a similar form in often and sufficient way." Important thing of doing target in situation of trade cycles is that any cycle is not completely regular combined of uniformity, repetitiveness and expansion, i.e., it does not happen that for production to reach from one high level to another always same time is needed and levels of production and employment always move in one proportion at the turn points of top and the bottom. But such

kind of cycles never happened. In this way trade cycles are recurring up and down in total income, production and price-level.

### 24.1 Types of Trade Cycles

Trade cycles are generally divided in the below mentioned groups:

- 1. The Short Kitchin Cycle: It is also known as mini-cycle(laghu chakra) which is approximately of 40 months. It is famous by the name of British economist Joseph Kitchin who in 1923 had presented the difference between small and big cycle. He, on the basis of his research, reached this conclusion that large cycle is of two- three cycles of 40 months.
- 2. The Long Juglar Cycle: This cycle is also known as large cycle. It may be defined like this "It is up and down of trade activities between successive crisis. "In 1862, French economist Clement Juglar had told that periods of prosperity, crisis and liquidation always come one each other in the same sequence. Modern economists have reached this conclusion that duration of Juglar cycle is on an average of nine and half years.
- 3. The very Long Kondratieff Cycle: In 1925, Russian economist Kondratieff reached this conclusion that there are very long waves of cycles whose durations are more than 50 years and which are made of six Juglar cycles. Very long cycle came to be known as Kondratieff cycle.
- **4. Building Cycle:** Such types of cycles are those which are related to construction of buildings and whose duration is very regular. Their duration is double of large cycles and is on an average of 18 years. Such cycles are related to two American economists names *Warren* and *Pearson* who had reached this conclusion presented in the book named *World Price* and *Building Industry*, 1937.
- 5. **Kuznets Cycle:** Famous American economist *prof. Simon Kuznets*, established a type of cycles named long term secular swing of 16-22 years; which was presented in such a manner that it makes the 7-11 years cycle comparatively unimportant. It started to be known as Kuznets cycle.



Notes

Trade cycle is a part of capitalistic economy. It is related to cyclical booms and depressions.

### **Self Assessment**

Fill in the Blanks:

- 1. Trade cycle is ...... of periods of prosperity and depression of good or bad trade.
- 2. Trade cycles are recurring ...... in total income, production and price-level.

# 24.2 Phases of Trade Cycle

A specific cycle is generally divided in four phases:

1. Expansion or Prosperity or Upswing

- 2. Recession or upper turn point
- 3. Contraction or depression or downswing; and
- 4. Revival or Recovery or Bottom turn point.

In condition of various cycles, these phases are recurring and uniform but any phase does not have a definite time sequence or time interval. As **Pigou** has targeted, cycles though may not be twins but they are of the same family. Just like families they have similar attributes which may be described. Starting from trough or lower point, cycle passes from the phase of recovery and prosperity, climbs the peak, falls by the medium of recession and depression and reaches trough. This is shown in **figure 24.1**.

We will further describe these attributes of trade cycles.

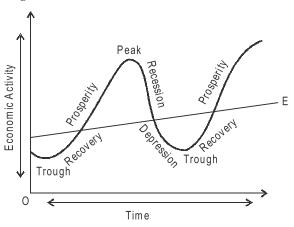


Figure 24.1

### Recovery

First let us take that situation , when depression had existed for a few days and recovery or lower turn point starts. Originating forces or starters are exogenous or endogenous forces. Assume that semi durable things have worn off and consequently it becomes important that they are substituted in the economy. By this demand increases and for fulfilling the increased demand investments and employments increase. Recovery of industry starts. Recovery of related capital goods industry also starts. Once when it starts, process of reupliftment becomes accumulative. Consequently, levels of employment, income and production in the economy rise slowly. In the initial phases of recovery phase, there is extra and unused capacity in the economy which production increases without proportionately increasing the total cost. "But as time passes, production keeps getting less flexible. Obstacles keep arising with increasing costs, more difficulty arises in distribution and it may happen that 'plants' may have to be expanded—in such conditions prices rise." Increase in profits happen. Improvements take place in trade expectations. Best conditions are there. Investment is motivated, which increases demand for bank loans. By this credit expansion takes place. In this way, accumulative process of investment, employment, production, income and increase in prices feeds itself and becomes self supporter. At the end, recovery steps in prosperity phase.

# **Prosperity**

In prosperity phase, demand, production, employment and income are at high level. They increase prices but do not increase in the ratio of wages, salary, interest rates, rent rate and, price rise. By difference in prices and costs, amount of profits increase. Increase of profits and possibility of their continuance generally increase the stock market prices. "By the influence of improving expectations all securities, which also includes bonds, increase. Specific changes happen in stocks. Expectations of comparatively more profits further increase investments. Liberal bank-credit helps investment. Such investments mainly happen in bank fixed capital, 'Plant', accumulation (Sambhar) and machinery. It, by increasing demand for consumer goods and by further increasing the price levels does sufficient expansion in economic activity. By this provision and wholesale dealers and producers are motivated

Notes

that they increase their stocks. In this way expansion process will remain accumulative and self supporter until economy does not reach that high level of production which is known as peak or boom.

Prosperity or peak may take the economy to the level of full employment.; and may bring inflationary increase in prices. It is a sign of end of prosperity phase and start of recession. Seeds of recession are situated inside boom in form of tension in economic structure, which do the job of control on expansive route. These are they:- (a) scarcity of labour and raw material etc because of which costs increase relatively to prices (b) increase in interest rates because of scarcity of capital; and (c) when income increase, because of the stable tendency of prices and consumption, inability of consumption to increase. First factor decreases profit margins. A second factor makes investments expensive and along with the first, decreases trade – expectations. Result of third factor is stocks get accumulated, which expresses that sales and consumption are lagging behind production. These forces become accumulative and self supportive. Industrialists, traders and businessmen become alert and overoptimism is taken by pessimism. It is the start of upper turn.

#### Recession

When from peak, which is of short duration, movement happens downwards, recession starts. "It targets that duration of the turn in which forces that bring contraction, finally win over the forces of expansion. Its external signs are – liquidation in stock market, tension in banking process, some liquidation of debts, and start of decline in prices." As a result, profit margins further decrease because cost starts increasing ahead of prices. Some firms are closed. Other firms reduce production and try to sell hoarded stock. Investment, employment and demand decline. This process becomes accumulative.

Recession may be slow or fast. Sudden explosive condition may arise by fast recession, which is created by banking process or stock exchange and panic and crisis spreads. "When crisis and more specifically panics is spread, then it feels like accompanied by end of confidence and demands for liquidity. Thus crisis may also arise because of some inquisitive and sudden failure in itself. Any firm or bank or corporation declares that it is incapable of repaying its debt. Such declaration makes other firms and banks weak at such time when because of lack of money in economic structure bad symptoms start emerging; and then by it such wave of panic spreads that efforts to withdraw money from financial institutions reaches the zenith ........... United States of America received such experience in 1873, 1893, 1907. In words of M. W. Lee, "When once recession starts then it starts spreading itself like jungle fire, when once it starts moving then itself prepares its military troop and internally promotes its destructive capacity."

### Depression

When extensive decline takes place in economic activities, recession merges in depression. Sufficient reduction happens in consumption of goods and services, employment, income, demand and prices. As a result of extensive decline in economic activity bank deposit falls, credit expansion stops because traders do not agree to take loan. Bank rates decline a lot. As per **Prof. Estey**, "This decline of active purchasing power is the basic background of decline in prices, which despite of general (extensive) decline of production, targets depression." In this manner, factors providing specificity to depression are-collective unemployment, general decline in prices, profits, wages, interest rates, consumption, expenditure, investments, banks deposits and loans; factories are closed; and all types of constructions-capitalised goods and buildings – suddenly stop. These forces are accumulative and self supportive and economy reaches the bottom.

It may be that depression is short-lived or it may also happen that it stays at the bottom for sufficient time. But some time or the other limiting forces do come in momentum, which start ending the contraction phase and strengthen the route for recovery. Like this cycle is completed.

Notes



Did You Know?

As time passes, production keeps getting less flexible.

# 24.3 Theories of Business Cycles

Because of all those many resources and conditions which are hidden in cyclical ups and downs, it is difficult to determine the behaviour of business cycles. As a result of attempts to make them clear, many theories have come forward. Some consider external reasons and some consider internal reasons to be responsible for cycles. Some economists divide trade cycle theories in monetary and non-monetary theories, while others divide them in real, psychiatric, and among those theories which are related to saving, expense and investment.

#### **Self Assessment**

#### **Multiple Choice Questions:**

3. Trade cycle is a of capitalistic economy		my
	(a) part	(b) small part
	(c) sacrifice	(d) subject
4.	Various economists have trade cycl	e in various forms.
	(a) inaugurated	(b) defined
	(c) sambhasit	(d) none of these
5. Modern economists have reached this conclusion that duration of Juglar cycle average of		clusion that duration of Juglar cycle is on an
	(a) nine and half years	(b) seven and half years
	(c) twelve and half years	(d) five and half years
6.	Duration of building cycle is very	
	(a) irregular	(b) regular
	(c) long	(d) short

# 24.4 Hawtrey's Monetary Theory of Trade Cycle

According to **prof. R.G Hawtrey**, "Trade cycle is a complete monetary Problem." It is the change in demand flow of money from the side of traders as a result of which prosperity and depression come in the economy. Their opinion is that strike, flood, earthquake, drought, war etc non-monetary reason, if much happen, may bring partial depression , bring rise, by which, changes happen in demand for money from the side of producers and traders. In today's era, bank credit only is the main source of payment. Banking process only, by increasing or decreasing interest rates or by buying securities or selling them in the hands of traders, increase or decrease credit. By this flow of money in the economy increases or decreases and like this prosperity or depression comes in the economy.

Expansion phase of trade cycle starts when increases loan facilities. These loan facilities are provided by decreasing the rate of interest of giving loans or by buying securities. By it traders and producers are motivated to take loans. Its reason is that they are very alert towards changes in interest rates that is why when loan is available at cheap rates they take loans from bank for increasing their stock or material. For this they give big orders with the manufacturers who further for fulfilling this increased demand deploy more sources of production. Consequently, monetary income of masters of resources of production increases because of which expenditure on goods increase. Traders see that their stock is ending. They place more orders with manufacturers. By this there is an increase in productivity activeness, income, expenditure, demand and sock of the traders diminishes even more. According to **Hawtrey**, "Meaning of increasing activeness is increasing demand and meaning of increasing demand is increasing activeness. Expansion of a vicious circle, productive activeness starts."

As accumulative process of expansion moves, producers start increasing prices. By high prices traders are motivated to take more loans, so that they may keep more stock for earning more profits,. In this manner, optimism motivates to take loans, sales increase by taking loan and by sales, optimism increases.

**Hawtrey** has to say that prosperity cannot go on continuously. When banks stop expansion of loans then prosperity ends. Banks refuse to give loans because their cash reserve stocks get empty and the currency that is in circulation, it is consumed by the consumers in form of cash holdings. Second reason is that when prices of domestic goods increase very much as a result of which in comparison to export, imports increase, then export of gold has to be done to foreign countries. Compelled by these reasons, banks have to increase the rates of interest and they refuse to give loans. Instead they ask the trader community to repay loans. By this need for trade depression starts.

For repaying loans to the banks, traders start selling their stocks. By it process of price fall starts. Traders also cancel their orders given to the manufacturers. Because of decline in demand, manufacturers reduce their manufacturing activeness. Further, demand for resources of production falls. Unemployment spreads. Income falls. Declining demand, prices and income- all these are indicators of depression. Firms, incapable of repaying bank's loan become bankrupt and in this way compel banks that they further contract their credit. In this way entire process becomes accumulative and pushes the economy in depression.

According to **Hawtrey**, process of recovery moves very slow and with interruptions. When depression is going on, traders sell their stock at any price that they get and repay banks loans. As a result, money starts coming in bank's reserve and their reserves increase. Though bank-rates are very less, still credit deadlock is maintained which stops the traders from taking loans from the banks because of pessimism in economic activeness. Central bank may end this obstacle by adopting liberal monetary policy, which will ultimately bring rejuvenation in the economy.

### Criticism

Money theorists like **Friedman** have supported the theory of **Hawtrey**. But most economists have criticised him for this that in describing cyclical ups and down he has emphasised much on monetary resources and has ignored non-monetary resources. Those facts for which Hawtrey's theory has been criticised, some of those are being discussed below:

Expansion or contraction of credit cannot bring boom or depression: No one can deny that by expansion of credit trade activities expand. But Hawtrey believe that by credit expansion, boom comes. It is not correct because cause of boom is not credit expansion. As Pigou has targeted, "Changes in bank money supply are a part of trade cycle, not the cause." In the last stage of depression loans are easily available but still it remains incapable of bringing

recovery. In the same way, credit contraction cannot bring depression. If much happens, it may merely create conditions for depression. In this way expansion or contraction of credit can neither bring boom nor depression in the economy.

- Notes
- 2. Prosperity cannot be continued and depression cannot be delayed indefinitely: Haberlar has criticised this argument of Hawtrey that, "For dissolving trade boom always monetary reasons are responsible and if money supply is endless then prosperity will go on forever and depression may be stopped." But the fact is that even if supply of money in the country is infinite, still neither prosperity may be continued for an uncertain period nor depression may be cancelled.
- 3. Traders not dependent only on bank credit: What workpart Hawtrey has given to wholesale dealer, Prof. Hamburg has criticised it. In Hawtrey's theory, main people who take loan for banks are traders or wholesalers and start bringing rise or fall. In reality traders do not only depend on banks but use their hoarded reserves and by taking loans from their personal sources arrange finance for their business.



Task

Express your thoughts about theory related to trade cycle.

### 24.5 Samuelson's Trade Cycle Model

Prof. Samuelson by assuming various values of one period lag MPC ( $\alpha$ ) and accelerator ( $\beta$ ), has prepared a Multiplier-accelerator model related to five different types of trade cycles. This is Samuelson model-

$$Y_{t} = G_{t} + C_{t} + I_{t} \qquad \dots (i)$$

Where  $Y_t$  is national income (Y) at time t which is sum total of government expenditure  $G_t$ , consumption expenditure  $C_t$  and induced investment  $I_t$ .

$$C_{t} = \alpha Y_{t-1}$$
 ...(ii)

$$I_{k} = \beta \left( C_{k} - C_{k-1} \right) \qquad \dots (iii)$$

On substituting equation 2 in equation 3 we get

$$I_{t} = \beta \left(\alpha Y_{t-1} - \alpha Y_{t-2}\right)$$

$$I_{t} = \beta \alpha Y_{t-1} - \beta \alpha Y_{t-2} \qquad ...(iv)$$

$$G_t = 1$$
 ...(v)

On substituting equations 2, 4 and 5 in equation 1 we get

$$Y_{t} = 1 + \alpha Y_{t-1} + \beta \alpha Y_{t-1} - \beta \alpha Y_{t-2}$$
 ...(vi)

= 1 + 
$$\alpha$$
 ( $Y_{t-1}$  +  $\beta \alpha Y_{t-1}$ ) -  $\beta \alpha Y_{t-2}$ 

= 1 + 
$$\alpha$$
 (1 +  $\beta$ )  $Y_{t-1}$  -  $\beta \alpha Y_{t-2}$  ...(vii)

According to **Samuelson** "We national income of two periods is known to us then by taking weighed sum, national income of the next period can easily be calculated. Weight, no doubt will depend on values chosen of relation with marginal consumption tendency. By assuming this that value of marginal

consumption tendency is more than zero and less than 1 (0 <  $\alpha$  < 1) and value of accelerator is more than zero (0 <  $\beta$ ), Samuelson describes five types of cyclical ups and downs summary of which is given in table 24.1."

