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Macro-Economic Theories

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MACRO ECONOMIC THEORIES
(BAECCC102)

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SYLLABUS

Introductory 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
	National Income: concepts of National Income
	GNP and Welfare
2.	Inter-temporal and international comparisons of National Income
	Classical theory of Income, output and employment
	Keynesian theory of income, output and employment.
3.	Consumption function: Absolute income hypothesis
	Relative income hypothesis
	Permanent income and life cycle hypothesis
	Investment function: Keynesian approach
	Accelerator theory
4.	Demand for Money: Quantity theory of money
	Keynesian approach
5.	Boumol's and Tobin's contribution
	Friedman's restatement of Quantity Theory of Money
	Supply of Money: Definition of Money and its importance in macro economics

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Unit-1: Introduction of Macroeconomics

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Contents

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

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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.

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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.....

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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:

4. Macro word has taken from Greek's_____.
   (a) Macros (b) Micros
   (c) Origin (d) Name of these
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 factors _____degree is found.
   (a) aggregate (b) cost
   (c) curve (d) none of these

1.3 Major Macroeconomic Issues

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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

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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

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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 non-development 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.

Notes

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.

☞ According to **Lipsey** and **Chrystal**- "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."

Notes

Task Express your views on main problems of macroeconomics.

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).

   6 apples + 7 apples = 13 apples (This is a meaningful aggregate.

   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 heterogenous 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.*

Notes

Unit-2: National Income : Concept of National Income

Contents

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 accuring 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

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

Or

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

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

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

Notes

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.

☞ **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.

Notes

- **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

Notes

₹ 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.

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.

Notes

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

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

It has been assumed in above table that at wheat producing time, there is no cost of intermediate goods. Therefore, 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 + ₹ 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.

Notes

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.

Notes

(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 (GDP_{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 (GDP_{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.

Notes

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_{MP}) adding depreciation, we will get Gross Domestic Product at Market Price (GNP_{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

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

Notes

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

+ Rent
+ Interest
+ Profit
} Operating Surplus

+ Mixed income of self employed
+ Net factor income from abroad

} = Domestic income = Net Domestic Product at Factor Cost

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."

Notes

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.

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.

Notes

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

1.	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.
2.	Gross National Product at Market PRICE (GNP_{MP})	=	DP_{MP} + Net factor income from abroad
3.	Net National Product at Market Price (NNP_{MP})	=	GNP_{MP} – Consumption of permanent capital of depreciation
4.	Net Domestic Product at Market Price (NDP_{MP})	=	NNP_{MP} – Net factor income from abroad

Notes

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 (GDP_{FC})	=	NDP_{FC} + Depreciation
7.	Gross National Product at Factor Cost (GNP_{FC})	=	GDP_{FC} + Net factor Income from abroad
8.	Net National Product or National Income at Factor Cost (NNP_{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'?

Notes

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

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 measurment 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.

Notes

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.

1. 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.

Notes

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.

Notes

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

1. 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

Books

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.*

Notes

Unit-4: Sectorial Accounting

Contents

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:

Notes

Accont of Income and Production in Bussiness Sector 1991-1992

(price in lacs)

Income Receips	Amount	Sale	Amount
1. Wages and Complemenry Income	2,500	1. To customer	22,000
2. Social Security Payment	1,000	2. To states	11,200
3. In spite of rules pure income of many unit and changes in the price of residual	500	3. Export	4,000
4. Income of individual rent	1,000	4. Sales of capital things	6,000
5. Change in the price of residual material and profit of rule	5,000	5. Pure change in the price of rematerialsidual	3,500
6. Pure interst	500	6. Total production of bussiness	46,500
7. Receiving of Total income	3,750		
8. Indirect Bussiness Tax	6,000		
9. Payment in exchange of pure bussiness tax	43,500		
10. Wear Discounting	3,000		
11. Total payment with Exchange of bussiness production	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 and ……...are involve of employee.
3. The income of personal interest is show the ……of 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:

Notes

Account of Income and Expenditure of Private Sector 1991-92

(Money in lacs)

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

Notes When personal income is more than expenditure, less or equal then this item can be positive, negative or zero.

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 income and expenditure of goverment sector 1991-92

(Money in lacs)

Purchasing of Direct services		**Surce of Income**		13,500
		1. Personal tax	5,000	
1. Wages and salary	3,000	2. Tax on rules	2,500	
2. Payment or social security	100	3. Indirect bussiness tax	6,000	
3. Recieve income and pure and total production	3,100	4. Reciving of social security		–2,100
4. Purchasing from bussiness firms	1,100	(i) From bussiness	1,000	
		(ii) From person	1,000	
		(iii) From goverment	100	
	200	5. Income of goverment		
5. Purchasing from foreign				15,600
6. Transfer payments	2,100			
7. Pure paid intrest	1,000			
8. Total expenditure (3) to (7)	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

Notes

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 income and expenditure of foreign and other sector 1991-92

(Money in lacs)

	Rupees			Rupees
1. Wages and complementary income		100	Net foreign Investment	3900
2. Profit from foreign branch		100		
3. Recieve income and total and pure production		200		
4. 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

Notes

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

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.

Account of total saving and exchange 1991-92

(Money in lacs)

1.	Purchasing on bussiness capital things	6,000	1. Savings of corporation		4,100
2.	Pure change in residual material		(i) Profit which cannot distribute	800	
3.	Pure foreign exchange	3,500	(ii) Change in the price of residual material	200	
4.	Total Investment	3,900	(iii) Forein branch profit	100	
		13,400	(iv) Capital depreciation discounting	3,000	
			2. Personal saving		11,100
			3. Goverment loss		-1,800
			4. Total saving		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

Notes

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.

