



Centre for Distance and Online Education
Punjabi University, Patiala

Class : M.A. II (Economics)

Semester : 3

Paper : 5 (Money and Banking)

Unit : I

Medium : English

Lesson No.

- 1.1 : Money: An Introduction
- 1.2 : Classical Quantity Theory of Money (Fisher and Cambridge)
- 1.3 : The Keynesian Theory of Money & Contribution of Tobin
- 1.4 : Modern Quantity Theory of Money: Friedman's Restatement of Quantity Theory
- 1.5 : The Liquidity Theory of Money (Radcliffe-Sayers and Gurley Shaw)
- 1.6 : Measures of Money Supply
- 1.7 : H-theory of Money Supply

Department website : www.pbidde.org

ECOM22306T: GP.-1 (iii) Money and Banking

For Regular and Distance Education Students

Maximum Marks: 100
Internal Assessment: 25
Marks External Assessment:

Time Allowed: 3 Hours

Pass Marks: 35%

Teaching Hours (For
Regular Students): 55

For Private Students

Maximum Marks: 100

Objective of the paper: The objective of the paper is to acquaint the students with the concepts, operations, and role of money and banks. The aim is to study and appreciate their key role, especially after the implementation of economic reforms. The paper integrates theory, institutions and policy.

INSTRUCTIONS TO THE PAPER-SETTER

For *Regular and Distance Education Students*, the question paper will consist of three sections: A, B and C. Sections A and B will have four questions from the respective sections of the syllabus and will carry 12 marks each. Section C will consist of 9 short-answer type questions of three marks each, which will cover the entire syllabus uniformly and will carry 27 marks.

For *Private Students*, the question paper will consist of three sections: A, B and C. Sections A and B will have four questions from the respective sections of the syllabus and will carry 16 marks each. Section C will consist of 9 short-answer type questions of four marks each, which will cover the entire syllabus uniformly and will carry 36 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and the entire section C.

SECTION-A

Money: Origin, Functions, Kinds; Near Money. **Theory of Money:** Classical quantity theory of money; Keynesian theory; contribution of Tobin; Modern quantity theory (Friedman's Restatement); Liquidity theory of money (Radcliffe-Sayers and Gurley-Shaw thesis). **Supply of Money:** Measures of Money supply, H-theory of money supply: (High powered money, money multiplier process, factors affecting high powered money).

SECTION-B

Commercial Banks: Definition, Classification, functions (including credit creation and its control). Theories of commercial banking, Innovations in commercial banking services. **Demonetisation:** Concept, Logic, Impact. **Non-Bank Financial Intermediaries:** Definition, types, impact on India's economic development, measures taken to control their operations.

BASIC READINGS LIST

1. Suraj B. Gupta: Monetary Economics-Institutions, Theory and Policy. S.Chand and Company Ltd. Delhi, 2003
2. Dudley G. Lockett: Money and Banking. McGraw Hill, 1976.
3. Jayati Ghosh, C.P. Chandrasekhar and Prabhat Patnaik, Demonetisation Decoded. A Critique of India's Currency Experiment. Routledge, New York, 2017.
4. Fred R. Glahe: Macroeconomics. Harcourt Brace Jovanovich, 1985.
5. H.R. Suneja : Innovations in Banking Services. Himalaya Publishing House, 1994
6. C.Rana Manohar Reddy; Demonetisation and Black money. Orient

BlackswanPvt.Ltd. India,2017

7. Ramagopal Agarwala:Demonetisation: A Means to an End. Sage PublicationsIndia,2017.

SUPPLEMENTARY READINGS

1. R. Glenn Hubbard: Money, the Financial System and the Economy.
2. Ritter and Silber: Principles of Money, Banking and Financial Markets.
3. H.R. Machiraju: Indian Financial System.
4. R.W. Clower: Monetary Theory.
5. Srivastava, R.M: Management of Indian Financial Institutions.
6. Gurley G.J. and S.E Shaw: Money in a Theory of Finance.
7. Radcliffe: Report of Committee on the Working of Monetary System.

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MONEY–AN INTRODUCTION

1.1.1 Introduction

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1.1.1 INTRODUCTION

Social economy has always been and probably will remain a monetary economy. Small communities in isolation may do without money, and barter system (i.e. direct exchange of goods and services with goods and services) may suffice under very primitive conditions. We might also conceive of a modern economy, which is so completely planned that it does not use money. But as we shall discuss further, even in such an economy, money is indispensable for a variety of reasons. This suggests that this man-made instrument is particularly important for the modern economies.

1.1.2 OBJECTIVES

In this lesson, we shall study first the inconveniences and limitations of barter system so that we can appreciate the various roles played by money. The lesson will also familiarize the student with the various forms in which money has existed and its evolution to the present form.

1.1.3 LIMITATIONS OF BARTER SYSTEM

Direct exchange of one commodity for another without the mediation of money is called barter. This system of exchanging goods for goods continued to prevail before the invention of money. Because of certain uses of barter system, it still prevails in certain backward parts of India and other underdeveloped countries. Particularly in villages, the direct exchange of goods for goods still prevails in India. Wage payments in kind to agricultural laborer is nothing but one manifestation of barter system.

The system of barter is simple. It increases co-operation and is usually free from the evils of money. This system is particularly suitable for primitive and self-sufficient pre-industrialised economies where the exchange requirements of people are limited. However, with increasing economic development, as the market economy and the exchange requirements expand, barter economy fails to deliver the goods. An increasing division of labour, which is a necessary concomitant of development, gives rise to increasing exchange, which encourages the ever-improving monetary instruments. It is next to impossible that all wishes of individuals, who enter into barter system, should coincide as to kind, quality, quantity and value of the things, which are mutually desired. This is especially true for a modern economy in which on a single day millions of persons may exchange millions of commodities and services. A medium of exchange which everyone is willing to accept easily overcomes the difficulties of barter because by splitting the actions of barter into purchases and sales which are independent of each other, the need for people's wishes to coincide exactly as to quality, value, time and place is eliminated. We can enumerate the following main difficulties of barter system :

1.1.3.1 Lack of double coincidence of wants

Under the barter system it is necessary that the wants of two persons who wish to

exchange goods must coincide. Suppose X has wheat and he wants sugar. Then X must find a person who has sugar and who is ready to exchange sugar for wheat. Barter, thus, required double coincidence of wants which, in practice, is difficult to be found. However, goods can be exchanged for money, which is usually the most acceptable medium of exchange.