**Situation 1** expresses the cycleless path of Samuelson because it is dependent only on multiplier effect and accelerator does not do any job in it. It has been shown in figure 24.2 (A)

**Situation 2** expresses damped cyclical path which rises and falls around static multiplier level and slowly settles at that level as has been shown in figure 24.2 (B)

	Mutual Activity Model of Samuelson		
Situation	Value	Trade of the cycle	
1.	$\alpha = .5$ , $\beta = 0$	Cycleless path	
2.	$\alpha = .5, \beta = 1$	Damped ups and downs	
3.	$\alpha = .5, \beta = 2$	Ups and downs of Constant Amplitudes	
4.	$\alpha = .5, \beta = 3$	Explosive cycle	
5.	$\alpha$ = .5, $\beta$ = 4	Cycleless explosive path	

**Situation 3** expresses cycles of constant amplitudes which revolve around their own attributes level again and again. This situation is shown in figure 24.2 (C).

Situation 4 reveals anti damped or explosive cycles. for it, see figure 24.2 (D).

**Situation 5** is related to cycleless explosive upward path, which finally reaches the cumulative interest rate of increase, as has been shown in figure 24.2 (E).

The five conditions that have been described above, out of those nature of only three situations no. 2, 3 and 4 is cyclical. But only two may be kept be reducing them because situation no. 3, relating to constant amplitudes has not come in use. As far as situation no. 2 of damped cycles is related, though not regularly, but in the last half century has been taking place slowly. "Generally, in comparison to war-time period, during post war period cycles are comparatively damped." They are result of "Such shocks- which may be called erratic shocks which are generated from such exogenous sources like war, change in crops, inventions etc which may be hoped for attaining sufficient stability." It is not possible to measure their results.

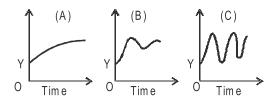
Situation number 4 of explosive cycles cannot be found in the past. Reason for the lack of those cycles is the result of those exogenous sources, which limit ups and downs. But Hicks has built the trade cycle by taking the validity of values, which endorses trade cycle controlled by peaks and bottoms.

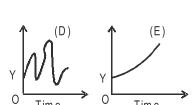
### **Critical Appraisal**

A very big attribute of the mutual activity of Multiplier and accelerator is it, in comparison to multiplier or accelerator alone, increases the national income very fast. It is a useful tool not only for the description of trade cycles but also is form of a guide for stabilisation policy. As **Prof. Kurihara** has targeted, "Multiplier based on the concept of marginal consumption tendency, only by meeting the analysis, works in form of a useful tool of accelerator rule trade cycle analysis and in form of a useful guide of trade cycle policy." Multiplier and accelerators, by joining together create ups and downs. As much more will be the value of accelerator ( $\beta$ ), possibility of explosive cycle will be that much more. As much will be the value of Multiplier ( $\alpha$ ), possibility of cycleless path will be that much more.

Agreeing with **Prof. Estey**, we may say in form of conclusion that- "Combination of multiplier and accelerator seems to be keeping the capacity to generate cyclical ups and downs. Multiplier along does

not generate any cycle by any given motivation instead till the stable level of income, provides just a slow increase, which is determined by the tendency of consumption but if rule of acceleration is changed then the result is the cycle of ups and downs start which may be known as Multiplier level. Accelerator first takes the income above this level, but as the rate of increase of income reduces, accelerator changes the least turn which takes the total income below the multiplier level, and then up, and like this cycle goes on.





# Notes

### Limitations

Despite of these direct utilities of multiplieraccelerator mutual action, presented analysis has its own limitations:-

- Figure 24.2
- 1. Those various cycles that Samuelson has described, he is silent about their duration.
- 2. Presented analysis assumes this that tendency of marginal consumption( $\alpha$ ) and accelerator ( $\beta$ ) are constant, but in reality they change with the level of income. Hence it may be applicable only at the level of small ups and downs.
- 3. Those cycles which have been described in the presented model, they move around stable level only in a trendless economy. It is not real, because economy is not trendless but stays in the process of growth. It is the result of it only that Hicks had developed his theory of trade cycle in progressive economy.

#### **Self Assessment**

State whether the following statements are true or false:

- 7. In prosperity phase, demand, production, employment and income are at high level.
- 8. In this way, accumulative process of investment, employment, production, income and increase in prices feeds itself.
- 9. When from peak, which is of short duration, movement happens downwards, recession starts.
- 10. When extensive decline takes place in economic activities, recession merges in boom.

# 24.6 Hicks's Theory of Trade Cycle

*Prof. J.R. Hicks* in his book *A Contribution to the Theory of the Trade Cycle*, developed his theory of trade cycles on the based on the rule of Multiplier- accelerator mutual action rule. For him, "Theory of acceleration and theory of Multiplier are two aspects of the theory of up and down". Different from the model of Samuelson, which is applicable for short ups and downs, Hicks's model is related to the problem of growth and moving balance.

# Ingredients of the model

These are the ingredients of Hicks's model of trade cycles: Warranted rate of growth, consumption function, autonomous investment, induced investment function and multiplier- accelerator relation.

Warranted rate of growth is that rate , which maintains itself. It is according to saving-investment balance. When actual investment and actual saving are taking place at the same equal rate then it is said that the economy is growing at a warranted rate. According to *Hicks*, it is Multiplier- accelerator mutual action only that leads the way to up and down around warranted rate.

**Consumption** function takes the form of  $C_t = \alpha Y_{t-1}$ . Consumption in period t is considered to a function income (Y) of previous period (t - 1). Like this, consumption lags behind income and multiplier is understood as lagged relation.

**Autonomous investment**, is free of changes in level of production, hence it is not associated with the growth of the economy.

At the other end, induced investment is dependent on the changes in levels of production, hence is a function of economy's growth rate. In Hicks's model, accelerator is based on induced investment, which along with Multiplier f = brings upturn. Hicks has defined accelerator like this that it is the ratio of induced investment with increase in income.

On Multiplier and accelerator being given in stable values, leverage effect only is responsible for ups and downs.

### Assumptions of the Model

Hicks's theory of trade cycle is dependent on the below given assumptions:

- Hicks assumes that economy is progressive in which autonomous investment increases at a constant rate in such a way so that economy stays in moving balance.
- Savings and investment Co-efficient change in such a way overtime that upwards displacement from balance path brings lagged movement far from the balance.
- Hicks assumes that value of Multiplier and accelerators are fixed.
- Economy cannot expand beyond the level of full employment.

### 24.7 Summary

First let us take that situation, when depression had existed for a few days and recovery or
lower turn point starts. Originating forces or starters are exogenous or endogenous forces.
Assume that semi durable things have worn off and consequently it becomes important that
they are substituted in the economy. By this demand increases and for fulfilling the increased
demand investments and employments increase. Recovery of industry starts. Recovery of
related capital goods industry also starts.

### 24.8 Keywords

- Recovery- Regain.
- Boom- Fast Speed.

### 24.9 Review Questions

- 1. How many types of trade cycles are there?
- 2. Tell the phases of trade cycles.
- 3. Write the money theory of Hawtrey's Trade cycle.
- 4. What is Hicks's trade cycle?

# **Answers: Self Assessment**

Notes

 1. exchange
 2. ups and down
 3. (a)
 4. (b)

 5. (a)
 6. (a)
 7. True
 8. True

9. True 10. False

# 24.10 Further Readings



Books

- **1. Macroeconomics: Theory and Policy** *H.L Ahuja, S. Chand Publishers,* 2010.
- **2. Macroeconomics** S.K. Chakravorty, Himalaya Publishing House, 2010.
- **3. Macroeconomics: Economic growth, fluctuations and policies —** *Robert E. Hall and David H. Paipal, Viena Books, 2010.*

# Unit-25: The Super-Multiplier of the Multiplier Accelerator Interaction

#### **Contents**

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- 25.1 The Super-Multiplier or the Multiplier-Accelerator Interaction
- 25.2 Use of Multiplier Accelerator Interaction in Business Cycles
- 25.3 Summary
- 25.4 Keywords
- 25.5 Review Questions
- 25.6 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know the Super-Multiplier or the Multiplier-Accelerator Interaction,
- Know the use of Multiplier-Accelerator Interaction in Business Cycles.

### Introduction

Combined effect of multiplier and accelerator is also known as leverage effect which may take the economy to a very high or a very low level of income multiplication.

# 25.1 The Super-Multiplier or the Multiplier-Accelerator Interaction

Hicks, for measuring the net effect of initial investment combined multiplier or accelerator with mathematical method and named it Super-multiplier.

Super multiplier is calculated by adding induced consumption (cY or  $\Delta C/\Delta Y$  or MPC) and induced investment (v Y or  $\Delta I/\Delta Y$  or MPI). Hicks divides the investment in autonomous or induced investment so that investment I = Ia + vY where, Ia is autonomous investment and vY is induced investment.

Because 
$$Y = C + I$$
 That is why, 
$$\Delta Y = c\Delta Y + \Delta I a + v \Delta Y$$
 
$$\Delta Y - c\Delta Y - v \Delta Y = \Delta I a$$
 
$$\Delta Y (1 - c - v) = \Delta I a$$
 
$$\frac{\Delta \gamma}{\Delta I a} = \frac{1}{1 - c - v} = \frac{1}{s - v}$$
 Or, 
$$Ks = \frac{1}{1 - c - v} = \frac{1}{s - v}$$



Super-multiplier tells that if there is any initial growth in autonomous investment, then in the income there will be growth of Ks time of autonomous investment.

Where Ks is super multiplier, c is marginal consumption, v is marginal investment and s is marginal savings tendency (s = 1 - c).

Super-multiplier tells that if there is any initial growth in autonomous investment, then in the income there will be growth of Ks time of autonomous investment. In this manner, in general form super multiplier will be,

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

Now we will describe joint working of multiplier and accelerator in form of above equation. Assume that c = 0.5, v = 0.4 an there is an increase of ₹ 100 crores in autonomous investment, then increase in total income will be,

$$\Delta Y = \times 100$$

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

It shows that increase of  $\ref{thm}$  100 crores in autonomous investment increased the income to 100 crores. General multiplier would have increase the income only up to  $\ref{thm}$  200 crores, assuming this that value of multiplier K is 2, because MPC = 0.5, but Multiplier by combining with accelerator(Ks = 10) increased the income up to  $\ref{thm}$  1000 crores which is much more than increase by a general multiplier.

### **Self Assessment**

#### Fill in the blanks:

- 1. Combined effect of multiplier and accelerator is called ......
- 2. Leverage effect may take the economy to a very high or a very ...... level of income multiplication.

		Table I: Multiplier	Accelerator Inter	action	
	_				(crore ₹)
Duration	Initial	Induced	Induced	Increase in	Increase in
	Investment	consumption	Investment	income	total Income
(t)	,	(c = 0.5)	(v = 0.4)	$(\Delta Y = c + v)$	
(1)	(2)	(3)	(4)	(5)	(6)
0	0	0	0	0	0
t + 1	100			100	100
t + 2	100	50	40	90	190
t + 3	100	45	36	81	271
t + 4	100	40.5	32.4	72.9	3439
t + 5	100	36.45	29.16	65.61	40951
	•••				
t + n	100	0	0	0	1,000

**Notes** 

In table I it has been described that how through combination of multiplier and accelerator, on value of super multiplier being ks 10, income multiplication process from an initial investment of ₹ 100 crores, brings an increase up to ₹1000 crores in the income.

In period (duration) t + 1 fixed investment of ₹ 100 crores amounts is done in the economy. But immediate induced consumption or investment does not happen. In period t + 2, from 100 income of t + 1 period induced investment of 50 happens, because marginal consumption tendency is 0.5, while in income from 100, induced investment of 40 takes place because (v = 0.4). increase in income from period t + 1 to t + 2 is 90 = (50 + 40). Increase in income of various periods may be calculated like this:  $\Delta Y_{t+1} = c\Delta Y_{t+1} + t + v\Delta Y_{t+1} = 0.5 \times 100 + 0.4 \times 100 = 90$ . Similarly, increase in income of period t + 3 will be  $\Delta Y_{t+3} = c\Delta Y_{t+3} + v \Delta Y_{t+2} = 0.5 \times 90 + 0.4 \times 90 = 45 + 36 = 81$ . For knowing total increase in income (column 6) increase in income of the current period (column 5) is added to increase in total income of the (column 6) previous period. For e.g. increase in total income in the period t + 2, which is 190 (column 6), it is obtained by adding increase in income in this period 90 (column 5) to the increase in total income in the previous period t + 1,100 (column 6).

Similarly, increase in total income in the period t + 3, 271= increase in income of this period 81 plus 190 from period t + 2 (column 6). This accumulative process of income multiplication goes on until, induced consumption, induced investment and increase in income does not reduce to zero in period

t + n. If increase in consumption, income and investment from period t + 1 to t + n is added, then total income increases to ₹ 1000 crores, total consumption becomes 500 crores and total investment becomes 400 crores, on initial investment of 100 crores.

In figure 25.1 dynamic (Praavaigik) route of income is shown. Income has been measured on vertical axis and time on horizontal axis. On super multiplier being 10, curve OY, expresses time route of income. With time this curve increases and reaches new balance level of income of OY, and becomes flat. It shows that income increases at a decreasing income.

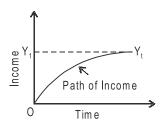


Figure 25.1



Did You Know?

Hicks, for measuring the net effect of initial investment combined multiplier accelerator with mathematical method and named it Super-multiplier.

#### Self Assessment

#### **Multiple Choice Questions:**

- Income has been measured on vertical axis and time on .....
  - (a) horizontal axis
- (c) non-horizontal

(c) parallel axis

- (d) odd axis
- Hicks's investment has been divided in autonomous investment and ...... investments.
  - (a) induced

- (b) multiplier
- (c) super- multiplier
- (d) none of these
- In period (duration) t + 1 ...... of  $\uparrow$  100 crores amounts is done in the economy.
  - (a) investment

(b) fixed investment

(c) disinvestment

(d) none of these

6. Increase in income of period t + 1 is equal to the quantity of initial ......

**Notes** 

(a) investment

(b) disinvestment

(c) money

(d) none of these

### 25.2 Use of Multiplier Accelerator Interaction in Business Cycles

With different values of MPC and accelerator, Multiplier- accelerator may give different results in form of cyclical ups and downs. Assume that MPC= 0.5 and accelerator co-efficient is 2. On previous concepts and initial investment given as ₹ 100 crores, we will study this fact that how changes takes place in income. Table II clarifies this process of multiplication of income.