To Payable / by Receipts		Account				
		1	2	3	4	5
		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.
10. 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.

Notes

b. Transaction system present by Liyontif.

c. 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.

Notes

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-corporation	2. complementary income	3. income	4. (a)
5. (a)	6. (b)	7. True	8. False
9. True	10. 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

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

Notes

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.

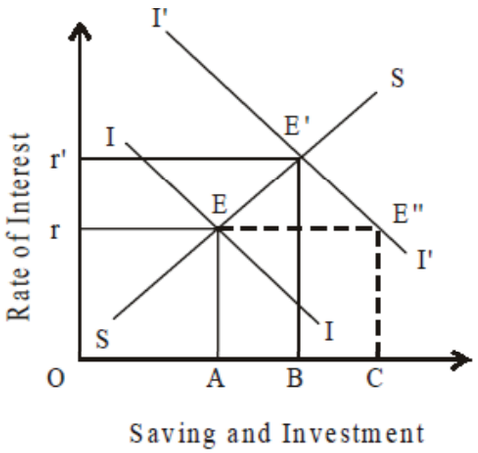

Figure 5.1

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 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 $PP_1=MM_1$.

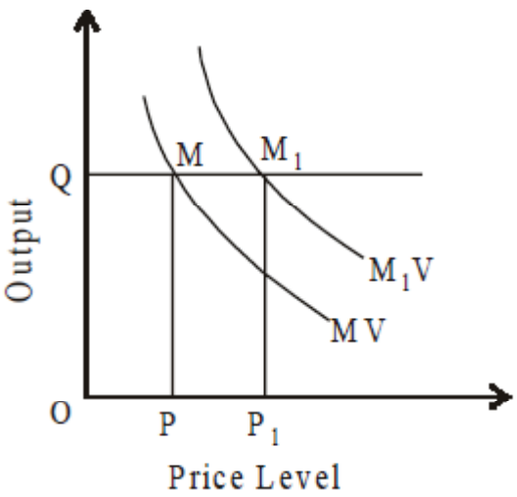

Figure 5.2

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 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_o 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_oN_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_F.

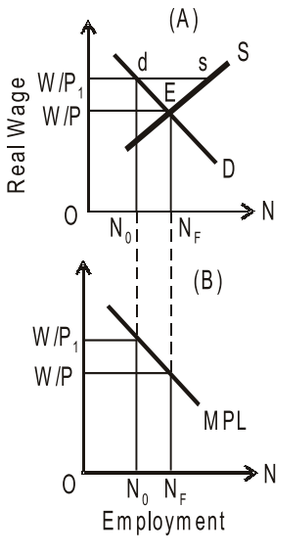

Figure 5.3

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, capital

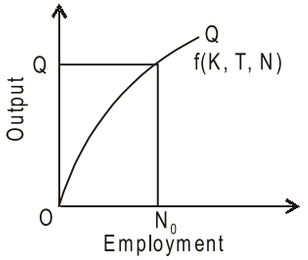

Figure 5.4

Notes

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*.

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 $D_l=f(W/P)$ is the increment function of labour rate. Other side, the demand of labour is dependent on labour rate $S_l=f(W/P)$ 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), $D_l=S_l-N_f$, as show in Panel (C).

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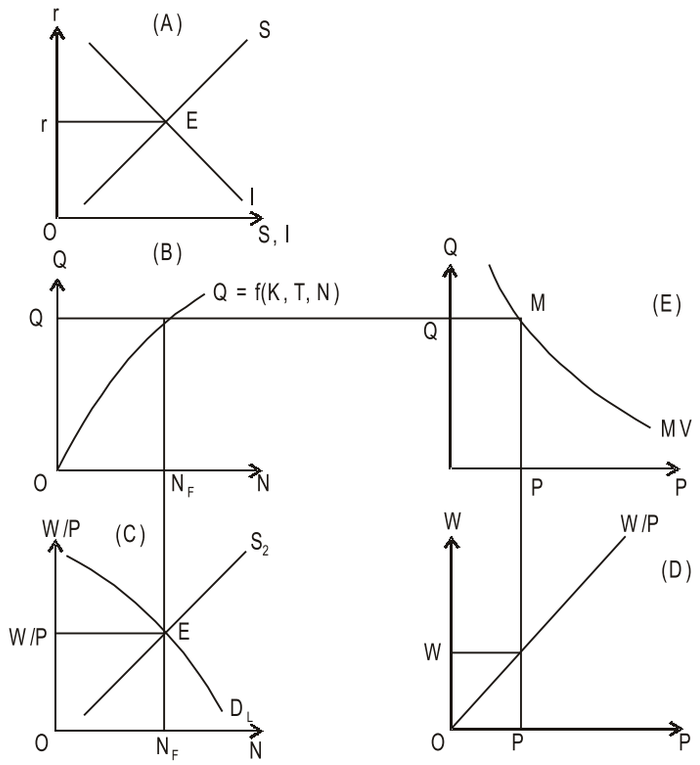

Figure 5.5

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 an d 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

Notes

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

Notes

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.

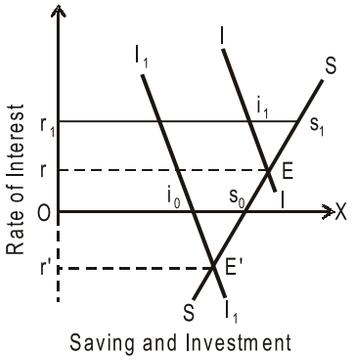

Figure 5.6

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

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.