1.1.3.2 Lack of common measure of value

Barter system suffers from the fact that there is no common measure of value. In the above example, even if X succeeds in finding out a person who is having sugar and is willing to exchange his sugar for wheat, the problem will not end here: for how much of wheat how much sugar should be exchanged? The exchange of goods cannot take place unless and until the two persons agree to exchange some given quantity of goods with each other. Since there is no common measure in terms of which the values of different goods can be expressed, the ratio of exchange of two goods will be arbitrary and vary from person to person depending upon their intensities of want for different goods.

Further, in this system the value of different goods will be expressed in as many terms as there will be the number of goods and services (including their different qualities and varieties). This value system would be very cumbersome and beyond the comprehension of an average person. Moreover, in this situation no meaningful accounting system is possible since it will be very difficult to keep account of a commodity, say wheat, in terms of as many commodities as are exchanged for it.

1.1.3.3 Indivisibility of commodities

Barter system fails in respect of many articles, which are indivisible. Suppose a man is having a horse and he wishes to exchange his horse for wheat, rice, vegetables and so on. He cannot break his horse into pieces and then go to the individual sellers of the above commodities to exchange pieces of horse with other commodities. Thus, certain commodities which are indivisible cannot be bartered away. However, this difficulty has been removed by the invention of money. Horse can be sold for money, which can then be used for the purchase of different commodities. The rest of the money can be stored for other purposes. This brings us to another difficulty of barter, i.e., storing of wealth.

1.1.3.4 Difficulty of storing wealth

In the above example, suppose the seller of horse does not want to spend all his sale proceeds from the horse instantaneously. Suppose he wants to store some of his sale proceeds for future needs. Under the barter system he can do this only by storing some commodities, say wheat. But, wheat cannot last longer than one year.

And that too would require great skill. Obviously, life would be highly insecure without the use of money.

An idea about the difficulties of barter can be had by narrating the example of a famous French singer who gave her performance at an island where money was not used. She was paid in kind, i.e., pigs, goats, apples, bananas and other fruits. This should have made her richer. But in the course of journey, she found that the pigs and goats had eaten away her fruits, and to keep them alive, she had to give many more performances so that she could earn enough to feed those animals.

1.1.3.5 Difficulty of transporting commodities

Under the barter system, one has to transport goods and services from one place to another. Suppose a shepherd wishes to exchange his sheep for other commodities. Then he will have to travel a long distance along with his herd to find the sellers of commodities he wishes to buy and who are willing to purchase his sheep. In this process it is possible that the shepherd may lose a number of sheep on the way or he may be looted. The invention of money has saved us from the drudgery of transporting goods.

1.1.3.6 Other difficulties

Besides the above-mentioned difficulties, one can add many more. How to exchange different services under the barter system? How can a teacher be paid? How can one evaluate the service rendered by a musician or a doctor? Further, the process of borrowing and lending would be extremely difficult under the barter system. How to settle deferred payments, i.e., calculate the rate of interest?

In a nutshell we can say that barter system cannot cope with the development of a modern industrial society which is based on the division of labour. The workers are paid much before the final output, i.e., they are paid daily, weekly or monthly, whereas the final output may come after, say six months or one year. In certain cases, this period may be much longer (e.g. in heavy industry). In the intervening period the workers and other factors of production will have to be paid. How to do this without the use of money? Thus, money has not only saved us from the inconvenience of barter but maximum satisfaction out of limited resources has also become possible because of the use of money. In the words of Professor Robertson, "The need for money then seems to be fundamental, if a given volume of productive power is to be made to yield the greatest harvest of individual satisfaction which it is capable of yielding."

1.1.4 EVOLUTION OF MONEY

As already stated, the barter system could not cope with the complexities of modern industrial society. The inconveniences of barter were pressingly felt by them when they tried to move out of the primitive economy and when their wants became diversified. Men began to think of some device which would save them from the difficulties of barter. The search for such a device resulted in the evolution of money.

In a modern economy incomes consist of wages, salaries, interest, rents and profits which are payments for the services contributed towards the manufacturing or sale of goods. Such payments are not received continuously and the dating of expenditure does not coincide with that of income received. No one spends the whole of his weekly or monthly income the moment it is received. To a considerable extent, therefore, money must necessarily act as a store of value by virtue of its use as a medium of exchange.

However, in the beginning money was used as a unit of account in terms of which all other goods and services were evaluated. For example, when a goat of a given size and weight was adopted as a standard, all other commodities were evaluated in terms of this goat. If a horse was worth 5 goats, and 100 bananas worth one goat, then it was easily understood that 500 bananas were worth one horse.

Thus, the value of everything was determined in terms of a standard goat.

It must be understood, however, that goods were still exchanged for goods, The only novelty was that the values of goods and services were determined in terms of a standard commodity (goat in our example). This symbolises the birth of money.

This idea of adopting some commodity as standard of value in terms of which the values of all other commodities were assessed was an important invention of mankind considering that the adoption of some commodity as the standard of value (or unit of account) is a great invention. Crowther rightly remarks that, "To us this invention seems very simple. It is merely the application to the sphere of the same idea that has produced the foot or the meter to measure length, the pound or gram to measure weight, the degree to measure temperature, and so forth. But at that time it was doubtless radical And it undoubtedly was an invention; it needed conscious reasoning power of man to take the step from simple barter to money accounting."

The use of money as a unit of account did not spare man from the inconvenience of barter. As already stated, goods are still exchanged for goods. So both the parties, i.e., buyers and sellers, had to be brought together to exchange their goods though indirectly through the use of standard goat, a unit of account. This

difficulty was removed when money was used as a medium of exchange. Money came into being which facilitated the exchange of goods and services much faster.

Apart from facilitating transactions by serving as a unit of account and a medium of exchange the invention of money also made it easy to store wealth by serving as a store of value. In a barter economy a rich man was one who had a large store of physical things he needed, i.e., large chunks of fertile land, large number of animals, big buildings and so on. But managing all these things was a difficult task. However, with the invention of money, nothing except money needed to be stored since money could purchase everything when required.