Task

Express your thoughts on super-multiplier or multiplier- accelerator interaction

Table II: Multiplier Accelerator Interaction				
				₹ Crore
Duration	Initial	Induced	Induced	Increase in
(1)	Investment	consumption	Investment	income
	(2)	(c = 0.5)	(v = 2)	(2 + 3 + 4)
		(3)	(4)	(5)
t + 0	0	0	0	0
t + 1	100	-	-	100
t + 2	100	50	100	250
t + 3	100	125	150	375.00
t + 4	100	187.50	125	412.50
t + 5	100	206.25	37.50	343.75
t + 6	100	171.88	-68.74	203.14
t + 7	100	101.57	-140.62	60.95
t + 8	100	30.48	-142.18	-11.7
t + 9	100	-5.48	-72.66	21.49
t + 10	100	10.75	33.20	143.95

Above table reveals this that in period t + 1 increase in income is equal to amount of initial investment. This increase in income brings an increase of ₹50 crores in period t + 2 (column 3) because MPC is 0.5. This increase in consumption induces investment of ₹100 crores, on acceleration co-efficient being 2 ₹100 crores =  $50 \times 2$  (column 2), and income increases up to ₹250 crores. (sum of column 2 + 34 i.e. 100 + 50 + 100 = 250) This increase in income again brings an increase of ₹125 crores in consumption (column 3) which is half of ₹250 crores because MPC = 0.5. But in period t, consumption is a function of income of previous period. Hence actual increase in consumption in period t + 3 is difference between consumption in period t + 2 and t + 3, i.e., 125 - 50 = 75. If this increase in consumption (₹5 crores)is multiplied with 2, the value of accelerator then, induced investment  $150 = 75 \times 2$  (column 4) is obtained in period t + 3. Hence in period t + 3, ₹375 crores, sum of columns 2 + 3 + 4 expresses increase in income. Similarly, in t + 4 ₹412.50 crores of income is produced. In this period, increase of income is the most which shows the peak of business cycle; after this income starts falling until it does not reach the bottom or the trough in t + 8 i.e. at ₹ (-)11.78 crores. From period t + 9, it will start

rising again which represent the phase of revival of the business cycle. This behaviour of income of first rising, then falling and then increasing at a fixed rate shows the mixed working of accelerator and multiplier. But actual behaviour of business cycle depends on the value of multiplier and accelerator as has been expressed by Samuelson in his Model.

#### **Self Assessment**

#### State whether the following statement are True or False:

- 7. Super multiplier has been calculated by adding both -the induced consumption and induced investment.
- 8. Super multiplier tells that if any initial increase happens in autonomous investment, then an increase of Ks times of autonomous investment in income will take place.
- 9. In period t + 2, in 100 income of t + 1 induced investment of 50 does not happen.
- 10. Actual behaviour of business cycle depends on the value of multiplier and accelerator as has been expressed by Samuelson in his Model.

### 25.3 Summary

• In this relation Dr. Kurihara has targeted that marginal consumption tendency less than a unit provides answer to this question that before complete collapse or in the situation of full employment why does accumulative process stop? According to Hanson, its reason is this that a big part of increase in income in each period is not spent on consumption in each next period. Through it there is a reduction in amount of internally induced investment and when such reduction increases by increase in induced consumption, then fall in income starts. In this manner, Prof Hanson has written, "It is marginal tendency of the saving only that stops the expansion process even then when at the peak of multiplier process through the process of accelerator expansion is increased."

### 25.4 Keywords

- Multiplier- Co-efficient.
- · Interaction- Process of meeting

### 25.5 Review Questions

- 1. Define super multiplier or multiplier- accelerator interaction.
- 2. Mention "uses of multiplier- accelerator interaction In business cycles."

#### **Answers: Self Assessment**

1. Leverage Effect	2. low	3. (a)	4. (a)
5. (b)	6. (a)	7. True	8. True
9. False	10. True		

### 25.6 Further Readings



Books

**1. Macroeconomics** – *Mohan Srivastava, DND publications, 2010.* 

# Unit-26: Kaldor's Theory of Trade Cycle Contents

**Notes** 

#### Contents

Objectives

Introduction

- 26.1 Kaldor's Theory of Trade Cycle
- 26.2 Stabilisation Policies or Measures to Control Trade Cycles
- 26.3 Summary
- 26.4 KeyWords
- 26.5 Review Questions
- 26.6 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- Know the Kaldor's Theory of Trade Cycle,
- Know the Stabilisation Policies.

### Introduction

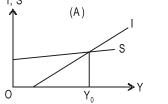
In form of a measure to control business ups and downs monetary policy is run by the central bank of a country. Central bank adopts many measures to control the quantity and quality of credit. For increasing the reserve of commercial banks it reduces rank rates and interest rates of the banks. It purchases securities from the open market. It reduces limit requirements on loans and motivates the banks to provide more loans to consumers, businessmen, traders etc.

# 26.1 Kaldor's Theory of Trade Cycle

Nicholas Kaldor constructed a model of trade cycle on the basis of Keynesian terminology of savings and investment. According to him it is the effect of cycle pressures that which takes the planned saving and investment of the economy towards equality. Actually, difference in planned saving and investment brings cycle. But cycle is possible only when saving and investments are non-linear.

Consider figure 26.1(A) and (B) where I and S are equal at the income level Y₀ of equilibrium. But each

situation is a situation of single balance. In the part A of the figure beyond  $Y_0$  where I > S is a situation of unstable imbalance because such situation will bring unlimited expansion, full employment and hyper-inflation. At the other side if S > I then such situation brings collapse along because of the downward movement towards the



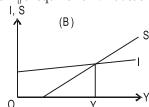


Figure 26.1

left side of  $Y_0$  as has been shown in part B of the figure. Kaldor leaves the functions of linear savings and investments because they are incapable of creating cycle. Instead of these he adapts non-linear savings and investments.



Notes

Nicholas Kaldor constructed a model of trade cycle on the basis of Keynesian terminology of savings and investment.

A non linear investment function I has been shown in figure 26.2. As economy moves towards expansion phase, which has been shown by a left side movement along with curve I, where curve I is almost flat. It means that there is unused capacity at least level of others and net investment is there. But zero expansion starts then negative impact of accumulated capital is stronger on investment decisions in comparison to that on the high levels of production and profits. Opposed to it at high level of income when economy enters contraction phase the curve I again become flat and net investment reduces because increase in costs, increasing costs and increase in difficulties to take loan will prevent producers from expanding much faster. By this rate of increase in production reduces. It

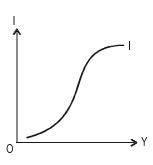


Figure 26.2

means that present capital stock and capacity is more than current production. This situation further reduces investment. Hence there is a fall in income and economy enters the phase of contraction by accumulative impact.



Did You Know?

Kaldor shows the expansion of his trade cycle in three phases.

Similarly non linear savings function is shown in figure 26.3. At very low level of income, saving becomes very less. It may be negative also. In this way during the phase of expansion MPS is more. At general levels of income, increase in savings happen at lesser rate. It has been shown by the medium part of curve S. But at a very high level of income saving will be much and people will save a large part of their income.

Cycle can be seen only when none linear saving and investment curves are brought together as in figure 26.4. Figures A, B and C show multi-balances on situations. Of these A and B are stable conditions and C is an unstable condition. I > S between situations C and B below condition A, it will raise the level of income higher. S > I between

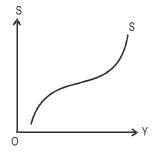


Figure 26.3

conditions A and C and above condition B; it will lower the level of income.

But situations A and B are stable only in short term. In long term these conditions become unstable and path of the cycle is visible. For it Kaldor has used capital stock in form of another variable which has an impact on the relations of savings and investments. He took both, investments and savings in form of function of income and capital stock so that

$$S = f(Y, K)$$

$$I = f(Y, K)$$

$$\frac{dS}{IY} > 0, \quad \frac{dS}{dK} > 0$$

$$\frac{dI}{dY} > 0, \quad \frac{dI}{dK} < 0$$

$$\frac{dI}{dY} > \frac{dS}{dY}$$

And,

In other words, in contraction phase, MPI > MPS

The above relations show that S and I directly change positively with Y. S changes directly with K and Y changes inversely with K.

Relation MPI > MPS shows the stability of the economy which takes it to either expansion or contraction. According to conditions 26.4, conditions A and B are 'switch points'. These are those points at which, in long term, economies change their directions towards either expansion or contraction. Point C is unstable towards both the directions. When points B and C come closer the expansion phase of the cycle starts. When they meet then, expansion ends and contraction starts. Opposite to it when points C and A come closer then contraction starts. When they meet then contraction ends, and expansion starts.

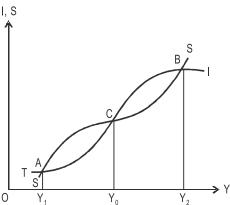


Figure 26.4

#### **Self Assessment**

### Fill in the blanks:

- 1. Difference in planned saving and investment brings ......
- 2. The Cycle is ..... of pressures.

### **Expansion Phase**

Kaldor shows the expansion phase of his cycle in three stages. As in figure 26.5 stage 1, on starting from condition  $Y_0$  which is similar to figure 26.4. Assume that economy is in equilibrium at point C, but it is a point of unstable balance. C's upwards movement shows that I > S, which takes the economy

towards expansion path. Since investment rate is high, that is why capital stock of the economy increases at a sharp rate. But by increase of capital stock, marginal productivity of capital reduces and investment cycle shifts downwards. At the same time when there is an increase in capital stock of the economy it increases the income of the

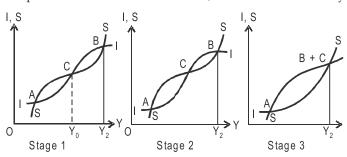


Figure 26.5

economy by which its savings increase. Hence savings curve shifts upwards. In the same way by the investment curve I shifting downwards and by savings curve S shifting upwards, point C comes closer to point B as has been shown in stage 2 of the figure 26.5. This process of curve I shifting downwards and curve S shifting upwards goes on until both curves do not touch each other and point C and point B do not meet as has been shown in stage 3 of the figure 26.5. But in this condition S > I in both directions, that is why in downwards direction it is an unstable condition. It takes the economy downwards until point A is not reached in stage 3.

### **Contraction Phase**

Contraction phase of trade cycle is also shown in three stages as in figure 26.6. Let us start from situation

Y₁ which matches with the point A in figure 26.4. It is the point of short term fixed balance but of a very low level of income. But at such low level of income, due to unused capacity in long term, capital stock reduces and investment curve I shifts upwards. Along with it savings reduce which shifts the savings curve downwards. Like this by

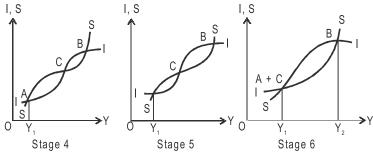


Figure 26.6

curve I shifting upwards and curve S shifting downwards conditions A and C come close as has been shown in stage 5 of the figure. This process will go on slowly unless curves I and S dot not touch each other and conditions A and C do not meet as has been shown in stage 6 of figure 26.6. But at income level  $Y_1$  this condition of A + C is unstable in upwards direction because I I>S, it will take in expansive direction until economy does not reach at the high level of income  $Y_2$  at point B. From point B, curve I and S will slowly reach stage 1 shown in figure 26.5 and cyclical process starts again. In this way, Kaldor's cyclical process is self-generating.

According to **Kaldor**, those forces which bring turn point towards bottom they are not definite at the high level. Boom will definitely end by itself. But depression may fall in static condition and may stay there until external changes (like discovery of new inventions, opening of new markets etc) do not come in its protection.

Then in Kaldor's model, cycles are not necessarily of same length and duration and neither is expansion and contraction requisitely uniform. In reality, it depends upon slopes of curves I and S and by what rate do they shift in each stage of the cycle.

Kaldor in describing his theory of trade cycle uses neither acceleration rule nor monetary factors. Also he shows that how is trade cycle obtained without any growth factor.

### **Self Assessment**

#### Multiple choice Question:

- 3. Cycles are possible only when savings and investments are ......
  - (a) non linear

(b) linear

(c) more

- (d) less
- 4. Kaldor leaves the functions of linear savings and investments because they are ...... of creating cycle.
  - (a) incapable

(b) capable

(c) ahead

(d) behind

5.	Difference in planned saving and investment brings		
	(a) deficit	(b) cycle	
	(c) instability	(d) none of these	
6.	Cycle can be seen only when none linear saving and investment curves are brought		
	(a) together	(b) separately	
	(c) detached	(d) none of these	

# 26.2 Stabilisation Policies or Measures to Control Trade Cycles

For controlling the ups and downs in the economy many measures and suggestions are employed from time to time. Their objective is to stabilize economic activity for saving from ill-effects of boom and recession. For it below mentioned three measures are adopted.

### 1. Monetary Policy

In form of a measure to control business ups and downs monetary policy is run by the central bank of a country. Central bank adopts many measures to control the quantity and quality of credit. During boom, for controlling the expansion of money supply it increase bank rate, sells securities in open market, increases reserve ratio and adopts many selective credit control measures like increasing limit requirements, and regulating consumer credit etc. hence bank adopts expensive monetary policy. Taking loan by business and trades becomes expensive, difficult and selective. In this manner, efforts are made to control more quantity of money supply in the economy.

For control recession or depression, central bank adopts cheap or easy monetary policy. For increasing the reserve of commercial banks, it reduces bank rates and interest rates of the banks. He buys securities from the open market. It reduces limit requirements on loans and motivates the banks for giving loans to consumers, businessmen, traders etc.

### Limitations of Monetary Policy

But monetary policy is not very effective in controlling boom or depression. If boom is due to cost push factors then it will not be effective in controlling inflation, total demand, production income and employment. As far as depression is related, experience of the great depression of 1930 tells that when there is pessimism in traders then success of monetary policy does not happen at all. In such situation they do not have at all the tendency to take loan, even if interest rates are very less. In this way, when there is reduction in income of which consumers and which are unemployed they reduce their consumption expenses. In such situation neither central bank nor commercial banks can motivate the consumers to increase total demand. In this manner success of monetary policy is very limited in controlling economic ups and downs.

### 2. Fiscal Policy

Monetary policy alone does not have the capacity to control trade cycle. That is why it is added to compensatory Fiscal policy. In born fiscal measures are very effective in controlling excessive government expenditure, personal consumption expenditure and personal and public investment. At the other side during depression they are helpful in increasing government expenditure, personal consumption expenditure and personal and public investment.

### Notes Policy during Boom

Following measures are adopted during boom. For reducing demand for goods and services government cut down unnecessary expenses on non-developmental activities. In it there is a ban on personal expenses also, which depends on government demand for goods and services. But cutting down government expenditure is difficult. Then it is not possible to differentiate between necessary and unnecessary government expenditure. That is by this measure is completed by karaadhan. For reducing personal expense, government increases rates of personal company and goods taxes. When income is more than government expenditure then government adopts the policy of surplus budget. It may be done by either increasing tax rates or by reducing government expenditure or by both. It reduces income and total demand through opposite reaction of multiplier.