Notes

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.

Notes

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.

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 $AD=f(N)$.

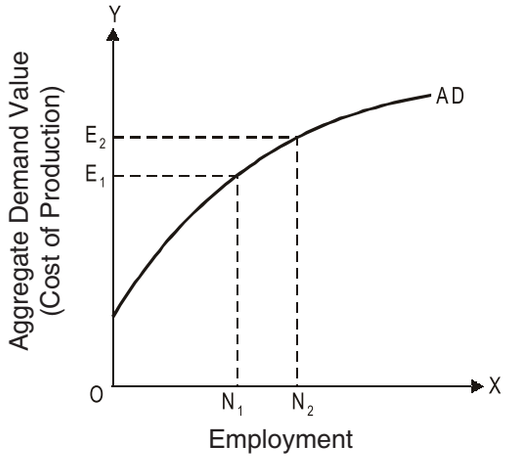

Fig. 6.1: Aggregate Demand

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

Notes

on employment ON_2. 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. The shield of Aggregate supply value curve is increasing as whenever every source is not getting employment.

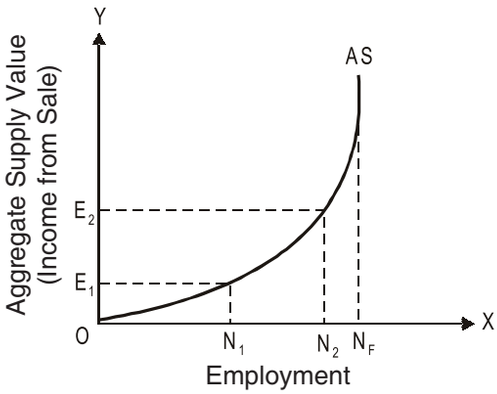

Fig. 6.2: Aggregate Supply curve

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:

4. Effective demand decide the level of income and …….
   (a) employment (b) Unemployment
   (c) cost (d) Curve
5. To increase the employment effective demand is……by investment.
   (a) decrement (b) Increment
   (c) expenditure (d) None of these
6. Aggregate supply is the second important decider of……. the level of income and employment.
   (a) Dissimilation (b) Prkamya
   (c) Equilibrium (d) None of these

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

Notes

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.

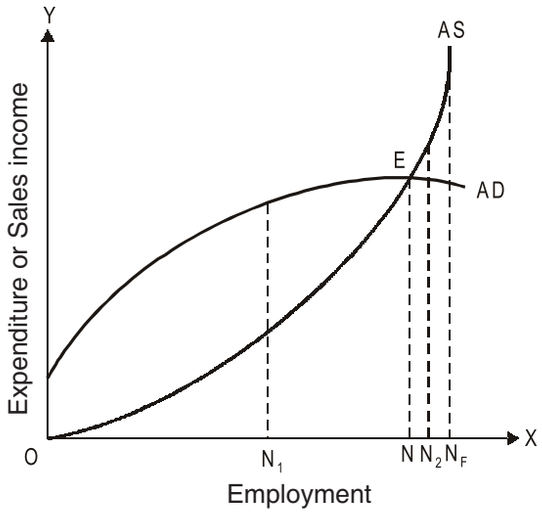

Fig 6.3: Equillibrium within Kension Theory

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 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_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 MM_1.

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.

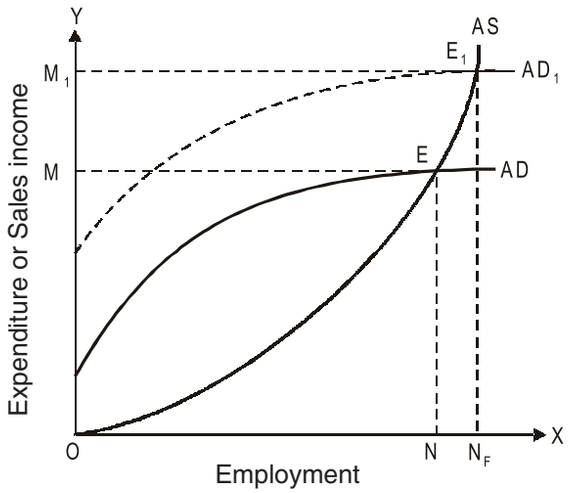

Fig 6.4: Shifting in Equilibruim

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.

Notes

(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 economic development.

(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

- 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	2. special principle	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

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-

$$C = a + cy_d$$

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

Notes

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° APC = OC_1/OY_1 1 and MPC =Δ 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°, there APC=MPC.

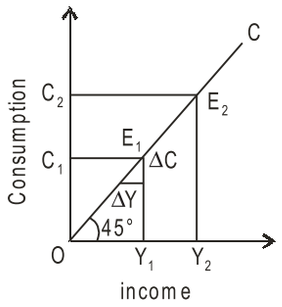

Fig. 7.1

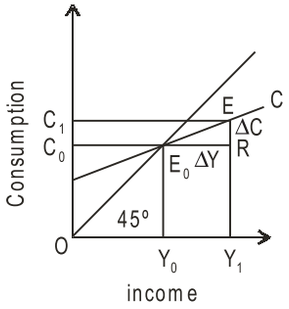

Fig. 7.2

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.