These three functions: a unit of account, a medium of exchange, and a store of value performed by a commodity constitute the invention of money. Thus, in the words of Crowther, "Money is one of the most fundamental of all man's inventions. Every branch of knowledge has its fundamental discovery. In mechanics it is wheel, in science fire, in politics the vote. Similarly, in economics, in the whole commercial side of man's social existence, money is the essential invention on which all the rest is based."

1.1.5 FUNCTIONS OF MONEY

Money cannot be defined by enumeration, i.e. by making a list of things that can serve as money. This is because it is not only a tedious job, but also because it will not tell us what money is. Money is not what it is, but what it does. Thus, a proper definition of money must be put in functional terms so that money can be defined as anything that performs these functions.

Various functions that money performs have been divided into: (a) Primary functions (b) Secondary functions : (c) Contingent Functions.

1.1.5.1 Primary Functions

The two basic functions of money for which money was evolved, i.e., to serve as a unit of account and medium of exchange, are said to be the primary functions of money. In every country, irrespective of its ideology, these two jobs are entrusted to money. By performing these functions money has freed the economy from the inconvenience of barter.

As a unit of account or measure of value, money has removed the greatest inconvenience of barter, i.e., how to determine the value of different commodities in relation to each other. Once the values of all commodities have been expressed in terms of money, their relative prices can be easily determined. Thus, the existence of a money unit facilitated comparison of relative value of goods.

By acting as a medium of exchange, a single transaction of barter is decomposed into separate transactions of sale and purchase, and the need for the double coincidence of wants (a necessary precondition for exchange to take place under the barter system) is eliminated.

1.1.5.2 Secondary functions

The secondary functions of money are:

- i. Store of value.
- ii. Standard of deferred payment; and
- iii. Transfer of value.

As already stated, in a modern economy, income consists of wages, salaries, interest, rents and profits. Such payments are received and spent discontinuously. Dates of expenditure do not coincide with the dates of income. No one spends the whole of his weekly or monthly income the moment it is received. Therefore, to a considerable extent, money must necessarily act as a store of value by virtue of its use as a medium of exchange.

Two other functions are generally performed by money- that of acting as a standard of deferred payment, and transfer of value- though these two functions are not always independent of each other. Money, by virtue of acting as the medium of exchange, will generally be used as standard for deferred payment. The third secondary function of money relates to its serving as a medium of transfer value. Money facilitates the transfer of value from one person to another and from one place to another more easily and quickly than any other measure. Suppose Rs. one crore have to be transferred by a person residing in Kerala to a person residing in Punjab. While under the barter system so much of physical quantity of goods would have to be transported/transferred, under the money system a simple paper (Bank draft) indicating the value will serve the purpose.

1.1.5.3 Contingent Functions

Besides performing primary and secondary functions, money also performs contingent functions viz :

- i. Distribution of national income.
- ii. To equate marginal utilities of expenditure,
- iii. To serve as a basis of credit creation; and
- iv. To impart uniformity and liquidity to wealth.

Money facilitates the distribution of national income. In the modern economic

system a large number of people, workers, capitalists and entrepreneurs, contribute to production. The methods of production are roundabout or indirect. The final output belongs to all the contributors. In the absence of money, the distribution of the joint product among the various claimants would have been impossible. This would have been more so if the final product is indivisible.

Money facilitates the maximisation of satisfaction of both the consumers and the producers. Since money is the only commodity which can be distributed among the competing users in different quantities, a consumer applies the principle of maximum satisfaction by purchasing quantities of various goods at the margin with a given amount of money. With the help of money, producers are also enabled to maximise their returns by substituting one factor for another at the margin.

Money is the basis of credit creation. The banks rely upon the supply of money to increase or decrease the amount of the credit. It must be mentioned here that credit is the sine qua non of the modern industrial societies in which the institutional finance is the major source of capital, both working as well as fixed.

Money also imparts uniformity and liquidity to different types of assets. When different assets are converted into money, they become uniform. Money itself is highly liquid as it can be converted into any other form of wealth. Just as liquid assumes the shape of any pot in which it is stored, similarly wealth in money form can be converted into any commodity at the wish of the owner.

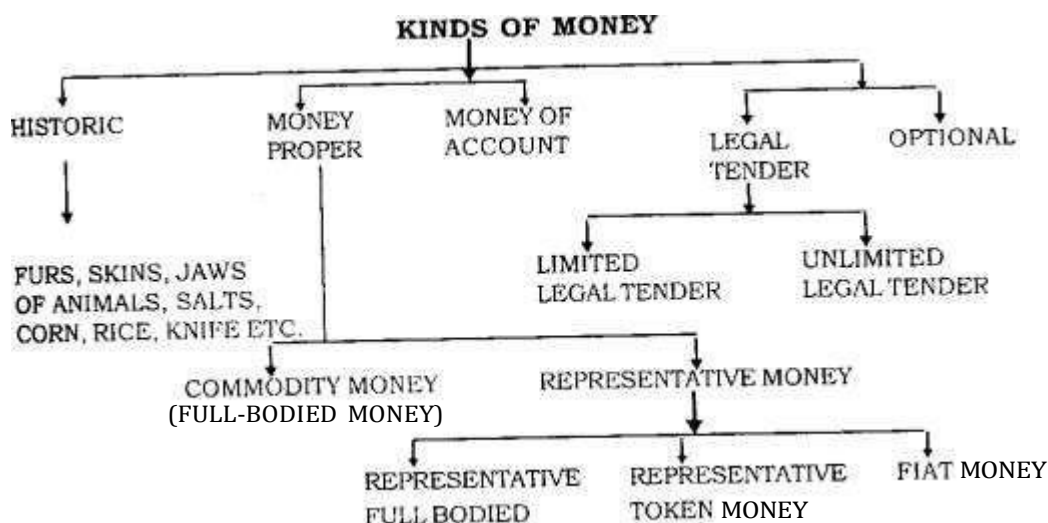
Self - Check Exercise

- Q.1 What are the primary functions of money?
Q.2 Give difficulties of barter system

1.1.6 KINDS OF MONEY

There are several ways of classifying money. One way of classifying money is according to the different forms in which it has existed or been in circulation. This would include historic money such as furs, skins etc. Another way of classifying it is to make a distinction between money proper and money of account. There are different sub categories of money proper also. A third way of classifying money is according to its legal status or acceptability : this classification gives us legal tender money and optional money.