Another fiscal policy which is often adopted is taking loan from the public, effect of which is to reduce money with the public. Then repayment of public debt should be done and when economy stabilizes then payment should be postponed till any future date.



Task

Express your thoughts about Kolder's theory of trade cycle.

### Policy during Depression

During depression government increases public expenditure and reduces taxes and adopts the policy of deficit financing. These measures increase total demand, production, income, employment and prices. Encrease in public expenditure increases total demand for goods and services and brings an increase in income through multiplier. Public expenditures are done on roads, drains, dams, parks, schools, hospitals and other construction works. They create demand for labour and personal construction industries and are helpful in reviving them. For inducing demand for consumer goods industries government also increases its expenditure on measures like unemployment insurance and social security. For deficit financing, loan taking by the government and idle money lying with financial institutions are used in investment plans.

#### Conclusion

Effectiveness of each cyclical fiscal policy depends on applying the policy work at right time and nature, quantity and organisation of public construction works.

### 3. Direct Controls

Objective of direct controls is correct allocation of resources for price stability. They are for influencing the important points of the economy. They influence special consumers and producers. They are in form of rationing, licensing, price and wage controls, export tax, exchange control, quota, monopoly control etc. They are more influential for removing obstacles and shortcomings created by inflationary pressures. But their success depends upon a skilled and loyal government, else black marketing, corruption, long queues and speculation may arise from them. Hence they must be used only during crisis like war, bad crops, hyper inflation etc.

Conclusion

Of many measure of stabilisation policy any single method is not sufficient for controlling cyclical ups and downs. That is why all measures should be used together. Applying monetary policy is easy but it is less effective, because in capitalist system using cyclical policy and direct control is difficult but they are more effective. Because in capitalistic system, cyclical ups and downs are existent, hence it is not possible to end them completely. Some ups and downs may be good for economic growth and others not needed. Stabilisation policy should control unnecessary ups and downs.

### **Self Assessment**

#### State whether the following statements are True or False:

- 7. Contraction phase of trade cycle is shown in three stages.
- According to Kaldor, those forces which bring turn point towards bottom they are not definite at the high level.
- 9. When there is an increase in capital stock of the economy it decreases the income of the economy
- 10. Monetary policy is more effective in controlling boom or depression.

### 26.3 Summary

 For reducing personal expense, government increases rates of personal company and goods taxes. When income is more than government expenditure then government adopts the policy of surplus budget. It may be done by either increasing tax rates or by reducing government expenditure or by both. It reduces income and total demand through opposite reaction of multiplier.

# 26.4 Keywords

- Trade cycles Business cycles.
- Single Only.

### 26.5 Review Questions

- 1. What is Kaldor's trade cycle theory? Explain.
- 2. Tell the stabilisation policies or measures to control trade cycles.

# **Answers: Self Assessment**

1. cycle	2. effect	3. (a)	4. (a)
5. (b)	6. (a)	7. True	8. True
9. False	10. False		

### 26.6 Further Readings



Paaka

- 1. Macroeconomics: Theory and Policy H.L Ahuja, S.Chand and Publishers, 2010
- 2. Macroeconomics: S.K Chakravarty- Himalaya Publishing House, 2010.

# **Unit-27: Monetary Policy**

#### **Contents**

Objectives

Introduction

- 27.1 Meaning of Monetary Policy
- 27.2 Objectives and Goals of Monetary Policy
- 27.3 Instruments of Monetary Policy
- 27.4 Expansionary Monetary Policy
- 27.5 Restrictive Monetary Policy
- 27.6 Role of Monetary Policy in a Developing Economy
- 27.7 Fiscal Policy
- 27.8 Summary
- 27.9 Keywords
- 27.10 Review Questions
- 27.11 Further Readings

# **Objectives**

After studying this unit, students will be able to:

- · Know the meaning of monetary policy,
- · Know the objectives of monetary policy,
- Know the expansionary monetary policy,
- Know the restrictive monetary policy.

### Introduction

Monetary policy is related to credit control measures adopted by the central bank. Is of two types: (1) Quantitative-general and indirect control; and (2) Qualitative. – selective or direct control. Under first category changes in bank rates, operations of open markets and changeable reserve requirements are included. Their objective is to regulate complete level of credit in the economy through the medium of commercial banks. In it changeable limit requirements and regulation of consumer credit are included.

## 27.1 Meaning of Monetary Policy

By monetary policy is meant credit control measures adopted by the central bank of a country. **Johnson** defines monetary policy like this, "this policy is in the form of a tool to control the supply of money by the central bank with for achieving the objectives of general economic policies." G.K Sha has defined it as "Any conscious activity done by monetary officer for changing quantity, availability or cost of money"

# 27.2 Objectives and Goals of Monetary Policy

**Notes** 

Main objectives of monetary policy are as follows:

Full Employment: Full employment has been kept under the main objectives of monetary
policy. It is an important objective because by unemployment not only there is a loss of
possible production but by it social prestige and self respect is also hurt. Apart from this it
creates poverty. That is why attaining full employment is extremely important.



Notes

Monetary policy is in the form of a tool to control the supply of money by the central bank with for achieving the objectives of general economic policies.

- Price Stability: Bringing stability in price level is one of the main objectives of monetary Policy.
- **3. Economic Growth:** In the recent years one of the most important objectives of monetary policy had been that there should be a fast economic development of the economy.
- **4. Balance of Payments:** Since the decade of 1950 another objective of monetary policy had been to maintain a balance of payment.

#### **Self Assessment**

#### Fill in the blanks:

- 1. Full employment has been kept under the main ...... of monetary policy.
- 2. When prices start rising and there is a need to stop them then central bank sells ..............

### 27.3 Instruments of Monetary Policy

Monetary policy is related to credit control measures adopted by the central bank. Is of two types: (1) Quantitative-general and indirect control; and (2) Qualitative. – selective or direct control. Under first category changes in bank rates, operations of open markets and changeable reserve requirements are included. Their objective is to regulate complete level of credit in the economy through the medium of commercial banks. In it changeable limit requirements and regulation of consumer credit are included.

1. Bank Rate Policy: Bank rate is that minimum rate of loan giving by the central bank at which it re-discounts the first category hundies of exchanges and government securities adopted by the commercial banks. When central bank sees that inflationary pressures have started showing in the economy, it increases bank rates. Taking loan from central bank becomes expensive and commercial banks will comparatively take fewer loans from it. Commercial banks will increase their rate to giving loans to traders. That is why those taking loans will take fewer loans from commercial banks. Contraction of credit takes place and prices stop from rising further. As opposed to it when prices fall, then central bank reduces its bank rate. It is cheaper of commercial banks to take loan from central bank, and then commercial banks also reduce their rate of lending. By it traders are motivated to take more loans. Investment is induced. Production, employment, income and demand start to increase and prise stop falling.

- 2. Open Market Operations: Open market operations are related to sale purchase of securities by the central bank in money market. When prices start rising and there is a need to stop them then central bank sells securities. Reserves of commercial banks reduce and they are not left in the situation to give loans to traders' class. Further investment is discouraged and increase of prices stops. Opposed to it, when forces of recession start in the economy, then central bank purchases securities. Reserves of commercial banks increase. They give more loans, investment, production, employment and demand increases and falling of prices stops.
- 3. Changes in Reserve Ratios: Keynes had suggested this tool in his book *Treatise of Money* and United States of America was the first country which adopted it form of a monetary method. According to law each bank has to keep some percentage of its deposit in its godown in reserve and some percentage with the central bank. When prices start rising then central bank increases the reserve ratio. Banks have to keep more amounts with the central bank. Their reserves reduce and they give fewer loans. Unfavourable effect is there on the quantity of investment, production and employment. In situation opposite to it, when reserve ratio is reduced, then reserves of commercial banks increase. They give more loans and there is a favourable effect on the economic activity.
- **4. Selective Credit Controls:** Selective credit controls are brought in use to control special type of credit with specific objectives. For controlling speculative activities inside the economy these often take the form of changing margin requirements. When in economy or in specific areas, there is fast speculative activity in some goods and prices start to rise then central banks raise margin requirements on them. Result is this that those taking loan are given less money in form of loan on specific securities. For e.g. meaning of increasing margin requirement to 60 percent is that to the pledger of securities worth ₹ 10,000, 40 percent of its value (₹ 4000) will be given as loan. In situation of recession in specific fields, central bank by reducing margin requirements encourages loan acceptances.

### Conclusion

For an effective analytic monetary policy it is important that bank rate, open market operations, reserve ratio and selective credit control measures are adopted together. But all monetary theorists have accepted that (i) in depression when trade confidence is at its weakest state, then success of monetary policy is zero; and (ii) it is successful against inflation. Monetarists say that in comparison to fiscal policies, monetary policies have more flexibility. They may be applied soon.



Did You Know?

By monetary policy is meant credit control measures adopted by the central bank of a country.

# 27.4 Expansionary Monetary Policy

Expansionary (or cheap) monetary policy is used to come out of the deflationary gap or recession. When there is a decline in consumer demand of goods and services and trade demand for investment goods then deflationary gaps emerge. Central banks start expansionary monetary policy which makes the conditions of credit markets easy and brings an upward change in the entire demand.

For this objective central bank purchases government securities from open market, reduces reserve requirements of member banks, reduces discount rates and through selective credit measures

encourages consumer and trade credit. Through these measures it reduces the cost and availability of credit in the money market and improves the economy.

Expansionary monetary policy has been described through figure 27.1 (A) and (B). where initial recession is at R, Y, P, Q. In part (A) of the figure economy in already at extra money supply are interest rate OR. Consider that due to the credit policy of the central bank there is an increase in money supply in the economy. It shifts the curve LM rightwards to LM₁. It increases the income from OY to OY₁ and entire demand increases and in part (B) curve D shifts upwards to D₁. Along with increase in demand for goods and services, production at high price level OP₁ rises from OQ to OQ₁. If expansionary monetary policy works properly then balance at point E₁ may take place at full employment. But because of the below mentioned limitations possibility of reaching to that situation is not there.

### **Its Scope and Limitations**

During the decades of 1930 and 1940 it was believed that in comparison to controlling boom and inflation, success of monetary policy was very limited in inducing recovery in depression. This concept emerged from the experiences of the great depression and publishing of the general theory of the Keynes.

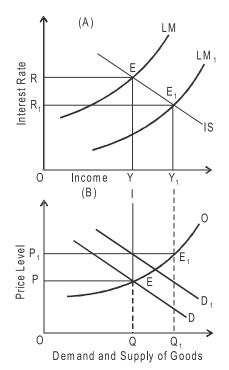


Figure 27.1

Monetarists' opinion is that during depression central bank through cheap credit policy may increase the reserves of the commercial banks. It may do so by purchasing securities or by decreasing the interest rates. As a result by increasing the facilities of those taking loans, banks' capacity will increase. But experience of the great depression tells that during sharp depression when traders are pessimistic, then practically success of such policy is zero. In such situation banks are helpless on bringing revival. Since trade activities are almost in the situation of stagnancy hence traders have no tendency for taking loans to make inventories, though interest rates are very less. Since they want to reduce their already taken loans for inventories by returning. Apart from this question of taking loans for long term requirements does not arise in depression, when trade activity is already at very low level. With consumers also the condition is same who are struggling with reduced income and unemployment. Hence they do not wish to purchase any durable goods through bank loans. In this manner all banks may make credit available but they cannot compel traders and consumers to accept it. In the decade of 1930, very low interest rates and unused reserve amount with banks could have any important impact on world's economies with depression.

"It is not said that during sharp contract cheap monetary policy will with without any profitable impact, but its most effect will be in preventing a bad situation from reaching to a worst situation. But restrictive monetary policy associated with downturn business will definitely make downturn business worse- its traditional example was the monetary policy of 1931 which gave its contribution in making the great depression serious.... At the other side if credit is easily available at favourable terms then definitely it will have a stabilising effect. It may become slow on fulfilment of liquidity requirements of the trade and perhaps may decrease the limit of downturn."

But what was the cause of collapse of monetary policy in the decades of 1930 and 1940? Apart from painful and disillusion experiences during the great depression and after it, General Theory of Keynes

**Notes** 

in form of a tool for more stability became the causes of collapse of monetary policy. Keynes told that more flexibility liquidity preference schedule (liquidity net) presents monetary policy in form of helpless at the time of sharp depression.

### **Self Assessment**

#### **Multiple Choice Questions:**

3.	Bringing stability in price level is of	one of the of monetary policy.		
	(a) main objectives	(b) main work		
	(c) plan	(d) none of these		
4.	Attaining full employment is	Attaining full employment is		
	(a) important	(c) extremely important		
	(c) main work	(d) none of these		
5.	are brought in use to control special type of credit with specific objectives.			
	(a) selective credit controls	(b) objective		
	(c) specific areas	(d) none of these		
6.	Central banks start expansionary markets	monetary policy which makes the conditions of credi		
	(a) difficult	(b) easy		
	(c) changeable	(d) none of these		

# 27.5 Restrictive Monetary Policy

Monetary policy made for reducing the entire demand is known by the name of restrictive (or expensive) monetary policy. It is used to come out of an inflationary gap. Due to increase of consumer demand for goods and services, inflationary pressures are created in the economy and because of it boom also comes in trade investment. By increasing the cost and availability of bank credit for reducing entire consumption and investment central bank starts restrictive monetary policy. Central bank may do so by selling government securities in the open market, by increasing the reserve requirements of member banks, by increasing the discount rates and by controlling the consumer and trade credit through selective measures. Through these measures central bank increases the cost and availability of credit in the open market and by which it controls the inflationary pressure.

### **Its Scope and Limitations**

But field of inflation in monetary policy is very limited in inflation control. Its limitations are as follows:

- 1. Increase in Velocity of Money: There is an important limit of effectiveness of monetary policy in stopping inflation-increase in velocity of money kept with the public. Central bank, through expensive monetary policy, may control money supply and cost of money but it has no such power by which it may stop the velocity of money. public may effectively bring in use money supply available with it as a result of which restrictive monetary policy becomes unsuccessful. It may be done in many ways.
- a. Commercial Banks Portfolio Adjustment: When restrictive monetary policy is on, then commercial banks fulfil the demands of borrowers for loans by selling government securities to the central

bank. Such type of policy just changes the deposits kept by the banks in form of securities to active deposits. Government securities kept in the portfolio of the banks are substituted in place of loans. But there is no change in total deposit and money supply of the bank. But through it, total expense increases, because banks lend money to borrowers. In this manner restrictive monetary policy of the central bank becomes ineffective.