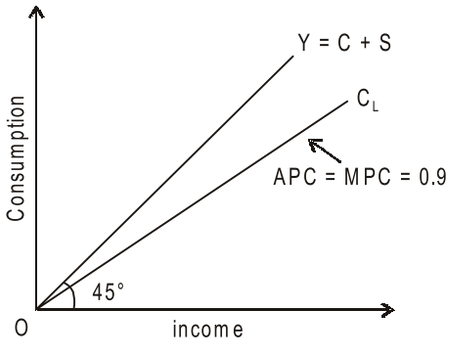

Fig. 7.3

Notes

Did You Know? All customers are the function of whole disposable income.

Self Assessment

Fill in the blanks:

1. Keynes renders the principle of consumption function in his book……..
2. Being increment and decrement in income……expenses are also 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

Notes

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."

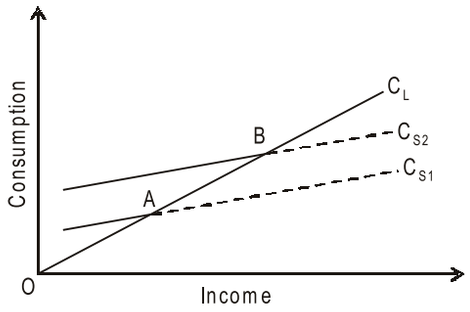

Fig. 7.4

Task Express his ideas on consumption function principle of Keynes.

Absolute income hypothesis presents in **figure 7.4** where C_l 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.
8. 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.*

Notes

UNIT-8: Relative Income Hypothesis

Contents

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

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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 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.

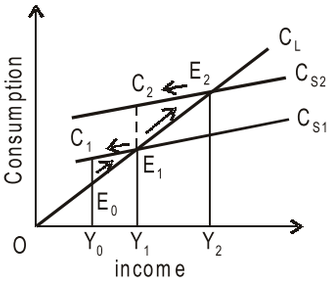

Fig. 8.1

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

Notes

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 CL. But when income is falls then consumers reaches backwards to E_2 to C_2 on C_{S2} curve. It is 'Ratchet Effect'. When income increases in long period, then short period consumption function raise to up side, but when income falls then it shifting below and did not come to last status.

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-

1. **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

Notes

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}

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.

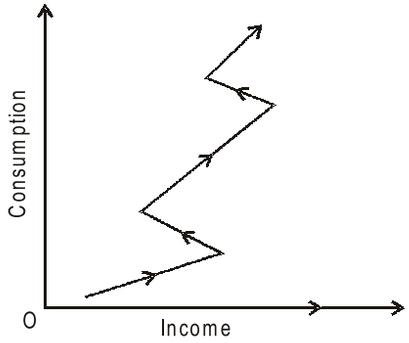

Fig. 8.2

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 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:

7. 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.

Notes

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 slowly-slowly 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

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

$$Y_m \text{ or } Y = Y_p + Y_t \quad ...(1)$$

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

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.

Notes

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 ……..
2. 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_t). 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 (y_P).

$$C_P = k\, Y_P$$

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

So,
$$C_P = k(r, w, u)\, Y_P \qquad ...(3)$$

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:

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

Notes

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 (Yt) and previous period's income (Y_{t-1}) and the ratio of income change in both (a). If current income sudden increases then there will be less increase in permanent 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:

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

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.

Notes 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}

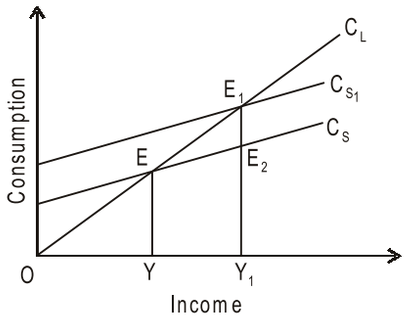

Figure 9.1

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

Notes

5. According to Friedman, the relation between permanent income and consumption is-
   (a) Rational (b) Positive
   (c) Permanent (d) Temporary
6. 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:

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

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 CC_1 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 T_1, he borrows CY_0 B quantity of currency for make his consumption level CB that is simple. In the middle years of his life, this shows by T_1T_2, 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_2 T, it spends the SC_1Y_1 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_t), present value of future anticipated labour income (Y^e_{Lt}) and present value of assets (A_t) are involved.

Consumption function is shows like that:

$$C_t = f(V_t) \quad \ldots(1)$$

Where V_t = total sources on time t.

Further, $V_t = f(Y_t + Y^e_{Lt} + A_t)$ …(2)

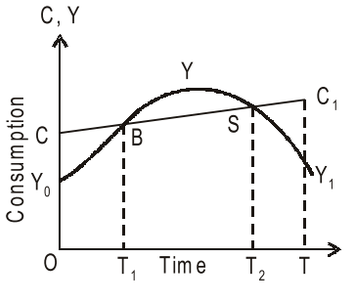

Figure 9.2

Here Y_t = current income; Y^e_{Lt} =Present value of future expected labour income in period t; and A_t = price on t duration of assets.

Notes

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

$$C_t = a_1 Y_t + a_2 Y^e_L + a_3 A_t \quad \ldots(3)$$

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

$$\frac{C_t}{Y_t} a_1 + a_2 \frac{Y^e_L}{Y_t} + a_3 \frac{A_t}{Y_t}$$

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.

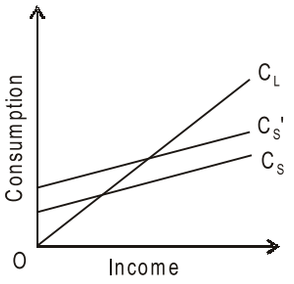

Figure 9.2

Ando-Modigliani consumption function shows in **figure 9.3** by C_S curve. C_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_S shift upward and become C_S with time. Long duration consumption function is C_L which shows that when income increases 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.