Let us study these categories in detail. A table will help us in this study.



Ever since the invention of money, it has been in circulation in different forms. The history of development of money shows that in the beginning, ordinary commodities like furs, skins, jaws of animals, etc., were used as money. It was perhaps the beginning of a distinction between money proper and money of account. Money of account is that in which accounts are settled, i.e., in which debts, prices and general purchasing power are expressed. On the other hand, money proper refers to actual money or 'common money'. In the words of Keynes, we may elucidate the distinction between money proper and money of account by saying that the money of account is description or title, and money proper is the thing which answers this description. But if the thing can change whilst the description remains the same, then the distinction can be highly significant. The distinction is then like between the King of England (whosoever he may be) and King George. A contract to pay a weight of gold equal to the weight of King of England is not the same thing as a contract to pay a weight of gold equal to the weight of the individual who is King George.

Thus, money of account is unchanging while actual money may change in its form and contents. For example, ever since the adoption of monetary system in India, though actual Indian Rupee has been varying in weight, size and the type of metal used, yet as a unit of account it has been the same. Broadly speaking, usually no distinction between 'money proper' and 'money of account' is made. However, at certain unusual times, these might be different. For example, during the war and post-war periods of hyperinflation in Germany, although actual money

was Mark, yet U.S. dollar became the unit of account owing to its stable value in the face of rapidly depreciating Mark.

Money proper or common may be either commodity money or representative money. Commodity money is also termed as full-bodied money because the real commodity value of the money material and its face or legal value do not differ. In other words, its real value is equal to its face value. It may also be called standard money since the two values (real as well as face) of money are equal. Gold coins whose face value and real value are the same, may be called full-bodied money or standard money. According to Professor Robertson, full-bodied money may be defined as "Money whose value is not materially greater than that of its component stuff." In the words of Newlyn, "Clearly, money may have commodity value in different degrees. Originally, gold had value which was identical (within very small limits) as a coin and as a commodity. If its commodity value rose above its coin value it ceased to be money and became a commodity, that is to say, it was melted down into bullion. Similarly, if the coin value rose above the commodity value, then the commodity gold became money, that is to say, it was brought to the mint to be coined."

Actual money which is not full bodied is called representative money. Professor Robertson defines representative money as "Money whose value is materially greater than the value of the stuff of which it is composed." Representative money is so called because it derives its importance from the main money which it represents. Paper money and cheap metal coins are examples of representative money. Paper money, when inconvertible into specie (say gold) is commonly called fiat money, i.e., money by command. The 'fiat money' exists simply because of the authority of the government. Inconvertible currency notes of the small and high denominations issued by the Central Bank are best examples of fiat money. As will be seen shortly 'fiat money' is an extreme example for token money. Thus, representative money can be divided as :

- Representative full-bodied money
- Representative token money
- Fiat Money

Representative Full-Bodied Money

Under the representative full-bodied monetary system, the holder of money is promised by the issuing monetary authority the payment of full-bodied coins or the equivalent quantity of gold (bullion) in exchange for money received. It is obvious that although representative full-bodied money has no value of its own nevertheless

as a medium of exchange it represents a certain quantity of specie whose commodity value is equal to the legal value of the money it represents. U.S. Gold Certificates which were circulated in U.S.A. before 1933 were an ideal example of representative full-bodied money because they were fully backed by the required quantities of gold.

The representative full-bodied money is issued on the same principles on which the full-bodied commodity money is issued. Since the issue of the representative full-bodied money is to be accompanied fully (100 percent) by the reserves of gold or other precious metals, the danger of over-issue of currency is ruled out. Representative full-bodied money is better than full-bodied commodity money in many respects. Firstly, it will do away with the heavy cost of coinage which must be incurred in case of full-bodied money. Secondly, the loss of precious metals, which is associated with the conversion of gold into coins and with the handling of such coins, is less in case of representative full-bodied money. Thirdly, representative full-bodied money has the added advantage of easy transportability. Against these advantages, however, its only disadvantage is that it lacks durability and it can be easily lost.

Representative Token Money

Under the representative token money system the holder of money is entitled for token coins for equal weight of gold by the monetary authority. It resembles its counterpart, the representative full-bodied money, in all respects except that the commodity value of bullion or coin kept as reserve is less than its value as money.

Since representative full-bodied token money always carries its real value with it, it is acceptable not only in the country of origin but also in other countries. Usually, full-bodied representative money carries a great confidence of people than token money. People accept it in payment of transactions without hesitation. From this, however, it does not follow that full-bodied money is always better than token money. Under certain circumstances token money may be more useful than full-bodied money. In the last quarter of the 19th century, most of the countries adopted gold standard replacing silver standard. This led to the fall in the price of silver. Let us assume that there was a country, which continued to be on the silver standard. If in such a situation the carriage of silver was continued at the official price, this would have encouraged the imports of silver (whose price had fallen in other countries), thereby increasing the money supply and hence endangering inflation. Thus, a full-bodied money does not always guarantee against price instability.

On the other hand, if the country suspends full-bodied money in favour of token money, the free coinage of silver (as implied in the full-bodied money) will automatically stop which will not encourage the import of cheap silver. Thus, replacing token

money in favour of full-bodied money will ensure greater price stability. The point to emphasise is that neither the full-bodied money nor the token money are good or bad by themselves.

Fiat Money

Fiat money, as the name implies, circulates in the country by the formal command of the state. The main features of 'fiat money' are :-

1. It has little or no value as commodity.
2. It is non-redeemable in any commodity whose value is equal to its face value.
3. Its purchasing power is not kept at par with that of gold or silver in which it might have been formerly convertible.