Then, when banks sell government securities to central bank, their prices fall in the market and rate of interest on them increases by it general interest rate structure in the market increases. But by fall of prices of securities banks will have capital losses and banks will not like to suffer those. It depends on it that whether banks hope that fall in securities prices (or increase in interest rates) is short term or is going to last long. If banks hope that decline in security prices will stay for some time only then instead of selling those (securities) at capital loss, they will like to keep them. At the other side if they hope that decline in securities prices will go on for some time then for giving loans to the customers at high rates they will sell the securities and will fulfil the capital-loss by sale of securities by giving the loans at high interest rates. But once demand for loans will reduce then banks will be able to buy back the government securities at prices lower than that at which they had sold them and will again be in profit in this deal. In this way, commercial banks' policy of portfolio adjustments increases the velocity of net money despite an expensive monetary policy and as a result expensive monetary policy is left ineffective.

- b. Role of non-Banking financial Intermediaries: NBFIs stop the money supply controlling capacity of monetary policy in two ways. First, they sell securities for giving loans and like commercial banks, increase the velocity of money in the same way as has been described above. Secondly, under expensive monetary policy as the rate of interest increases on securities, in order to achieve more reserves from the savers financial intermediaries keep increasing interest rates of deposits with them. It encourages savers that they give their inactive money to these intermediaries by which their loan capacity increases further. In this way these intermediaries are successful in increasing the velocity of money as a result of which expensive credit policy is left incapable.
- c. Methods to make better use of available money supply: Many methods have been devised for better use of available money supply which makes restrictive monetary policy ineffective. Some such methods are there like development of better methods of fund collection of sales financial institutions; in comparison to commercial banks more loan taken by NBFI from the public etc. By obtaining funds from various sources of commercial banks, such institutions, even under restrictive monetary policy, are successful in increasing the velocity of available supply of money.
- 2. Discriminatory: Expensive monetary policy has discriminatory influence on various fields of economy. It is said that those firms which depend on internal sources under financial system, they are not influenced by restrictive monetary policy. At the other side, only those firms are influenced which depend on banking system for funds. Especially it is understood in relation to expensive monetary policy that it works against the traders, because they are extremely sensitive towards changes in credit costs reason for which is that they cannot take credit risk and are ageist residential construction and some types of state and local government expenditure. It can not only slow their expenditure but may even stop it.
- 3. Threat to Credit Market: If central bank strictly controls credit market and investors expect interest rates to rise continuously then it may end loan sum reserves of credit market. Consequently securities may not be sold and credit market may stop working.
- **4. Threat to solvency of NBFIs:** Strong restrictive monetary policy, through fast increasing interest rates, may create a threat to solvency of savings banks and savings and loan

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- institutions like NBFIs. This happens because different from commercial banks, they are not in a conditions to keep themselves balanced in fast increasing interest rates.
- 5. Changes of Expectations of Borrowers and Lenders: A very expensive monetary policy may change the expectations of borrowers and lenders. That is why they bring unchangeable changes in credit market situations. Sharp increase in interest rates changes the expectations so much that when this policy is given up and an expansionary monetary policy is started, even then lender are unwilling to give long term loans with an anticipation of further increase in interest rates. At the other side, borrowers, with an anticipation of increase in interest rates in future, may take long term loans though they do not need it.
- 6. Time Lags: One more limitation on effectiveness of expensive monetary policy is that there are time lags in need for action and identification, decision and popularization of action. Since due to these time lags monetary officers are not able to follow measures of restrictive monetary policy on time that is why monetary policy works very slowly. Hence it is not very effective in controlling inflation.

#### Self Assessment

#### State whether the following statements are true or false:

- 7. Monetarists have the opinion that central bank may increase the reserves of commercial banks during depression, through cheap monetary policy.
- 8. Full employment is not kept under the main objectives of monetary policy.
- 9. There is an important limit of effectiveness of monetary policy in stopping inflation increase in velocity of money kept with the public.
- When banks sell governments securities to central banks, their price in the market rise up.

# 27.6 Role of Monetary Policy in a Developing Economy

In a developing economy, monetary policy does an important job in increasing economic growth by influencing cost and sufficiency of credit, by controlling the inflation and maintaining the equilibrium of balance of payment. Hence in such countries main objectives of monetary policy is to control credit, stabilise exchange rate for controlling inflation and for stabilising prices, attain equilibrium in balance of Payment and increase economic growth.

1. To Control Inflationary Pressures: For attaining control on inflationary pressures created during the process of development, both quantitative and qualitative measure credit control of monetary policy are required. In tools of monetary policy, open market operations are not successful in controlling credit in undeveloped countries because bill market is small and undeveloped. Commercial banks keep flexible cash deposit ratio because they are not completely controlled by the central bank. Because of relatively low interest rate from them, they are unwilling to invest in government securities. Apart from this instead of investing in government securities they like to keep their reserves in liquid form like gold, foreign exchange and cash. Commercial banks also to not want to take loans or do re-discounting from central bank.

Bank rate policy is also not that effective in such countries because of the following reasons: - (i) shortage of discount bills; (ii) contracted shape of bill market; (iii) huge non-monetised field where goods exchange happens (iv) existence of local banks which do not do discounting of bills with central bank; (v) tendency of commercial banks of keeping large cash reserve; and (vi) being of large unorganised money market.

Use of Variable Reserve Ratio in form of a tool of monetary policy in LDCs is more effective in comparison to bank rate policy and open market operations. Since market of securities is very small hence open market operations are not successful. But increase or decrease in variable reserve ratio by the central bank increases or decreases cash available with commercial banks without having an unfavourable influence on prices of securities. Again, commercial banks keep huge cash reserves with cannot be reduced by the central bank. But by increasing variable reserve ratio, liquidity of banks is reduced. There are some limitations of use of variable reserve ratio in LDCs- first, since non-banking financial intermediaries do not keep deposits with central banks that is why they are not influence by it. Secondly, those banks which do not keep extra liquidity, in comparison to them, those who keep it are influenced more.

But in influencing the allocation of credit and consequently in influencing the procedure of investment qualitative measures of credit control are more effective in comparison to quantitative measures. In LDCS strong tendency is found to invest in gold, jewellery, inventories, tangible assets etc in comparison to optional productive sources available in agriculture, mining, plantation and industries. For controlling and limiting credit facilities for such unproductive objectives qualitative credit control is more appropriate. They are useful in limiting speculative activities in matter of larders and raw materials. They are more useful in stopping sectional inflation in the economy. They cut the demand for import by making it compulsory for importers to deposit advance amount equivalent of foreign exchange. It also has this influence that reserve rates of banks reduce so much so that in this process their deposits are transferred to the central bank. Selective credit control measures may be in form of change in limit requirement instead of definite type of security, consumer credit regulation and rationing of credit.

- 2. To Achieve Price Stability: Monetary policy is an important tool to attain price stability. It brings appropriate adjustment in money demand and supply. Imbalance in both of these will be reflected in price level. Decrease in money supply stops growth, while it excess will bring inflation. When economy is marching towards development then by increase in agricultural and industrial production and by slowly changing of non-monetised areas to monetised areas, demand for money rises slowly. By it demand for money for exchange and speculation objectives will also increase. Hence monetary officer, for stabilising prices and stopping inflation, will have to increase supply of money more than the ratio of demand for money.
- 3. To Bridge BOP Deficit: In form of interest rate policy, monetary policy does a very important task for bridging the BOP deficit. For achieving the planned target of development developing economies have to face serious Balance of Payment difficulties. For establishing foundational structures like electricity, irrigation, transportation etc and for directly productive activities like iron and steel, fertilizers, chemical etc such countries have to import capital equipments, machinery, raw material, parts and furniture. Because of which there is an increase in their export. But their exports are stagnant and because of inflation prices of export are also very high. As a result difference in import and export is created because of which balance of payment is imbalanced. Monetary policy through high interest rates may be helpful in bridging the deficit of balance of payment. High interest rates are helpful in reducing the difference in balance of payment by motivating inflow of investment.
- 4. Interest Rate Policy: For a developing economy high interest rate policy encourages more savings, develops banking habits and provides strength to monetization of the economy, which is necessary for capitalization and economic development. High interest rate policy also removes inflation because it discourages borrowing and investment of speculation and investment. Then this policy encourages allotment of scarce capital resources towards more productive sources. Some economists are supporter of low interest rates in such countries

**Notes** 

because high interest rates are hurdle in development but experienced results tell this that in developing countries investment in trade and industry is interest-inflexible but in net cost of investment, interest has a very little ratio. Despite of these opposing opinions, it is correct for the monetary officer to follow discriminatory interest rate policy. According to this policy for high interest rates should be there for unnecessary and unproductive experiments and for productive experiments low interest rates should be there.

5. To Create Banking and Financial Institutions: In LDCs, one objective of monetary policy is to establish and develop banking and financial institutions for collecting, floating and inducing savings. Monetary officer should encourage establishment of branch banking in rural and urban areas. Such policy will be helpful in monetization of non-monetized area and will induce saving and investment for capital building. It will also organise and develop money and capital market. It is necessary of developmental monetary policy, in which debt management is also included.

**Debt Management:** In a developing country, managing public debt is one of the important tasks of monetary policy. Its objective is to issue government bonds on appropriate time, stabilising their prices and minimising the service costs of public debt. Main objective of debt management is to create such situations in which public debts keep increasing year on year. In such countries public debts are necessary for controlling money supply and providing finance to development programmes. But public debt should necessarily be at cheap rates. Low interest rates increase the price of government bonds and make them more attractive for the people. They also feel the weight of debt to be less.

**Conclusion:** In this way entire monetary policy, as has been told above, is helpful in controlling inflation, reducing the Balance of Payment gap, inducing capital building and in increasing the economic development.

# Limitations of Monetary Policy in LDCs

Experience of developing countries tells that monetary policy has a limited role in such countries. Below mentioned are its reasons:

- Large Non-Monetized Sector: In such countries there is large non monetized area which is
  a hurdle in success of monetary policy. Most of the people live in rural areas where there
  is a trend of goods exchange method. Consequently, monetary policy is unsuccessful in
  influencing a wide part of the economy.
- **2. Undeveloped Money and Capital Market:** Money and capital markets are undeveloped. There is a lack of bills, stocks and shares which limit the success of monetary policy.
- 3. Large number of NBFIs: In such countries local bankers such as Non Banking Financial Intermediaries work on a large scale, but they do not come under the control of monetary officer. Because of this reason also effectiveness of monetary policy is limited in such countries.
- **4. High Liquidity:** High liquidity is found with the commercial banks because of which they are in affected by the credit policy of the central bank. It also makes the monetary policy less effective.
- 5. Foreign Bank: Almost in all developing countries foreign commercial banks are there. They also by selling the foreign assets and by taking out money from their main office, make the monetary policy less effective, while central bank may be following expensive monetary policy.

- 6. Less Bank Money: In such countries monetary policy is also not successful because bank money is a small ratio of total money. As a result of which, central bank is incapable of controlling credit in an effective manner.
- 7. Money not Deposited with bank: Prosperous people do not deposit money with banks instead use them for jewellery, gold, real assets, speculative consumption etc. Such activities encourage inflationary pressures because they do not come under the control of monetary officer.



Task

Express your thoughts in relation to expansionary monetary policy.

# 27.7 Fiscal Policy

### 1. Meaning

By fiscal policy is meant use of taxation or public expenditure by the government for stabilisation or growth. "By fiscal policy we refer to government actions affecting its receipts and expenditures which we ordinarily take as measured by the government's net receipts, its surplus or deficit." Government may balance undesirable changes in personal expenses and investment by anti-cyclical changes in public expenditure and taxes. **Arthur Smiths** has defined fiscal policy like this, "A policy under which the government uses its expenditure and revenue programmes to produce desirable effects and avoid undesirable effects on the national income, production and employment. Though the last objective of fiscal policy is long term stabilisation of the economy, still this objective may be achieved only by taking care of economic ups and downs. In this context **Otto Eckstein** has defined fiscal policy like this, "Changes in taxes and expenditures which aim at short run goals of full employment and price-level stability."

### 2. Objectives of Fiscal Policy

Below mentioned are the objectives of Fiscal Policy:

- 1. To attain and maintain full employment,
- 2. To keep the price level stable,
- 3. To stabilize the growth rate of the economy,
- 4. To maintain balance in the Balance of Payment,
- 5. To increase the economic development of under developed countries.

### 3. Instruments of Fiscal Policy

By the medium of change in government expenditure and taxation fiscal policy strongly influences national income, employment, production and prices. Increase in public expenditure during depression increase total demand for goods and services and does a huge growth in income by the way of multiplier process, while the influence of reduction in taxes is that disposable income increases as a result of which people's consumption and investments increase. At the other side during inflation decrease in public expenditure decreases total demand, national income, employment, production and prices whereas increase in taxes reduces disposable income and consequently reduces consumption and

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investment. In this way through a strategically combination of expenditure and taxation programmes government may control inflationary and deflationary pressures in the economy. Now we will discuss various sources of Fiscal policy-

#### 1. Budgetary Policy: Contra Cyclical Fiscal Policy

Budget is an important source of fiscal policy. Budgetary policy controls the results and relations of receipts and expenditures of fiscal policies. Further we discuss those general budget policies, which are adopted for stabilising the economy:

(i) Budget Deficit: Fiscal Policy under Depression- Deficit budget is an important measure to control depression. When government expenditure exceeds its receipts then in the thread of national income more than that quantity is put in as much has been taken out from it. Deficit expresses net expenditure of the government which increase the national income multiplier times the net expenditure. If MPC is 2/3, multiplier will be 3 and if in government

expenditure there is a net increase of ₹ 100 crores then it will increase the national income to ₹ 300 crores. In this way budget deficit puts an expansionary effect on total demand, even if by fiscal process marginal tendencies are unchanged and disposable receipts are redistributed. Expansionary effect of the budget has been shown in *figure 27.1* in non-linear form. C is the consumption function. C + I + G expresses consumption, investment and government expenditure (total expenditure function) before the presentation of budget. Assume that government expenditure G is increased in the economy. Consequently, total expenditure function shifts upwards to reach C + I + G'. Income increases

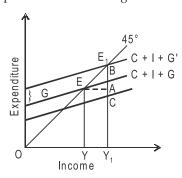


Figure 27.2

from OY to become  $OY_1$  where as equilibrium situation moves from E to  $E_1$ . In comparison to increase in government expenditure  $E_1B$  (=  $\Delta$  G) increase in income  $YY_1 + EA = E_1A$  is more. BA ( $E_1A - E_1B$ ) expresses increase in consumption. In this way budget deficit is always expansionary because as compared to amount of actual government expenditure there is more increase in national income. In this method of budget deficit taxes are kept as it is.

Budget deficit may be obtained by doing reduction in taxes and without reducing government expenditure. Reduction in taxes leaves comparatively more disposable income in hands of the people and in this way increased consumptions induce expenditure. As a result it further increases total demand, consumption income and employment. It has been clarified in *figure* 27.2 where C is the original consumption function. Assume that quantity ET is reduced in

taxes. By this consumption function will shift upwards and reach C' and from OY income will increase to become OY₁.

But reduction in taxes is not very expansionary from the path of increased consumption expenditure, because it may happen that tax relief is not spent on consumption and is saved. If business expectation are low then it may happen that traders may also not invest much. For saving from such dangers what government need to do is that he along with reduction in taxes also follows the policy of government expenditure. Its multiplier effect will be much more in that situation when we assume that because of tax relief some consumption and investments also increase.