Notes

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.

Self Assessment

State whether the following statements are True or False:

6. 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

Books

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.*

Notes

UNIT-10: Investment Function

Contents

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-

Notes

$$\Delta K_t \text{ or } I_t = K_t - K_0$$

Here, ΔK_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

Notes

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.

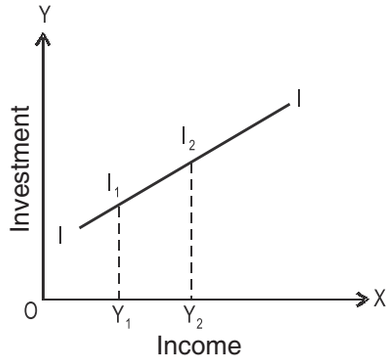

Figure 10.1: Induced Investment

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 OY_1 to 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.

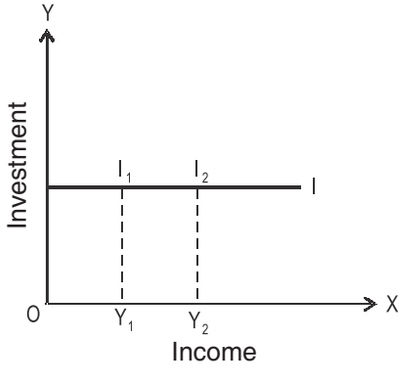

Figure 10.2: Autonomus Investment

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 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

Notes

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:

1. 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.

Notes

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

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

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

$$\frac{A_1}{(1+r)}, \frac{A_2}{(1+r)^2}, \frac{A_3}{(1+r)^3}, ..., \frac{A_n}{(1+r)^n}$$

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.

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

Here A_1, A_2, A_3, ……..A_n are the relative expected incomes in the end of first, second, third, fourth, …….. nth year. C is the supply price of asset and i is the relative rate of return from capital asset. For a definite value of C and A_1, A_2, A_3, ……. A_n the unique price which satisfy this equation, is called the Marginal Efficiency of Capital (MEC). In **Keynes** words the Marginal Efficiency of Capital "is that rate of discount 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."

Self Assessment

Multiple Choice Questions:

3. The mean of financial investment is the right of..... from one person to another.
   (a) transfer (b) non-transfer
   (c) expenditure (d) none of These.
4. When a buyer is investing, the other (seller) is.....
   (a) investment (b) disinvestment
   (c) sell (d) buy
5. Investment is called hold or ..... investment.
   (a) minimum (b) maximum
   (c) intended (d) none of These.
6. 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.

Notes

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.

Table 10.2 List of MEC

Investment project	Price of project (crore rupees)	Marginal efficiency of capital (MEC)
A	5	15%
B	2	12%
C	4	10%
D	7	8%
E	3	6%

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.

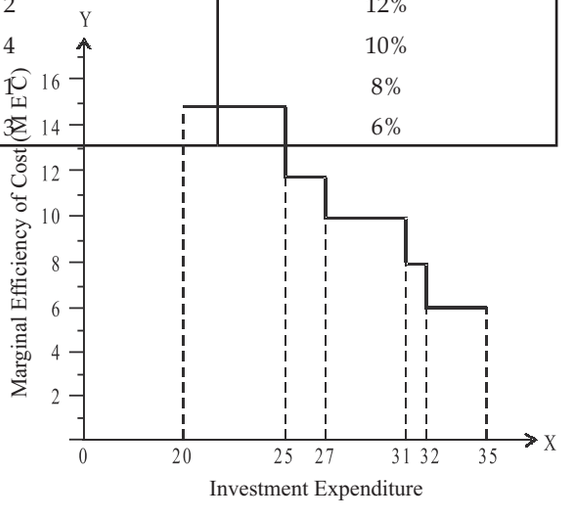

Figure 10.3 List of marginal efficiency of capital

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.

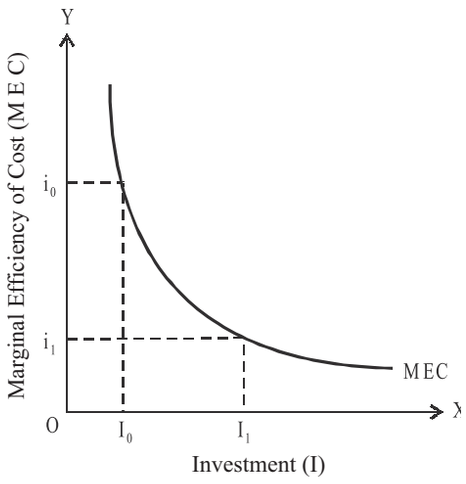

Figure 10.4 : Marginal efficiency curve of capital

Notes

Task Express your ideas in the relation to 'Investment'.

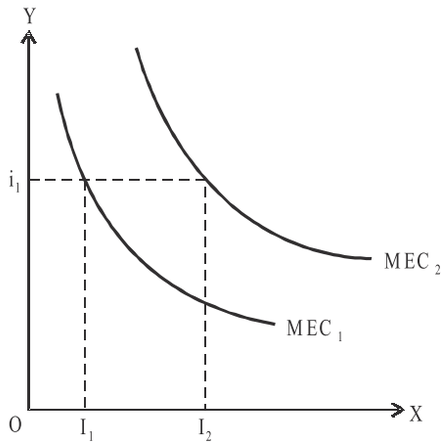

Figure 10.5 : Shifting of MFC curve

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 MEC_2. For example the decrement in income tax and corporation tax are inspired to entrepreneurs for shifting upward their 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.