Generally, 'fiat money' consists of paper currency and inconvertible bank notes of different denominations. For example, different currency notes, say Rs. 100 or Rs. 500 are hardly worth one paisa as a piece of paper on which they are printed. However, it should be emphasised that this characteristic of fiat money does not distinguish this from other kinds of money, particularly representative full-bodied paper currency. In the latter case also, the representative money itself hardly possess any value. Yet it is not a 'fiat money'. Therefore, something more than the mere fact that 'fiat money' has no real value is needed before a particular money could be called fiat. The distinguishing features of 'fiat money' is that it cannot be redeemed in gold. So long as full-bodied representative money can be converted into gold at the discretion of its holder, the country would not be on a fiat money standard. There is a technical difference between fiat money and token money. Fiat money has no commodity backing while token money has partial commodity backing. However, the distinction is not usually operational.

Now a days, we are so used to fiat money that we never care for its fiat characteristics. Fiat money standard imparts elasticity to the monetary system of the country. It allows the supply of money to be adjusted to the needs of a growing economy. Money supply under the fiat system is fully controlled and not left to the exigencies of availability of gold or other precious metals. Depending upon the need of different countries (both developed and underdeveloped) the supply of money can be increased or decreased.

But fiat-money is not a panacea for all economic ills. It always carries along with it the danger of over issue of currency which will endanger the stability of an economy.

Since fiat money of a country is not linked with that of other countries, foreign exchange rates continue to fluctuate which endanger the normal flow of international trade.

Classification of Money according to Legal Status (Acceptability)

Some economists emphasising the general acceptability of money have classified money into legal tender money and optional money (also called bank money or credit money) or customary money). Optional money is that form of money which may or may not be accepted in the discharge of debt. For example, bank cheques and drafts. Legal tender money, on the other hand, is used for settlement of payments without invoking legal punishment.

Legal tender money is of two types :

1. Limited legal tender money: It is one which is accepted as legal tender only upto a certain limited amount, like coins of low denominations.
2. Unlimited legal tender money: It is one which is accepted in the discharge of obligations up to any amount. Example - Hundred rupee notes.

After studying the kinds of money, let us now familiarize ourselves with certain terms and concepts related to money.

1.1.7 NEUTRALITY OF MONEY

Neutrality of money means that money is neutral in its effect on the economy. If money is neutral, an increase in the quantity of money will merely raise the level of money prices without changing the relative prices and the interest rate. Patinkin explains the neutrality of money as a situation when a uniformly introduced increase in quantity of money causes a proportionate increase in equilibrium prices of commodities and leaves the equilibrium rate of interest unaffected, provided there is absence of money illusion and distribution effects. Gurley and Shaw define neutrality of money as the inability of changes in the nominal stock of money to affect the rate of interest, output and wealth and other variables. Thus, money is neutral if it does not affect relative prices and leaves the interest rate unaffected.

In the classical system, money is neutral in its effects on the economy. It plays no role in the determination of employment, income and output. Rather, they are determined by labour, capital stock, state of technology, availability of natural resources, saving habits of the people and so on. In the classical system the main function of money is to act as a medium of exchange.

In the Keynesian system, there are two situations in which money is neutral. The

first is the situation of full employment when any increase in the quantity of money brings about a proportionate increase in the price level but output remains unchanged at the same level. The second is the special case of liquidity trap. When the economy is in the liquidity trap, there cannot be a further fall in the rate of interest even if the money supply is increased by monetary authorities. Thus, there will be no effect on such variables as investment and income. In this situation money is neutral.

The post Keynesians, particularly Friedman, Brunner and Metzler have shown that money is non-neutral in the short-run. Friedman believes that money may be non-neutral in the long run also.

Patinkin and Gurley and Shaw have pointed towards certain conditions or assumptions which must be met to establish the neutrality of money. There must be wage and price flexibility. People must be free of money illusion. Then, changes in the money supply must not change the distribution of income in the economic system. There must be absence of government debt or open market operations in the money market. People must have perfect information about the conditions of demand and supply in various markets.

1.1.8 MONEY ILLUSION

The propensity to respond to changes in money magnitudes as if they represented changes in real magnitudes is called money illusion. For example, suppose that our money income and the prices of all goods which we could buy were simultaneously doubled. Now, any set of purchase which we previously could afford, we can still afford; and any set we could not previously afford, still cannot be brought. And if the set of purchases we previously made was the one we preferred out of all those available to us, there is absolutely no reason for us to change it now. But, on the other hand, if because our money income has risen and we feel richer now and buy more of luxury goods and less of necessities, we would be suffering from money illusion, because we have failed to realize that our real income has remained the same.

1.1.9 INSIDE MONEY AND OUTSIDE MONEY

The distinction between inside money and outside money is based on the premise that the economy is to be equated with the private sector only and that the government is extraneous or foreign to the economy. Inside money is defined as money based on the debt of endogenous economic units. It is created within the private sector. Bank deposits thus represent assets as well as liabilities of the private sector. Inside money does not add to the net wealth of the community as a whole.

Outside money comes from outside the private sector. It is defined as money based on the debt of a unit (the government) exogenous to the economic system. Thus, it is government money and includes gold, foreign and government securities. It is a liability of the government as a debtor and a claim of the private sector as a creditor. An increase in outside money adds to the net wealth of the economy.

The distinction between inside money and outside money has been used by Gurley and Shaw to show that money may not be neutral. They show that if the money supply consists of a combination of inside and outside money, the classical neutrality of money does not hold good. With only inside money, the addition of net wealth of creditors is counterbalanced by reduction in net wealth of the debtors. On balance, therefore, there is no effect. With only outside money, any change in it will lead to a corresponding change in prices and therefore, while absolute price level will change, price ratios will not. Neutrality of money will still hold. According to Gurley and Shaw the existence of both inside and outside money violates its neutrality. If prices change to restore the value of outside money (when its quantity changes) to the original level, then the value of inside money changes in the process. This will change the asset preference of people in some parts of the economy.

Self - Check Exercise

Q.1 What is Representative Money?

Q.2 What do you understand by money illusion?

1.1.10 SIGNIFICANCE OF MONEY IN DIFFERENT ECONOMIC SYSTEMS

We have already dealt with the inconveniences of barter which man had to face in the absence of money. In a barter economy double coincidence of wants was a prerequisite for the exchange to take place. Further, indivisible commodities could not be bartered. In fact, barter system assumed a primitive society with people having limited wants. But as the economy expanded, and more so in the present society, barter failed to deliver the goods and hence the invention of money. The significance of money can only be appreciated if money is removed from the economic system even for a single day. However, we shall discuss the importance or significance of money with reference to two famous and extreme forms of economic systems, viz., capitalist system and socialist system.