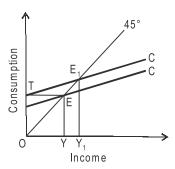


Figure 27.3

surplus Budget: Fiscal Policy Under Boom- There is a surplus in the budget when government expenditure exceeds the revenue. Policy of surplus budget is followed for controlling inflationary pressures inside the economy. It may happen by increase in taxation pr by decrease in government expenditure or by both. By it there will be a reduction in income and total demand, which (reduction) as a result of increased taxes will be equal to multiplier times of reduction in government and/or personal consumption expenditure. It may be made clear with the help of figure 27.1. where economy is in initial equilibrium condition at E₊.

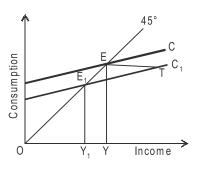


Figure 27.4

Assume that there is a reduction of amount of  $\Delta G$  in government expenditure by which total expenditure function shifts downwards to C+I+G. When E is the new balance situation which tells that as a result of reduction of  $E_1B$  in government expenditure income falls from  $OY_1$  to OY. Reduction in income  $Y_1Y=AE>E_1B$  which is the reduction in expenditure because in consumption also there is a reduction of BA.

When there is an increase in taxes then despite of government expenditure there may be surplus budget. Increased taxes reduce disposable income of the people and motivate reduction in consumption. Result is that there is a reduction in total demand, production, employment and income. It has been made clear in **figure 27.3.** Before levying tax, C is the consumption function. Assume that tax equivalent to ET is levied then consumption function will shift downwards to  $C_1$ . New equilibrium condition is  $E_1$ . Consequently income fall from OY to OY,.

(iii) Balanced Budget Multiplier: Another expansionary fiscal policy is Balanced Budget. In this policy, amount of increase in taxes and increase in government expenditure is the same. Its result is that net national income increases. Its reason is that reduction in consumption due to levying of tax is not equal to government expenditure.

### 2. Compensatory Fiscal Policy

Objective of compensatory fiscal policy is to compensate economy against unending trends towards inflation and deflation by adjusting public expenditure and taxes. That is why it becomes necessary for it that at any definite time instead of measures forever long term lasting fiscal measures are adopted. When there are deflationary trends in the economy then government must reduce its expenditure through deficit budget and reduction in taxes. Doing so is necessary for compensating reduction in personal investment and for increasing effective demand, employment, production and income inside the economy. At the other side, when inflationary trends are there, the government must reduce its expenditure by making a surplus budget and increasing taxes so that economy may be made stable at full employment level. There are two ways of compensatory fiscal policy: (i) Built-in Stabilisers and (ii) Discretionary Action

Built-in Stabilisers: Meaning of built-in stabilisers is that without any plan from government's side, adjustment of expenditures and taxes in the process of cyclical ups and downs inside the economy. Under this arrangement changes happen in the budget automatically that is why it is also called automatic technique of stabilization. Following are the various automatic stabilisers – incorporated profit tax, income tax, production tax, survivor and unemployment insurance and unemployment relief payment. In form of sources of automatic stabilisation tax and expenditure are related to national income. On unchanged structure of tax rate

**Notes** 

being given, tax receipts, along with movements in national income, change directly, while government expenditure change inversely with changes in national income. When national income falls in downward phase of trade cycle, which is based on the percentage of national income, reduce them and as a result tax income reduces. Along with it, government expenditure on unemployment relief and social security benefits increase automatically. There will be an automatic loss in the budget which will stop deflationary trends. At the other side in the upwards phase of trade cycle when national income rises fast then on an increase in tax rates, tax receipts will increase automatically. Also government expenditure on unemployment relief and social security benefits will decrease on its own. These two forces will themselves build a surplus budget and in this way inflationary forces will be controlled themselves.

#### Merits

In form of fiscal measure, built-in stabilisers have many merits. First, when personal purchasing power falls then built-in stabilisers do the job of cushion for it and during deflationary conditions, they reduce the difficulties of the people. Second, they stop the national income and consumption level from falling at low level. Thirdly, in this measure budgetary changes are automatic and there is no delay in taking administrative decision. Fourth, automatic stabilisers minimise the wrong forecasts and mistakes of time of fiscal measures. Lastly, they unite the short term and long term fiscal policies.

#### Limitations

But in form of an automatic compensatory measure effectiveness of built-in stabiliser depends on the flexibility of tax receipts, level of taxes and on flexibility of public expenditure. As much more will be the flexibility of tax receipts that much more powerful will be automatic stabilisers in controlling inflationary and deflationary trends. But flexibility of tax receipts is not so much that even in developed countries like America they may do the job of automatic stabiliser; secondly when level of taxes is low then during downswing in form of automatic stabiliser high flexibility of tax receipts also do not have much importance. Thirdly, built-in stabilisers after giving tax do not think over the secondary effects of trade-income stabilisers and consumption expenditure on trade expectations. Fourthly, this measure is silent about the stabilisation effects of local bodies, state governments and personal fields of the economy. Fifth, they cannot end trade cycles, they can only reduce their intensity. Sixth, their effects are no favourable from recession to recovery. That is why, economists have suggested that from discretionary fiscal policy of fiscal policy, built in stabilisers are substituted (anupoorit).

## 3. Discretionary Fiscal Policy

For discretionary Fiscal policy there is need for bringing such thoughtful changes in the budget like changes in tax-rates or government expenditure or both. Generally it takes three forms. (i) change in taxes, when expenditure stays stable (ii) change in expenditure, when tax stays stable, (iii) change in tax and expenditure together.

First, when there is a deduction in taxes while no change is done in government expenditure, then there is an increase in disposable income of this business and domestic area. Personal expenditure increases by it. But increase in income depends on the fact in whose tax and to what extent deduction is done and do the tax payers consider this deduction as permanent or temporary. If those attaining profit from tax deduction are people of high middle income group then there will be an increase in total demand. If it is related to low income group then there will be not much increase in their total income. If traders have not motivation to invest, then tax deduction will not motivate them to invest.

At the end, if tax payers consider the tax reduction to be temporary then this policy will be less effective that is why this policy is more effective in controlling inflation by increasing taxes because by high rates of taxes there will be a reduction in disposable income of people and businessmen, by which there will be a reduction in total demand. Secondly, for controlling deflationary trends, second method is more useful. With taxes remaining unchanged, if government increases its expenditure on goods and services then total demand will increase equal to increase in government expenditure. At the other side if government expenditure is reduced during inflation then it in not much effective, because trader expectations of the economy are of high trade of which there is no possibility to reduce effective demand. Third method is much more effective and better than the other two methods of stop inflationary and deflationary trends. For stopping inflation, taxes must be increased and government expenditure reduced. At the other side for facing depression, taxes may be reduced and government expenditure may be increased.

Notes

#### Limitations

Discretionary fiscal policy depends on right time and correct forecast. First, correct forecast is necessary to know that stage of the cycle through which the economy is passing. Only then it is possible that complete fiscal activity may be done. Wrong forecast may instead of slowing the cyclical ups and downs, may increase it. Actually, for correct forecasting, economics is not a complete science. As a result, fiscal action is always taken when in the trade cycle, turn points have arrived. Secondly, there are two time lags of public fiscal policy. First is "decision lag", which is related to the time that is taken in study of the problem and in taking the decision. Lag found in this process may be very long. Secondly, once the decision is taken then "application lag" is there. In it that expenditure is found which has been allocated for application of programme. In country like U.S.A, it may take more than two years and in a country like U.K., more than a year. Thirdly, some public plans are so complex that with an objective to increase or decrease expenditure on them, it is not possible to make them slow or fast.

## 27.8 Summary

In comparison to change in tax rates because of higher multiplier effect of government
expenditure, in comparison to expenditure tax changes may be applied much faster. That is why
for controlling cyclical ups and downs more emphasis is being laid on taxation in form of best
fiscal measure. In this manner, when turn point of trade cycle is already on then discretionary
fiscal policy gives power to built-in stabilisers, as is the experience of developed nations like
USA.

## 27.9 Keywords

- Fiscal Policy Financial policy.
- Goals objectives.

## 27.10 Review Questions

- What do you understand by Fiscal policy? Tell the difference between three main types of discretionary fiscal policy.
- 2. Analyse compensatory Fiscal Policy.
- 3. Do a critical analysis of automatic stabilisation.

## Notes Answers: Self Assessment

 1. objectives
 2. securities
 3. (a)
 4. (b)

 5. (a)
 6. (b)
 7. True
 8. False

9. True 10. False

# 27.11 Further Readings



Books

- **1. Macroeconomics: Theory and Policy** H.L Ahuja, S. chand Publishers, 2010.
- **2. Macroeconomics** S.K Chakra Varty, Himalaya Publishing House, 2010.
- **3.** Macroeconomics: Economic Growth, Fluctuations and Policies Robert E. Hall and David H. Paipal, Vaina Books, 2010.

## **Unit-28: Mundell Model**

**Notes** 

#### Contents

Objectives

Introduction

- 28.1 Fiscal Monetary Policy for Internal and External Balance: The Mundellian Model
- 28.2 Summary
- 28.3 Keywords
- 28.4 Review Questions
- 28.5 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- · Know the objectives of Mundell,
- Know the criticisms of Mundell Model.

## Introduction

In the objective of external balance allotment of monetary policy and in the objective of internal balance, allotment of fiscal policy must be done. But allotment rule works only when monetary and fiscal policy without any long lag (pashchataa) are continuously and well accommodated, before their impacts become visual. This is the "Mundell rule" of successful use of monetary and fiscal policy for internal and external stability, as per which, an instrument must be combined with that target only on which it has the maximum relative influence. He calls it the Principle of Effective Market Classification.

# 28.1 Fiscal Monetary Policy for Internal and External Balance: The Mundellian Model

Mundell has discussed about the relation between two instruments and two targets. Two instruments are monetary policy expressed through interest rate and fiscal policy expressed through the government expenditure. The two targets are full employment (internal balance) and balance of payment balance (external balance). Allotment rule is of monetary policy for the objective of external balance and for internal balance is doing of fiscal policy. Allotment of these instruments in the targets is shown in figure 28.1.



Notes

Mundell has discussed about the relation between two instruments and two targets.

In the figure, horizontal axis measure the rate of interest (monetary policy) and vertical axis measures the savings budget (Fiscal Policy). FF is the internal balance line and XX is the external balance line. Line FF expresses full employment. Its slope is negative because for maintaining full employment cut in the savings budget has to be definitely balanced by increase in interest rate. Inflation is below this line FF (in Zone III and IV) and above it (Zone I and II) is recession. On the other side, line XX give all the points of balance in balance of payment. Its slope is also negative because by doing cutting savings budget imports increase, for stopping which it is necessary to improve capital account by increasing the interest rate. Below this line (in Zone I and IV) there is loss in balance of payment and above this line (in zone II and III), there is surplus. In comparison to line FF, slope of line XX is much straight because when interest rates increase for balancing the expanding fiscal Policy (increase in Budget deficit or cut in savings budget); it motivates an undercurrent flow of short term capital for external balance. Towards interest rate changes as much relative will be capital momentums that much more will be line FF and XX of straight slope. By this monetary policy become comparatively more effective in maintaining external balance.

Figure 28.1 shows the internal and external balance and tells that in maintaining balance between these two what job does monetary and fiscal policy do? Assume that in zone I, economy is at point A where there is full employment in the economy and deficit in balance of payment. For ending the

deficit in balance of payment monetary officer first makes an increase of AB in interest rates so that the supply of money may be reduced. By reducing money supply demand for goods will decrease and by it imports will decrease further and at point B balance will be established at balance of payment. At this point there will be recession and unemployment in the economy. For correcting it and for bringing internal balance, reduction of the amount BC will have to be done, but at point C again there is loss in balance of payment, that is why it Is important that for reducing money supply, further increase of CD is done in interest rate. At point D, internal balance is again disturbed because of which there is further cut in savings budget. After

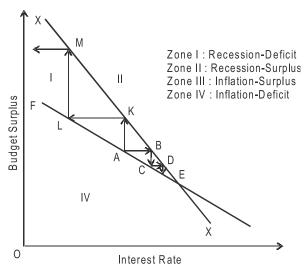


Figure 28.1

decrease of money supply, by this process of decrease in savings, at the end economy reaches point E where there is internal and external balance simultaneously.

## **Self Assessment**

#### Fill in the blanks:

- 1. Monetary and fiscal policies ...... under definite practical constraint.
- 2. Prescribed policy mix cannot be ..... in correcting the current account deficit.

At the other side, if for removing the deficit in balance of payment savings budget is brought in use and for ending unemployment and recession, monetary policy is adopted, then neither there will be internal balance nor external balance. If we move from point A then, by an increase in savings budget economy will move to K where though external balance is available, but there is unemployment

and recession in the economy. For removing it, interest rate is reduced by KL for increasing money supply. But at point L, in balance of payment, deficit increase from its previous level. For it still LM more savings budget will be necessary. For it, it will become necessary that further cut is made in the interest rates so that recession and unemployment are removed. Like this economy will keep moving farther from point E and internal and external balance will never happen together. In such situation allotment rule brings an explosive instability because policies have been coordinated badly.





Did You Know?

Allotment rule is of monetary policy for the objective of external balance and for internal balance is doing of fiscal policy.

In this way in objective of external balance allotment monetary policy and in objective of internal balance, allotment of fiscal policy must be done. But allotment rule works only when monetary and fiscal policy without any long lag are continuously and well accommodated, before their impacts become visual. This is the "Mundell rule" of successful use of monetary and fiscal policy for internal and external stability, as per which, an instrument must be combined with that target only on which it has the maximum relative influence. He calls it the Principle of Effective Market Classification.

In reality, Mundell contends for a rational mix of monetary and Fiscal policy. In zone II and IV there is no disproportion in joint use of monetary and fiscal policy. In zone II both policies must be restrictive and in zone IV, both policies must be expansive. In rest of the two zones monetary and fiscal policies must be definitely mixed for achieving both the targets together. According to Mundell, when monetary policy is combined with objectives of external balance and Fiscal policy is combined with objective of internal balance, and then both the objectives are met.