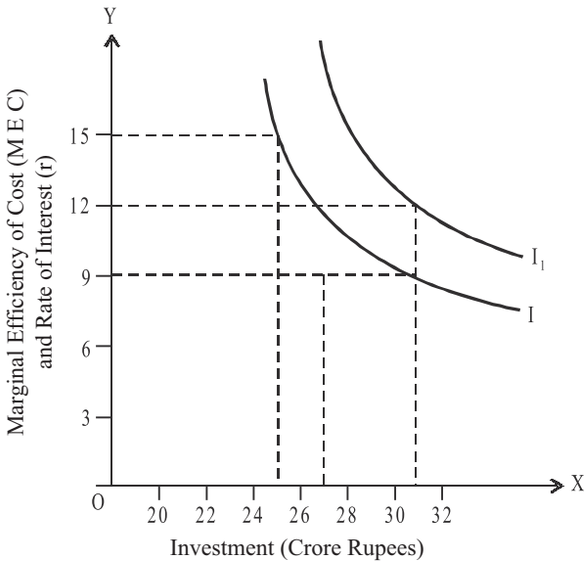

Figure 10.6: Investment Demand Curve

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 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

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 $\Delta / I_t = \beta \Delta C_t$, where β is an Accelerator coefficient, ΔI_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 (ΔI_t) and related change (ΔY_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 β and ν 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:**

$$\begin{aligned} I_{gt} &= v\,(Y_t - Y_{t-1}) + R \\ &= v\,\Delta Y_t + R \end{aligned}$$

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:

$$\begin{aligned} I_{nt} &= v\,(Y_t - Y_{t-1}) \\ &= v\,\Delta Y_t \end{aligned}$$

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.

Opration of the Acceleration Principle ν = 4

Duration in year (1)	Total production (Y) (2)	Desired Capital (3)	Replecement investment (R) (4)	net investment (In) +(5)	Induced investment (lg) = (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	–40	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

Notes

until Y_{t+6} period. After it, it starts to fall. In the lower part of figure, the I_n 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 negative, the replacement investment is going on with the same rate in the economy.

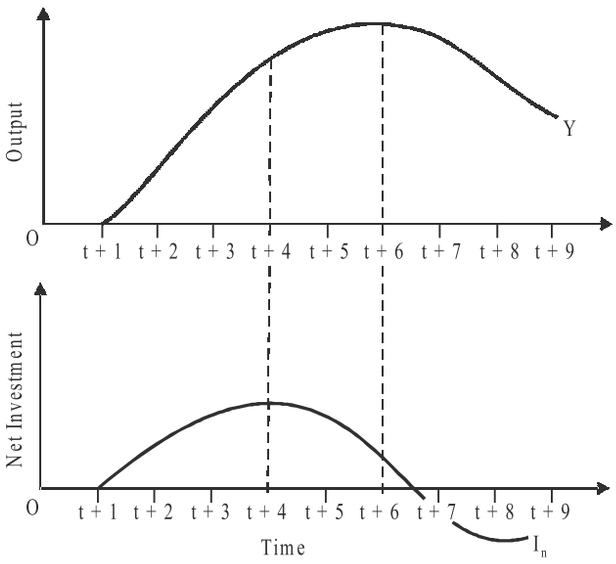

Figure 11.1

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.

Notes

5. **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

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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:

3. Capital stock will……..by any change in production
   (a) change (b) unchanged
   (c) profit (d) loss
4. Being constant the replacement investment, gross investment will……. ……according to every level of production.
   (a)unchanged (b) change
   (c) harmful (d) profitable.
5. Capital stock will……..by any change in production.
   (a) change (b) unchanged
   (c) loss (d) none of these
6. 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 ΔY is the change in production and ΔI 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, $I_{gt} = v + \Delta Y_t R$.

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.

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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.

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.
10. 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.		

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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

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Contents

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.

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

(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

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

Notes

(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 (M^1) will also be doubled. Hence,

M = ₹ 200, V = 8

M′ = ₹ 400, V′ = 4

Y = 400

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

$$= \frac{3200}{400} = ₹\ 8$$

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

Notes

From the above given example it is clear that by doubling the quantity of money, price level also doubles, i.e. from ₹ 4, it increases to ₹ 8 and value of money reduces to half from 1/4 to 1/8. From the above given example, it is clear that when quantity of money doubles, then price level also doubles. It increases from 4 to 8 and value of money decreases from 1/4 to 1/8.

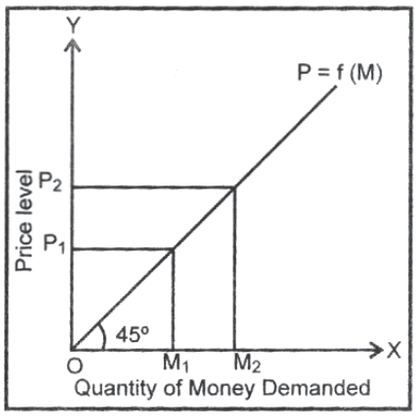

Figure 12.1

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 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

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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.

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

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) × 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

Notes

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.

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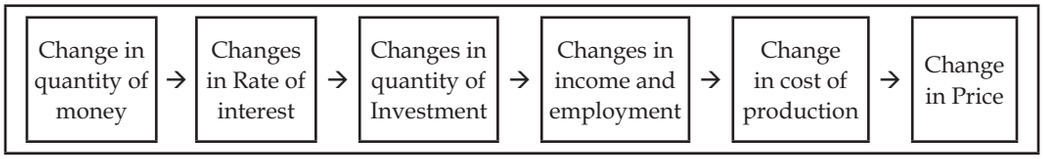
9. **It ignores the effect of rate of interest:** This theory ignores the effect of rate of interest on prices. As per Lord Kez, Hawtrey and Prof. Hayek the assumption of this theory that there is a direct relation between quantity of money and price level, is wrong. Actually, changes happening in quantity 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.