1.1.10.1 Money in the Capitalist System

The capitalist economy is not regulated by a central planning board. The factors of production are privately owned and are used according to the free decisions of their owners who are also free to spend what money they earn by selling these factors.

If they decide not to spend their earnings, i.e., they wish to save, they are free to do so. The use of these savings for the production of capital goods is again dependent on private initiative.

The millions of individuals in a modern capitalist economy, not being self-sufficient, are co-operating in a gigantic production process. Since there is no central planning board to decide about the problem of production and distribution, we have to ask such questions as: How does each person find his place in this process? How would producers decide as to what to produce, where to produce and how much to produce? How will the total produce be distributed? The answer to all these questions will be found in the analysis of pricing process of which money is an integral part in the capitalist system. The following points will clearly bring out the importance of money in a capitalist system:

(1) First of all, the use of money divides the exchanging people into sellers and buyers and splits barter into market supply and demand. Supply and demand determine market prices which are exchange values expressed in units of money. The direction of production is determined according to existing and expected price. The difference between these two sets of prices mean profits or losses for producers. According to expected profits or losses production will be expanded or contracted. All production in the modern era rests on economic calculation, i.e., on the comparison of monetary quantities.

(2) Money is an indispensable condition for the development of a credit market. In a barter economy it is possible to borrow goods against the promise to give these goods or other goods back after a certain period. In this case, we should have as many credit markets as we have different kinds of goods which may be subject to borrowing. It would be impossible to have a uniform credit market for the special economic service involved, viz., the exchange of present for future goods. The development of a money market (or credit market) is the condition of the formation of a uniform price for uniform services. What people demand and supply on this market is not the disposal of money by the use of which other goods may be procured. Loans find their ideal expression in money and it is the monetary economy alone in which it is possible to express the price of loanable funds in the form of interest rate.

(3) Money greatly helps consumers as well as producers to exercise their free choice. Free choice of consumption implies the use of money, because free choice can be exercised only if limited purchasing power at the disposal of consumers can be spent in small amount in alternative uses. This job can be performed by money only. A moneyless economy would have to use a system of rationing, i.e., distributing

the social product in a predetermined proportion. Freedom of choice of consumption would be abolished. Likewise, the guiding principles of producers, i.e., what, where and how much to produce are all determined by monetary reward.

(4) Money may be regarded as a common denominator for subjective valuations on the assumption that the amount of purchasing power spent on a commodity measure objectively the relative importance of satisfaction to the purchaser. However, this assumption is highly artificial because money income of different persons is unequal.

(5) In a perfect working credit market, savings are sure to be borrowed by those who want to buy capital goods or to increase their consumption beyond the limits of their income. However, money may turn out to be a disturbing factor in the credit market and in the economy in general. Money may be hoarded and total demand may be reduced with the further consequences of reduced production, unemployment and a further fall in demand. It may also happen that lowest practicable rate of interest is not low enough to induce the necessary amount of investment and that money remains idle with consequences similar to those of hoarding. On the other hand, money dishoarding as well as hoarding, change the basic assumption of the barter economy that supply creates its own demand. It had been assumed for a long time that nothing worse could happen than the partial overproduction of commodities which would immediately be remedied by the necessary adjustment in relative prices and production. That there would be a general deficiency in purchasing power was unthinkable. This was unwarranted optimism. Purchasing power can be destroyed with disastrous consequences for the economy just as it can be created with favourable or unfavourable effects depending upon the state of employment and numerous other factors.

(6) Among the disturbing effects of money, those changes in the general level of prices which are known as inflation or deflation are most obvious. If money is supposed to be a unit of account, its own exchange value should remain comparatively stable. The value of money is expected by its ability to buy and this ability is decreased when prices increase and vice-versa.

1.1.10.2 Money in Socialist Economy

We have seen that by the use of money, not only is it possible to overcome the clumsiness of barter and to extend the division of labour, but at the same time money is the basis of pricing process by means of which the economy is guided unless it is planned in every detail with complete foresight that individualistic economic calculation is rendered unnecessary. However, it should be noted that in

practice as well as in theory, modern planned economies too have made use of the price mechanism.

Lenin, for example, admitted in October, 1921 that they were greatly mistaken that Russia could reach even the initial stage of communism without passing through a period of socialist calculation. Trotsky asserted that a plan had to be checked and, to some extent, realized through the mechanism of the market. He admitted that 'the blueprints produced by the offices must demonstrate their economic efficiency through commercial calculation. Without a firm monetary unit commercial accounting can only increase the chaos.'

Some writers argue that abolition of free choice in consumption (which is the necessary concomitant of the economy where resources are allocated by some apex planning body) would do away with the necessity of pricing process. It is true that the problem is made less complicated if we let a central authority decide what is to be produced. Nevertheless, it remains indispensable to have a pricing mechanism without which "it is impossible for an economic system of any complexity to function with any reasonable degree of efficiency." The scarcity of means of production does not allow us to produce whatever we want to produce. Even if the aims of production should be determined by a director, the allocation of resources according to these aims would have to be the result of the working of a pricing process by means of which it is possible to compare the usefulness of the available resources in different fields of employment. Thus, we may safely conclude that even a socialist economy will remain a monetary economy if it is operated with some degree of efficiency.

1.1.11 SUMMARY

In this lesson, we have discussed the definition, functions, kinds and importance of money. Some important concepts relating to money have also been discussed. We learnt that a definition of money cannot reasonably be put in terms of some substance or other. Money is not what it is but what it does. The world as we know today cannot exist without money.

1.1.12 Key Concepts

- (i) Barter System : The system of direct and mutual exchange of goods and services.
- (ii) Money Illusion : First coined by economist John Maynard Keynes, the money illusion states that the average person tends to view their wealth and income in nominal terms instead of real terms.

1.1.13 Suggested Readings:

- (i) Suraj B. Gupta: Monetary Economics, Institutions, Theory and Policy.
- (ii) Dudley G. Lockett: Money and Banking

1.1.14 Questions for practice:

- (i) Define Money. Give its functions
- (ii) Discuss the kinds of money.
- (iii) Write a short note on neutrality of money

(iv) Write a brief note on role of money in capitalist economy.