#### **Self Assessment**

## **Multiple Choice Questions:**

3.	In objective of external balance allotment of monetary policy and in objective of internal balance allotment of must be done	
	(a) Fiscal policy	(b) Money
	(c) Principles	(d) None of these
4.	In reality, Mundel for a rational mix of monetary and Fiscal policy	
	(a) sophistry	(b) contends
	(c) meaning	(d) none of these
5.	Monetary-Fiscal mixture is not a true adjustment	
	(a) Mechanism	(b) Payment
	(b) Policy	(d) Capital
6.	When interest rate is increased by the medium of monetary policy then it brings in domestic investment.	
	(a) decline	(b) increase
	(c) stability	(d) none of these

#### Notes Criticism of Mundell's Model

But there are some shortcomings of this analysis:

- 1. Unrealistic Assumptions: This model assumes that officers know the limit at which economy is far from both the internal and external balance so that appropriate monetary and fiscal policy may be used. This is also assumed beforehand that they know quantitative results which are possible by the use of each policy. But these assumption are far from reality, because it is not possible to correctly judge the category of imbalance. Hence changing the policy may not be appropriate for such imbalance.
- 2. Overlook of Unemployment and Inflation: This analysis overlooks unemployment and inflation. It is unreal, because this concept which is known by the name of stagflation is often found in all developed countries.
- 3. Neglect of other Factors: This analysis only thinks over difference in interest rates a reason for capital momentum and ignores other factors such as exchange rate changes. Other than this it is not possible that continuous deficit is financed by capital momentum.
- 4. Practical Constraints of Monetary and Fiscal Policies: Monetary and Fiscal policies work under a definite practical constrainte of political reasons, some governments are not able to follow restrictive fiscal policy and monetary policy with high interest rates. Though such policies may be started, but they cannot be successful, because capital flow cannot be interest sensitive.
- 5. Unsuccessful Prescribed Policy Mix: Prescribed policy mix cannot be successful in correcting current account deficit because policy mix influences both- capital flow and imports, which is why it only ensures that negative business balance is compensated by positive capital flow and also vice versa.



Task

Expresses your thoughts in relation to the Mundel's Model

- 6. Not True Adjustment Mechanism: Monetary-Fiscal mixture is not a true adjustment mechanism. It does not adjust balance of payment but only makes it stable. Capital flow, leaving the prices and income unchanged, only completes the gap between the sovereign demand and supply of foreign exchange.
- 7. No Consideration on the Debt Servicing Requirements: This analysis does not make consideration on Debt servicing Requirements because, when domestic interest rates are increased then, continuous capital flow will happen on the current account of balance of payment.
- 8. Decrease in investments at home: When interest rates are increased by the medium of monetary policy, it will bring a decrease in domestic investment. It should definitely be accompanied by either a decline in government expenditure or tax cut or by any composition of the two. Such monetary- fiscal policy mixture misuses the savings of the economy by turning them towards debt financed government expenditure, which stops capital building. According to Johnson, "It creates the problem of 'ineptitude vs proficiency' in use of domestic savings possibility"
- 9. Conflicts between Prescribed Policy Mixes: There is a possibility of inter conflict between the prescribed policy mixes of governments of various countries. Johnson has told, "In all countries together reach the right combination of monetary and fiscal policies, particularly

if adjustment of policies is done by examination and defects relating to order, then it will be a complex process and under some circumstances instead of taking in the direction of balance, it may take far from it."

Notes

## **Self Assessment**

#### State whether the following statements are True or False:

- 7. In the objective of external balance allotment of monetary policy and in the objective of internal balance allotment of fiscal policy must be done.
- 8. It is possible to finance continuous deficit by capital momentum.
- 9. Prescribed policy mixture cannot be successful in correcting current account deficit.
- There is a possibility of inter conflict between the prescribed policy mixes of governments of various countries.

## 28.2 Summary

• In reality, Mundell contends for a rational mix of monetary and Fiscal policy. In zone II and IV there is no disproportion in joint use of monetary and fiscal policy. In zone II both policies must be restrictive and in zone IV, both policies must be expansive. In rest of the two zones monetary and fiscal policies must be definitely mixed for achieving both the targets together. According to Mundell, when monetary policy is combined with objectives of external balance and Fiscal policy is combined with objective of internal balance, and then both the objectives are met.

## 28.3 Keywords

- Surplus Excess.
- Conflict Internal struggle.

## 28.4 Review Questions

- 1. What do you understand by "Mundell's Model"?
- 2. Describe Fiscal Monetary policy for internal and external balance.

### **Answers: Self Assessment**

1. work	2. successful	3. (a)	4. (b)
5. (a)	6. (a)	7. True	8.False
9 True	10 True		

## 28.5 Further Readings



Books

- 1. Macroeconomics: Theory and Policy H.L Ahuja, S. Chand Publisher, 2010
- **2. Macroeconomics: Economic Growth, Fluctuations and Policy** *Robert E. Hall and David H. Paipal, Vaina books, 2010.*
- **3. Macroeconomics** S.K. Chakravarty, Himalaya Publishing House, 2010.

## **Unit-29: Swan Model**

#### **Contents**

Objectives

Introduction

- 29.1 Policies for Internal and External Balance: Expenditure Switching and Expenditure Reducing
- 29.2 Summary
- 29.3 Keywords
- 29.4 Review Questions
- 29.5 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the policies for internal and external balance,
- Know the expenditure switching and expenditure reducing.

#### Introduction

Monetary fiscal policies have definite objectives which may be obtained by use of policy equipment. These are-full employment, economic progress, price stability, and equilibrium of balance of payment. These objectives are often mutually opposing. Monetary and Fiscal policies study about nature of these oppositions and about the appropriate resources between them or about establishing interrelation between them. Analysis of these problems has centred mainly around internal and external objectives. Internal balance is related to income and full employment and external balance is related to the equilibrium of balance of payment.

Theory of economic (monetary or fiscal) policy has centred around two separate problems. First, relation between number of policy objectives and number of policy equipments; and second, allotment of policy equipments for achieving the objectives.

**John Tinbergen** was the first economist who had said that number of policy equipments should be equal to number of objectives. If as compared to policy equipments, numbers of objectives are more then, it means that requisite tools are not there for fulfilment of policy objectives. At the other side, if as compared to number of objectives, numbers of policy equipments are more then it means that there is not one composition by which problem will be solved, not who knows how many combinations are there. In this manner, it is important for the success of economic policy that number of policy equipments is equal to number of objectives. It came to be known as Tinbergen rule or fixed target approach.

The second problem arises that when number of policy equipments and policy objectives is same then, how the equipments should be allotted among the targets for achieving the given objectives. In the absence of coordination, correct value of objectives can be achieved by the rendering of distribution problem.



Monetary fiscal policies have definite objectives which may be obtained by use of policy equipments.

Notes

# Policies for Internal and External balance: Expenditure Switching and Expenditure Reducing

Johnson only has pointed towards policy equipments for bringing both internal and external balance. He named them expenditure reducing or internal policy and expenditure switching or external policy.

Deficit in balance of payment means excess of expenditure over income. For correcting it, similarity should be brought in income and expenditure. Objective of expenditure reducing policies is to reduce all demand by the medium of more taxes and interest rates, by which expense and production reduces. Further, fall in income and expenditure reduces domestic price level. By this there is a change in expenditure on domestic goods from foreign goods. As a result imports of the country reduce. Objective of expenditure switching policies is to increase the demand for domestic goods and to switch the expenditure from imported goods to domestic goods. Such expenditure switching increases domestic production. Until the extreme tendency of spending is less than the unit, it will improve the equilibrium of payment balance of the country.

For simultaneously achieving objectives of both internal and external, a judicious combination of expenditure reducing and expenditure switching equipments is necessary. For e.g. if economy is at full employment level then because of the policy of devaluation there may be inflation in the economy. That is why for maintaining balance of payment equilibrium and full employment along with the expenditure switching policy of devaluation, there must be more expenditure reducing policies of monetary and fiscal control.

Relation between policy equipments for simultaneously obtaining both objectives of internal and external balance has been analysed in form of Trevor–Swan model as described in figure 29.1.

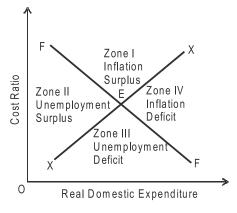


Figure 29.1

#### Self Assessment

### Fill in the blanks:

- 1. Fall in Production and expenditure reduces _____ price level.
- 2. Deficit in balance of payment means excess of _____ over income.

#### The Swan Model

Swan investigates appropriate combinations of expenditure reducing and expenditure switching policies for achieving internal and external balance.



Did You Know?

Deficit in balance of payment means excess of expenditure over income.

## **Assumptions**

This model is based on these assumptions that (a) Trade restrictions do not exist (b) capitalist do not exist and; (c) productivity, terms of trade and other financial transfers are given. In figure 29.1, horizontal axis measures the real domestic expenditure and vertical axis expresses the cost ratio which is the indicator of relative costs and shoes the competitiveness of the economy. Any movement towards left (towards 0) on the horizontal axis means use of expenditure reducing policy and any upward movement on vertical axis means use of expenditure switching policy. FF is the internal balance curve which expresses the situation of full employment. It shows various combinations of cost ratio and real domestic expense. A given level of employment can be obtained by either a level lower than a very favourable relative form of cost ratio and domestic expenditure or by a level upper than a less favourable relative form of cost ratio and domestic expenditure. In this way curve FF bends towards the right. Clearly, part towards the right of curve FF (upper) is related to inflation of situation of more than full employment and part towards the left of curve (lower) expresses recession or unemployment.

#### **Self Assessment**

#### **Multiple Choice Questions:**

3. Objective of expenditure reducing policies is to		s toall demand by the medium of more
	(a) reduce	(b) add
	(c) increase	(d) none of these
4. it is important for the success of economic policy that number of policy e to		licy that number of policy equipments is equal
	(a) number of policy objectives	(b) objectives
	(c) policy	(d) equipments
5. If economy is at full employment level then because of the policy of devaluation be in the economy.		because of the policy of devaluation there may
	(a) deflation	(b) inflation
	(c) loss	(d) decrease
6.	Theory of economic (monetary or fiscal) policy has around two separate problems	
	(a) collected	(a) centred
	(c) discreet	(d) none of these.

Curve XX shows the external balance where in lack of capitalists, export is equal to import. That is why, external balance happens when net exports become zero. This curve grows from left to right side which means that for economy to stay in external balance should definitely equilibrium devaluation by increase in domestic expenditure. (Devaluation, by encouraging export and discouraging import will improve the trade balance of the country and increase in real domestic expense will increase the import of the country in sufficient quantity). Clearly, part above the curve XX is related to saving and the part below it shows the deficit of balance of payment.

That point where curve FF intersects the curve XX, expresses the Bliss point, where economy is in internal and external balance simultaneously. In figure 29.1 E is such a point, where there exchange rate and real domestic expenditure are in balanced. If economy is not at point E, then it is in imbalance. According to **Swan**, "Both curves of internal balance and external balance divide the situation in four zones of economic misfortune." Four zones of imbalance are:-

Zone I: Inflation and payment balance surplus

Zone II: Unemployment and payment balance surplus

Zone III: Unemployment and payment balance deficit

Zone IV: Inflation and payment balance deficit.



Task

Express your thoughts about internal and external balance policies.

## **Policy Measures**

For description of types of policy measures, which are important for simultaneously obtaining internal and external balance, we will take it in eight possible condition of imbalance in **figure 29.2.** For these conditions, various combinations of policy measure are important.

Many countries are in equilibrium at point A of curve XX in payment balance and unemployment (or recession). For such situation there is need for extension of domestic economy through increase in domestic expense. It will reduce net exports. For making this tendency ineffective devaluation should be added to increase in domestic expenditure.

If deficit moves along in unemployment and payment balance, as happens in Zone III at point K, then there should be an increase in domestic expenditure. Policies increasing Internd demand by the medium of expansive measures also increase domestic employment. But this policy increases the deficit in balance of payment. It is described in form of "dilemma zone" because instead of expansive policy, devaluation is preferred policy.

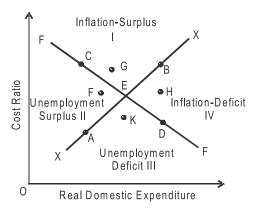


Figure 29.2

In balance of payment, if economy adds full employment with deficit, as happened at point D of curve FF, the devaluation is its only solution. This huge pre-defined will create surplus and extra foreign demand will bring inflation in domestic economy. For stopping these tendencies, little devaluation will have to be added to cut in domestic expenditure.

Take point H in Zone IV where domestic inflation is added to deficit in balance of payment. Inflation should be stopped by a cut in domestic expenditure which will also reduce deficit in balance of payment and finally will take the economy towards balanced situation E.

If there is equilibrium of balance of payment and inflation as on point B then it should increase its rate of exchange and reduce the domestic expenditure.

**Notes** 

Take point G in Zone I where surplus in balance of payment is added to inflation. In such situation, for correcting the surplus of balance of payment, exchange rate should be increased and for stopping inflation expenditure should be reduced. But cut in exchange rate will increase the surplus. It again expresses the "Dilemma Zone."

If the country in the situation of full employment and excess in balance of payment at point C of curve FF then it should increase its rate of exchange. But increase in rate of exchange will create unemployment. In order to be saved from it, domestic expense must be increased.

At the end, let's move to point F of Zone II where surplus in balance of payment is added to unemployment. Here increase in domestic expenditure will be appropriate for both, internal and external balance. Such policy will increase employment and for reducing the size of surplus, will also induce increase in import.

Above mentioned analysis presents this that if economy is neither at curve FF (internal balance) nor at XX curve (external balance), then it is in any one of the four zones.

When for achieving one objective (say, internal balance), economy follows only one policy or both expenditure switching and reducing domestic expenditure policies together, then it moves from the other objective(say, external balance). This problem arises not only in "Dilemma zones" I and III but also in "uncomplicated areas" II and IV. For example, if we take point F in Zone II where surplus in balance of payment is added to unemployment, then expansive policy will reduce unemployment and will also reduce surplus. But for taking the economy to full equilibrium point E then, price increase or price decrease exchange rate will have to be accepted which will remove the economy from one objective or other objective.

#### **Self Assessment**

#### State whether the following statements are True or False:

- 7. Policies increasing Internal demand by the medium of expansive measures also increase domestic employment.
- 8. External balance happens when net exports become zero.
- 9. Both curves of internal balance and external balance divide the situation in four zones of economic misfortune.
- 10. Deficit in balance of payment means deficit of expenditure over income.

#### 29.1 Summary

Theory of economic (monetary or fiscal) policy has centred around two separate problems.
 First, relation between number of policy objectives and number of policy equipments; and second, allotment of policy equipments for achieving the objectives.

## 29.2 Keywords

- External balance Outer balance.
- Internal balance Balance of inside.

# 29.3 Review Questions

Notes

- 1. What did Johnson do to bring both, internal and external balance?
- 2. What is Swan Model? Clarify.

## **Answers: Self Assessment**

1. domestic	2. expenditure	3. (a)	4. (a)
5. (b)	6. (b)	7. True	8. True

9. True 10. False

# 29.4 Further Readings



Books

**1. Macroeconomics: Theory and Policy**— *H.L Ahuja, S. Chand Publisher,* 2010.

# **Unit-30: Rational Expectations Hypothesis**

#### Contents

Objectives

Introduction

- 30.1 Adaptive Expectations
- 30.2 Rational Expectations
- 30.3 Basic Propositions of Rational Expectations Hypothesis
- 30.4 Stabilisation Policy and Ratex Hypothesis
- 30.5 Summary
- 30.6 Keywords
- 30.7 Review Questions
- 30.8 Further Readings

## **Objectives**

After studying this unit, students will be able to:

- Know the Adaptive Expectations,
- Know the Rational Expectations,
- · Know the Stabilisation Policy and Ratex Hypothesis.