1. **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,

Notes

Supply of Money = Notes + Coins+ Demand Deposits

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,

Demand for money= Sum of Cash balances

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 = ₹ 100 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,

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

Notes

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

$$\begin{aligned} P &= \frac{kR}{M}\left[C + h(1-c)\right] \\ &= \frac{\frac{1}{4} \times 2000}{550}\left[\frac{1}{2} + \frac{1}{10}\left(1 - \frac{1}{2}\right)\right] \\ &= \frac{500}{550}\left[\frac{1}{2} + \frac{1}{10} \times \frac{1}{2}\right] \\ &= \frac{500}{550}\left[\frac{1}{2} + \frac{1}{20}\right] \\ &= \frac{10}{11} \times \frac{11}{20} = \frac{1}{2} \quad \text{quintal of rice.} \end{aligned}$$

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

Notes

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

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

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

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

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

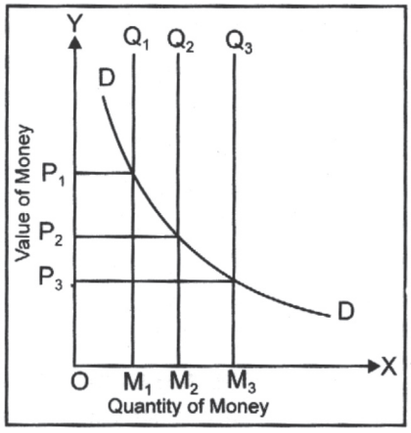


Figure 12.2

Robertson's Equation

As per Roberson's equation:

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

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

Notes

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.*

Notes

Unit-13: Keynesian Approach

Contents

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……

Notes

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

1. 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 ⇨ increment in the cash fund of people ⇨ increment in the demand of bonds ⇨ Increment of bonds price ⇨ decrease in rate of interest ⇨ increase in investment ⇨ increase of demand of inward ⇨ increase of price of inward (if Instrument is in the state of employment then) ⇨ increase in cost of production ⇨ 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

Notes

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.

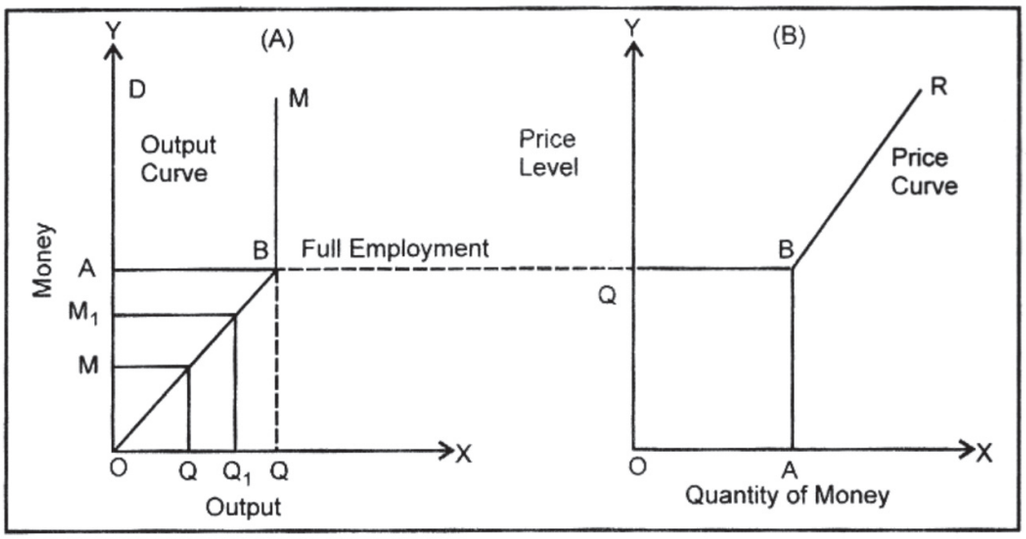


Figure 13.1

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.

☞ **You 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-

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

(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.

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

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

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

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

$$I = P_1C \quad ...(4)$$

(I = investment expenditure (C) their price (P_1) multiplying it)

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

(n: Normal price level)

It represents the ratio of total expenditure ($PR + P_1C$) 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.

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(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 the …….and 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

Notes

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.

Notes

13.3 Summary

- 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, 2010.*
4. **Microeconomics—** *Mohan Srivastava, DND Publications, 2010.*

Notes

Unit-14: Contribution of Boumol and Tobin

Contents

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

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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.

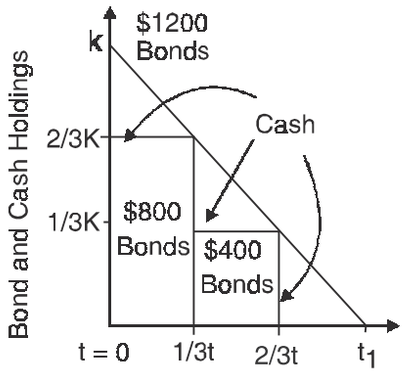

Figure 14.1

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

Notes

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:

$$C = r\frac{K}{2} + b\frac{Y}{K} \qquad \text{.....(1)}$$

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,

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

Or,
$$\frac{r}{2} = \frac{by}{K^2}$$

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

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

Or
$$K = \sqrt{\frac{2bY}{r}} \qquad \text{.....(2)}$$

Self Assessment

Fill in the blanks:

1. …… has given important contribution in transaction demand of money presented by Keynes.
2. Remaining cash is kept so that …….. don't happen together.