**THE CLASSICAL QUANTITY THEORY OF MONEY
(FISHER & CAMBRIDGE)**

1.2.1 Introduction

1.2.2 Objectives

1.2.3 Value of Money

1.2.4 Quantity Theory of Money-Fisher's Approach

1.2.5 Cash Balance Approach (Cambridge version)

1.2.6 Comparison of Fisher Approach and Cambridge Approach.

1.2.7 Criticism of Quantity Theory

1.2.8 Key Concepts

1.2.9 Suggested Readings.

1.2.10 Question for practice.

1.2.1 Introduction

Whenever there is a change in the quantity of money, it influences prices, money income, real income, rate of interest and many more variables. Traditional monetary theory has analysed these influences. This analysis has been made through two approaches- the Quantity Theory of Money (QTM) approach and the Keynesian approach.

The QTM has a traditional version and a modern version (given by Milton Friedman). Two formulations of the traditional QTM are- Irving Fisher's Transactions Velocity approach (1911), and the Cambridge cash balance Approach, attributed to Pigou, Marshall and Robertson (1923).

The quantity theorists believed that since determinants of money supply are known, the fundamental question of monetary theory was that what are the determinants of demand for money. The two versions of traditional quantity theory approach this answer from different angles, but reach the same conclusion.

1.2.2 Objectives

The objective of this lesson is to examine the Quantitative Theory of Money and Keynesian approach. The draw backs of these versions have also been discussed so that the students can appreciate the improvements and contributions made to this theory subsequently.

1.2.3 VALUE OF MONEY

Value of a commodity is defined as: units of other commodity (or commodities) that can be exchanged with it or purchased with it. It is, therefore, the purchasing power of one commodity in terms of other commodities. Depending upon the conditions of market

(that is demand and supply) a particular commodity can be exchanged only with a very limited number of goods. It is not very realistic to assume that books can always and at all places be exchanged for cows, bicycles, wheat, fruit, cinema shows and so on. Thus, when goods exchange for goods, it is with a limited range that the actual process may take place.

Value of money can be defined, in a similar fashion, as units of other commodities that can be purchased with it. Money can, therefore, be exchanged for any commodity. We have heard people saying, not unrealistically, that money can buy anything. Therefore, value of money is its general purchasing power: what it can buy in the market or what can be exchanged for it.

Let us now take the other side of the picture. Price of a commodity is defined as value of a commodity in terms of money. It means the number of units of money that can be exchanged for a unit of one commodity. The price of a commodity is its value in terms of money and value of money is the units of a commodity (or commodities) that are exchanged for one unit of money. It can immediately be seen that value of money is just the other side of the price of the commodities. Since money can be exchanged for all commodities, value of money is the other name of the general price level. When we say that the value of money has gone down it means money now buys less number of units of the commodity (or commodities) than before. It also means that a unit of a commodity must now be exchanged for more money than before. If more money has to be paid for the same unit of commodity, we say its price has risen. Thus, a fall in the value of money means a rise in the general price level and vice-versa. Value of money can briefly be stated to be its general purchasing power. A rising price level means low purchasing power of money and a falling price level is another name for its rising purchasing power.

As money is one of the very old economic phenomena and value of money intimately affects our daily routine of life, the determination of the value of money has been a very interesting subject of enquiry in the history of economic thought. Early writers started to explain the general level of commodity prices and quite naturally came up to the influence of supply of money on it. This approach of explaining the value of money (or the general price level) through its supply is called the quantity theory of money.

According to quantity theorists, the fundamental question of monetary theory is – what are the determinants of the demand for money?

There have been a number of answers to this question. The traditional quantity theory of money is one. There are two versions of the traditional quantity theory - Fisher's transactions velocity approach, and the Cambridge cash balance approach.

We shall deal with Fisher's quantity theory of money and supplement it with the cash balance approach. A recent reformulation of the quantity theory by Milton Friedman and others shall be taken up later, after we have studied the traditional approach.

1.2.4 QUANTITY THEORY OF MONEY – FISHER'S APPROACH

Irving Fisher focused attention on the reasons why people spend money. Hence, his theory is usually referred to as the transaction velocity approach. This approach has the equation of exchange as its centerpiece. To understand this equation of exchange, let us take a very simple example: whenever an act of purchase takes place in the economy, simultaneously there has to be an act of sale. This is to say that the amount of money spent (by the buyer) is exactly equal to the amount of money received (by the seller). Since this statement holds true for all market transactions, we can write:

Total money expenditures for goods and services = total money receipts from the sale of goods and services (I)

The above equation I is, no doubt, an identity, but it can be made into a tool for economic analysis.

Considering first the right-hand side of equation I. Let us suppose we can count each and every market transaction in the economy during a given period. Also suppose that in addition to the total number of transactions, we can also keep a record of the price at which each transaction is made. Then we can also find the average price at which all transactions took place during the given period. Thus, multiplying the two we obtain:

Total money receipts from the sale of goods and services = average price of transaction x total number of transactions (II)

Now considering the left hand side of equation I, total money expenditures for goods and services will be obtained by multiplying the total quantity of money by its average rate of turnover, or velocity (since the same unit of money is spent a number of times, it is not sufficient, or correct, to consider only the quantity of money spent to calculate the total money expenditure). Thus

Total money expenditure for goods and services = money supply x velocity of money (III)

The equation I can now be rewritten as:

Money Supply x Velocity of Money = Average price of transaction x total number of transactions (IV)

Symbolically, equation (IV) can be put as

$$MV = PT$$

The fundamental equation of exchange now consists of four variables each of which has behavioral explanations as follows:

Money (M): M is the control variable, that is, it is an element that is determined by a deliberate act of public policy.

Prices (P): This variable is considered to be a residual, i.e., it will be determined by the interactions of the other three variables M, V and T.

Transactions (T): The behaviour of this variable needs explanation in the long run as

well as the short run.

In the long run, classical economists considered full employment level of national income as the natural point of equilibrium, because they reasoned that whenever the economy temporarily moved away from the full employment level, forces are generated to restore the economy back to the full employment equilibrium. This argument rests on what we call the Say's law of markets. Thus, if wages are flexible, then any sizeable amount of unemployment in the economy will force wage rates down as workers compete for jobs. These lower wages create a demand for more workers, which will ultimately result in restoration of full employment, though at a lower wage rate.