#### Introduction

In the decade of 1930, when Keynes wrote his "General Theory", then the main problem of the world was unemployment. During the Second World War, inflation emerged in form of the main economic problem. After the world war, unemployment again emerged as a problem till the decade of 1960. Till next one century, unemployment and inflation jointly took a new form, which was called stagflation. This new problem of stagflation became a challenge before the policy makers and economists, because this theory of Keynes was silent on this subject. Hence a new macroeconomic theory was born by this crisis situation which was named "Rational Expectations Hypothesis OR Ratex".

## 30.1 Adaptive Expectations

Before discussing about the Ratex hypothesis, it is important to understand the meaning of adaptive expectations used in macroeconomics which was developed before the Ratex theory.

Expectations are forecast or predictions made by any financial agent in relation to those uncertain economic factors which are related to his decisions. Forecasts, along with the tendencies of the past, are based on current information and experience. Main part of economic theory, in development of expectations by the financial agents (i.e., consumers, producers etc.) is based on assumption of their rational behaviour. But till now economists, in measurement of human behaviour, have not been able to include the role of expectations. Keynes discussed the importance of expectations but he was silent on the fact that how are they developed?



Thought of rational hypothesis was first presented by John Mooth in 1961, who had taken this thought from engineering literature.

In recent years economists in model development have made an extensive use of adaptive expectation hypothesis. In this relation work done by **Cagen** in 1956 and by **Nerlove** in 1957 was very important. According to adaptive expectations hypothesis, it is the expectation of the financial agents that future will also definitely be like the tendencies of the past. They expect future prices of economic variables like price income in form of average of their past prices and the change in them to be in a very slow speed. Financial agents make the expected prices of these variables equal to the weighted average of their past and present prices. They change their expectations according to previous forecast errors. Errors that took place as a result of previous behaviours point towards an important source of information for development of hypothesis. But such expectations are based on these assumptions that financial agents expect very little change to take place on those mistakes. Hence when there are changes in economic policy then often meaningless forecasts happen through it.

For example, according to adaptive expectation hypothesis, financial agents develop the expectations of future inflation rate by the weighted average of the average inflation rates experienced earlier and if actual inflation is about to be different from expected inflation then they revise those expectations from time to time. It expresses the irrational behaviour of financial agents. Freidman's analysis of long-term Philips curve is based on adaptive expectation hypothesis. Assumption hidden in acceleration hypothesis of Friedman that price expectations are primarily based on experience of previous inflation is unrealistic. When price expectations of the financial agents are based on this assumption then they are irrational. If they think so in situation of rising prices, they will find themselves to be wrong. Its reason is that development of hypothesis is done not only by previous projections but by direct forecasts of future also. Basis of people's expectations is previous price changes along with present information in relation to many factors. In this manner, rational people for forecasting the inflation of the future with more reality, make use of all available information.

#### **Self Assessment**

#### Fill in the Blanks:

- When there are changes in economic policy then often meaningless .......... happen through
  it.
- 2. Ratex Hypothesis is applied to ..... policy.

## 30.2 Rational Expectations

Thought of rational expectations was first presented by John Mooth in 1961, who had taken this thought from engineering literature. His model is about modelling price activities of the main market. If we move with the assumption that financial agents, at the time of developing expectations, make the skilled and most desired use of information, then they create such theory of expectations by which reaction of consumers and producers on expected price changes depends on their reaction on actual price changes. Mooth's saying is that some expectations are rational in these meanings and that incidents are different only because of some random mistake only.

Mooth's imagination of rational expectations is related to microeconomics. Many economists were not satisfied by it. Hence it remained inactive for ten years. During the beginning of the decade of 1970,

Notes

Robert Lucas, Thomas Sargent and Neil Wallace used this thought for the problems of macroeconomics policies.



Did You Know?

Mooth's imagination of rational expectations is related to microeconomics.

## 30.3 Basic Propositions of Rational Expectations Hypothesis

Ratex hypothesis believes that financial agents by using all economic information available with them, build expectations of future prices of economic variable like prices, income etc. This information specially incorporates in itself relations related to economic variables like monetary and fiscal policies of the government. In this way, those building expectations believe that financial agents have complete and correct information about the events of the future. According to **Mooth** information should be considered like any other rare resource. Apart from this, rational financial agents while making their expectations should make use of the knowledge related to economic system. Hence Hypothesis of Ratex believes this that personal financial agents use complete available information in building expectations and they prepare this information from their rational. This assumption is important that Ratex does not express the consumer or firm to be far sighted or their expectations to be always correct. It indicates that agents think over the previous errors and if necessary, to stop the reoccurrence of such errors, review their expected behaviour. Objectively such assumptions indicate that agents are successful in removing regular expected errors so that such errors are average unrelated to available information.

Ratex hypothesis may be applied to economic (monetary, fiscal and income) policies. Those applying rational expectations have shown ineffectiveness of stabilising policies. According to them, due to change in economic policies (monetary, fiscal and income), no one has much information about the effects of it on the economy. Specially, it means to put a stop on Macroeconomic policies as tax cutting, increasing government expenditure, increasing money supply or making a deficit budget etc for controlling economic recession. Their reasoning is that public has learnt this from the previous experience that government will follow such policies. That is why government by adapting these influences cannot befool the public and mere indication of such policy may create expectation of countercyclical reaction from the government. In this way according to Ratex hypothesis people make assumptions about fiscal and monetary policies of the government and while taking financial decisions, pay attention towards them. As a result of it, by the time indications about governmental policies are received, public had already worked upon them and their impact ends. In other words, Ratex Hypothesis tells this that policy-moves bring changes in the financial behaviour of the people which are not expected beforehand and they are unexpected moves from the government. Once when people receive information about the policy and there is expectation of its getting started then it may bring changes in the financial behaviour of the people.

#### Rational Expectations and the Phillips Curve

In the acceleration hypothesis of Phillips curve promoted by **Friedman**, short term trade-off between unemployment and inflation but long-term trade-off is not there. It reason is that inflationary expectations are based on previous tendency of inflation which cannot be forecasted exactly correct. Because the expected rate of inflation is always behind its actual rate, which is why an observed error is found. For adjusting the expected rate of inflation with its actual rate, by adding some ratio

of observed error in the first period, according to the experience in the first period its expected rate is reviewed.

Notes

Economists good at rational expectations have denied the possibility of trade-off between inflation and unemployment during long period also. As per them, this concept hidden in his saying is unrealistic that price expectations are primarily made on the basis of experience of previous inflation. When people put their price expectations on this basis, then they are irrational. If they think so during rising prices, they will find that they were wrong. But rational people will not make such mistake, instead they will in comparison to future inflation, will use the entire available information for more accurate prediction.

In relation to Phillips curve, thought of rational expectation has been presented in figure 30.1. Assume that rate of unemployment is 3% and rate of inflation is 2%. We will start from point A on curve SPC,. For reducing unemployment government increases the rate of money supply, because of which prices start rising. According to Ratex hypothesis, firms in comparison to general price level, have more information about the prices of their industry. Their mere thinking this is a mistake that increase in prices has happened due to increase in demand of their goods. As a result of it, for increasing production they employ more workers, by which unemployment reduces. Workers also make the mistake of considering the rise in prices to be related to their industry. But when demand for labourers increase, wages increase and workers consider increase of monetary wages to be an increase of actual wages. In this manner economy, on short term Phillips curve SPC, moves upwards from point A to point B. But soon firms find that in all industries there has been an increase in prices and wages. Firms also find out that their costs have increased. With an increase of 4% in inflation rate workers feel that their actual wages have reduced and they put pressure for increasing wages. In this manner, because of monetary policy of the government, inflation rate increases in the economy. Consequently, on curve SPC, it moves from point B to point C where inflation rate is 3% which is equal to that before the adoption of expansive monetary policy by the government.

When government again tries to reduce employment by increasing money inflation then it cannot make a fool of those workers and firms who will now keep an eye on activities of costs and prices in the economy. If firms expect increase in prices along with cost of their goods then they will not try to increase their production as happened in case of curve SPC₁. As far as workers are concerned, labour organisations will demand for increasing wages according to increasing prices. When government keeps monetary expansion (or fiscal) policy on, workers and firms get used to it. Their experience only becomes their expectations. Hence when government again adopts such policy then firms increase their prices for making the expected inflation

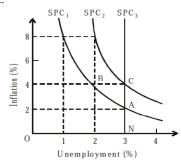


Figure 30.1

ineffective so that it does have an influence on production and employment. In the same way, in expectation for inflation workers demand for more wages and firms do not give much jobs. In other words, firms and workers make their expectation in wages agreement and price policy so that in the actual rate of unemployment and natural rate, even in short term also, there is no difference.



Task

Express your thoughts on rational expectations.

#### Notes Self Assessment

#### **Multiple Choice Questions:**

э.	of adaptive expectations used in macroecon	omics.
	(a) important	(b) unimportant
	(c) sufficient	(d) none of these
4.	In the decade of 1930, when Keynes wrote his "General Theory", then the main problem of the world was	
	(a) employment	(b) unemployment
	(c) labour	(d) capital
5.	During the Second World War, inflation emerged in	
	(a) form of the main economic problem	(b) form of war
	(c) form of peace	(d) none of these
6.	Forecasts, along with the tendencies of the past, are based on current information and	
	·	
	(a) news	(b) experience
	(c) theory	(d) rules

## 30.4 Stabilisation Policy and Ratex Hypothesis

According to Ratex hypothesis monetary and fiscal (stabilization) policies are ineffective in short term, because correctly guessing the expectation in short term is not possible. It is called policy impotence. Ratex hypothesis is bases on this assumption that industries and firms keep correct information about forthcoming economic activities. That is why their expectations are rational because they are based on all available information, especially government activities. If government follows any favourable monetary or fiscal policy then people know about it and according to it only they adjust their plans. Hence whenever government adopts any possible policy then it is not effective because people by predicting it had already adjusted their policies according to it. It means that government policy is ineffective. Another important assumption is that all markets are completely competitive and wages are completely flexible.

Come; first let's take fiscal policy only. Those followers of theory of Keynes, advocate for an active fiscal policy for reducing unemployment. But according to Ratex hypothesis cut in tax and/or increase in government expense will reduce unemployment only if its short term effects on the economy are unexpected for the people In other words, a fiscal policy may have a short term effect for reducing unemployment, if people do not have a pre-assumption that prices will increase. But whenever government sticks to such policy, then people have the hope for increase in inflation rate. Hence in inflation workers seeing the possibility of heavy increase will demand for more wages and firms predicting a rise in future costs will increase the prices of their goods. As a result of it fiscal policy will be ineffective in short term. Through it, in long term, unemployment and inflation may increase, when government tries to control inflation.

Similarly if government for reducing unemployment, increases money supply through an expansive monetary policy, then it will also be ineffective in short term. Such policy may reduce unemployment in short term only if its influence on the economy is not predicted. But when government sticks to such expansive monetary policy then people have an expectation of increase in inflation rate. Firms increase prices of their goods by which possible inflation may be made inactive so that it does not

have any influence on production. Similarly, predicting an increase in inflation workers demands for more wages and firms do not give employment to more workers. Hence it has no influence on unemployment.

Notes

If seen in this way, Ratex hypothesis suggests this that expansive fiscal and monetary policies will have a temporary impact in unemployment and if continued, may increase inflation and unemployment. Success of such policies is only when people may not forecast them. Once when people forecast them and mould themselves according to it then economy returns to its old natural rate of unemployment. Hence for short term impact of fiscal and monetary policies on unemployment, government will have to fool the public. But it does not happen always. If government continues these policies then they become ineffective because it is difficult to befool people for a long time and they forecast its effects on production and unemployment. In this way, fiscal-monetary policies become ineffective in short term. According to those supporting Ratex hypothesis, inflation cannot be controlled without doing extensive unemployment, if government declares monetary and fiscal policies and instead of surprising people, explain them about it.

#### Criticisms

Economists have criticised Ratex hypothesis on the following basis:

- Unrealistic Assumptions: Assumption of rational expectation is unrealistic. Critics reason
  is that big firms may predict correctly but small firms and general workers will not be able
  to do so.
- **2. Costly Information:** Collecting information, its analysis and broadcasting is very expensive. Hence there is no appropriate market for information. That is why most financial agents cannot work on the basis of rational expectation.
- 3. Different Information: Critics also believe that information available to the government is different from the information received by the firms and workers. Accordingly, expectation of firms and workers regarding the possible rates of inflation may not necessarily be different realistic rates just because of random error. But government on the basis of available information may correctly predict the difference between the possible and expected rate of inflation.
- 4. Prices and Wages not Flexible: Though reach of government and people to the information is equal, still there is no guarantee that their expectations will be rational. Critics say that prices and wages are not flexible. Economists like Phillips, Taylor and Fisher have shown this that if prices and wages are stable then monetary and fiscal policies may be effective even in short term. Meaning of stability of wage rates is they adjust with the market powers in a comparatively slower form because wage contracts are applicable for two-three years at a time. In the same way, from the beginning of the period possible price level is expected to be maintained till the end of the time period. Hence if expectations are rational also, monetary and fiscal policies may impact production and unemployment in short term.
- 5. Expectations Adaptive: Gordon has completely rejected the reason of Ratex hypothesis. He has told two reasons- First, any person does not keep sufficient knowledge for predicting the level of market adjusted prices and sticks to adaptive expectations. Second, even if any how he learns about the structure of the economy still rational expectations will be very near to adaptive expectations.
- **6. Government not Impotent:** It is often said that according to Ratex Hypothesis, government is incapable in economic field. But Ratex economists do not believe this, but their faith is that government has a deep impact on economic policies.

## Notes Self Assessment

#### State whether the following statements are True or False:

- Those followers of theory of Keynes, advocate for an active fiscal policy for reducing unemployment.
- 8. Similarly if government for reducing unemployment, increases money supply through an expansive monetary policy, then it will also be ineffective in short term.
- It is the faith of Ratex's economists that government does not have a deep impact on economic policies.
- 10. Gordon has completely rejected the reason of Ratex hypothesis.

## 30.5 Summary

Mooth's imagination of rational expectations is related to microeconomics. Many economists
were not satisfied by it. Hence it remained inactive for ten years. During the beginning of the
decade of 1970, Robert Lucas, Thomas Sargent and Neil Wallace used this thought for the
problems of macroeconomics policies.

## 30.6 Keywords

- Stagflation Speed-less inflation.
- · Past-Previous.

## 30.7 Review Questions

- 1. What are adaptive expectations? Describe.
- 2. Describe rational expectations.
- 3. Comment of 'Stabilisation policy' and 'Ratex hypothesis.

#### **Answers: Self Assessment**

1. forecasts	2. economic policies	3. (a)	4. (b)
5. (a)	6. (b)	7. True	8. True
9. False	10. True		

## 30.8 Further Readings



- 1. Macroeconomics S.K. Chakravarty, Himalaya Publishing House, 2010.
- **2. Macroeconomics: Economic Growth, Fluctuations and Policies —** *Robert E. Hall and David H. Paipal, Vaina Books,* 2010.

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