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

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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 ½ (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:

$$\frac{M_D}{P} = \frac{K}{2}\sqrt{\frac{2bY}{r}}$$

$$M_D = \frac{1}{2}\sqrt{\frac{2bY}{r}}P \qquad \ldots(3)$$

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:

3. The interest-costs and non-interest costs in keeping remaining cash, remains—
   (a) Included (b) Remaining
   (c) Maximum (d) Minimum
4. If brokerage increases then the amount of withdrawals become.....
   (a) more (b) less
   (c) mos (d) none of These.
5. As income increases, ……..…….. also increases.
   (a) transaction demand of money (b) income
   (c) expenses (d) none of These.
6. 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:

$$R = B (r + g) \text{ where } 0 \leq B \leq 1$$

Because g is a random variable of which expected value is zero. So the function of portfolio is:

Notes

$$RE = \mu R = Br$$

The risk related to portfolio is measured from the standard deviation of R i.e., σR. 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 σR and vertical axis measures the unexpected results σμR. 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. I_1 and I_2 are the indifference curves. Indifference curve shows that it is indifferent with those all combinations of risk and expected result which are situated on I_1 curve. It gives the preference to the points situated on I_2 curve instead of the points situated on I_1 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_1 is T.

Task 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.

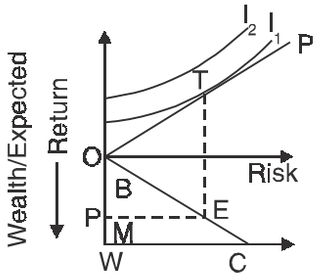

Figure 14.2

Notes

Therefore, risk averter, on keeping his entire wealth OW fewer in bonds and fewer in cash, diversifies his entire wealth.

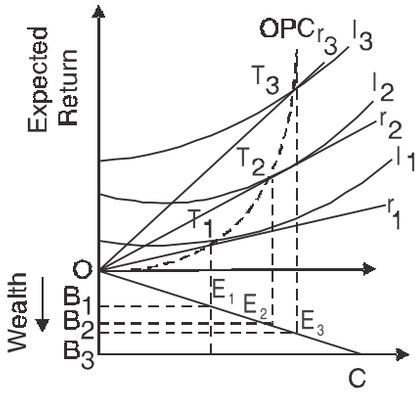

Figure 14.3

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 T_1, T_2, T_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, then they keep OB_1 bond and B_1W money. As interest rate on increasing r_1 to become r_2 and r_3, 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 thatwhen 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.

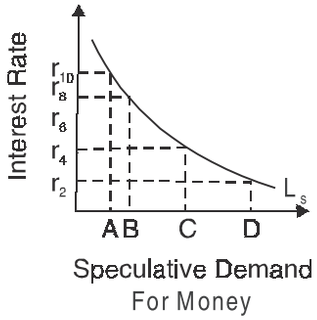

Figure 14.4

Notes

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 r_{10} to 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 r_4 to 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.

Self Assessment

State whether the following statements are True or False:

7. 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.
10. 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.

1. **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

Notes

14.6 Review Questions

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

Books

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

Contents

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.

Notes

For final asset holders the actual demand of money can be possible as the function of main following variables:

1. **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 μ (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.

Notes

3. **Equities:** Equities are defined as the form of claims of stream at the time of payment, which is constant in actual units.
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—

$$W = Y/r$$

Where W is the current price of total assets, Y is the total flow of expected incomes from five forms of assets, and r is the interest rate. This equation shows that 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_e 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; μ (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

Notes

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_b 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_1 S_1. Consequently, money-supply becomes greater than demand of money which increases the total income until there is not established a new balance in M_b and M_1 S_1 on point E_1. Therefore, income on being increased became OY_1.

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:

1. **Very Broad Definition of Money:** One accusation on Friedman is that he has used such broad definition of money in which not only currency and demand deposits (M_1) but the term deposits of commercial banks (M_2) 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 M_2) demand increases. But the demand of currency and term deposits (M_1) 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

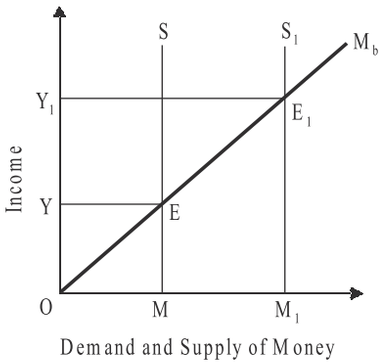

Figure 15.1

Notes

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.

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:

1. 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

Notes

6. Except liquidity the preferences and interests of asset holders are …… .

   (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:

1. 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 μ (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

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

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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

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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 %

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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 which are it's close …….. .
   (a) substitutes (b) installation
   (c) are not (d) none of these
4. The two components of money supply are—
   (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 …….. 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:

M_1 = 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)

☞ **You 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.

M_3 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:

1. **NM_2** = Currency of public + Demand Deposit + Other Deposits of RBI + Short Term Deposits
2. **NM_3** = NM_2 + 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.

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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.
9. 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.

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(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

1. Express the meaning and definition of money supply.
2. Which are the two main components of Money Supply?
3. Determine Monetary Aggregates and Money Supply measures in India.
4. 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

Books

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.*

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