Now, if the work force is fully employed, then by definition it is producing the maximum it can, and cannot produce any more. This sets a maximum on the number of transactions taking place in the economy. On the other hand, Say's law will not let transactions fall below the maximum level. The classical quantity theorists thus thought of transactions as moving along the growth path of the economy and becoming larger and larger as economic growth occurred.

The consequence of the above view would be that if M and V are held constant, then price level will fall only if T rises because of economic development. If only V is held constant then P can remain unchanged in the long run only if the quantity of M grows at the same rate as T ; otherwise if M grows at a faster rate than T , then there will be inflation.

In the short run, it was recognised by the classical quantity theorists that the economy does not always operate at full employment. This period, also known as transition period, is one when a change in money supply might affect both the price level and the volume of transactions. This is because it takes time for the adjustment process to occur and finally lead to restoration of full employment.

Velocity (V): The most fundamental assumption of classical quantity theorists was that velocity and money are independent of each other. Had this assumption not been made, then a change in M would cause a change in V ; the two will affect each other without affecting the right-hand side of the equation at all.

Also, the quantity theorists concluded that velocity of money circulation is stable, because velocity mainly depends upon payments mechanism and spending habits (although there might be other factors such as population density and physical means of transporting money), which are reasonably stable and predictable.

The above analysis led to the conclusion that if velocity is stable and predictable, if money and velocity are independent, and if Say's law of market results in full employment equilibrium in the long run, then it follows that the price level and the quantity of money will tend to move in the same direction. However, it should not be inferred that money and prices are necessarily proportional. This is because even in the long run the volume of transactions (T) will grow due to economic development, and V is also likely to drift.

Since the quantity theory tells us that prices and money supply tend to move in the same direction, thus a cure for inflation is to decrease the quantity of money. Similarly, in a period of deflation, it would be appropriate to increase the money supply.

Self - Check Exercise

Q.1 Define velocity of money

Q.2 Explain Fisher's equation of exchange.

1.2.5 CASH BALANCE APPROACH (CAMBRIDGE APPROACH)

Cash balance approach to the quantity theory has been worked out as an alternative and a better explanation of the mechanism and determination of the value of money. With slight variations in working out the details the theory has had illustrious names of Alfred Marshall, A.C. Pigou, Frederic Maitland, Denis Robertson and J.M. Keynes as its originators and protagonists. As these names are connected with Cambridge University, the theory expressed in the term of behaviouristic equation is labelled as Cambridge equation or Cambridge version of the quantity theory. In analysing the demand for money, the theory emphasizes the demand to hold money as demand for cash balances. Hence its title as the cash balance approach.

This theory applies the usual demand and supply apparatus to determine the value of money. The Cambridge economists define and take the supply of money in the Fisherian way of currency plus the deposit money with the bank. Nothing new is added. The uniqueness of the Cambridge approach is the application of general demand analysis to the special case of money : what is its utility and what is its opportunity cost and under what budget constraint must it be demanded ?

The classical explanation of demand for money as a medium of exchange is accepted. But something else is added. Money is also demanded as security against an uncertain future like unforeseen contingencies involving expenditure against irregular and uncertain future income. Thus, the present income and resources are not entirely spent on current obligation. Some cash is simply held for a future use. Utility of money is, therefore, both as a medium of exchange and as a security against future. Urgency of these needs decides this psychological yield on money. Marginal yield shall be, of course, lower, the larger is the quantity of money held.

The amount of cash held (given the desire to hold it emanating from its utility) depends upon the available resources and opportunity cost of their use. There is a difference of opinion among the Cambridge economists as to what constitutes the resources which act as budget constraint. Marshall takes both income and wealth (property) as the source out of which a proportion is demanded as money. He takes a concrete illustration of an economy whose income is 5 million quarter of wheat and whose property is 25 million quarter of wheat. If the money is kept as one tenth of income and one fiftieth part of wealth as ready purchasing power then the aggregate value of currency of the country shall be one million quarters of wheat. Other Cambridge economists are also not of one opinion on this matter. Keynes in his Tract on Monetary Reform tells us that

the people's desired amount of purchasing power depends partly on their habits. In the same writing he approvingly quotes Marshall where both wealth and income are taken as resources. Keynes in his "A Treatise on Money" criticised Pigou's interpretation of wealth as resources and said it were rather current income. We may say that Cambridge economists are not united on the definition of resources (or the budget constraint) for the demand for money but generally they take income and wealth as the resources.

Given the utility and the budget constraint, the demand for money depends on its opportunity cost (in relation to the utility). There are certain differences in details but the Cambridge economists believe the cost of money to be held is (i) the rate of interest foregone on possible financial investment (ii) the yield on real capital! which could have been earned if money were instead invested and (iii) the expected rate of inflation which shall decide the inducement to hold cash or commodities depending upon whether prices are expected to fall or rise in the future. Other factors have also been mentioned as influencing demand for money, like habits, system of payments, and so on. These institutional factors have already been dwelt upon by Fisher.

Thus, the demand for money depends on seven broad factors :-

- 1.3 Income [money income] say P_y $\left[y = \frac{Y}{P} \right]$
- 1.4 Wealth, say, W
- 1.5 Nominal rate of interest say, i
- 1.6 Yield on real capital, say r_k
- 1.7 Yield on commodities, say r_c
- 1.8 Utility of money, say U
- 1.9 Institutional factors, say X

We may, therefore, write the generalised demand function for money as

$$M_d = f(W, P_y, i, U, X)$$

The Cambridge Equation

Prof. A. C. Pigou tried to put the demand for money idea into the form of an equation. It can then be used to predict the price level or the value of money. It can be compared to Fisherian equation as well.

Prof. Pigou has taken three main factors as influencing demand, namely R the resources, r_k and r_c

$$\text{Thus } M = f(R, r_k, r_c)$$

Then he states that r_k and r_c are constants (in fact it means the expected yield on capital and the expected rate of inflation, hence expectations are held constant). This

means r_k and r_c give a constant proportion of R which is termed as k . Assuming that no economies are involved if more money balances are held, the equation or a specific form of the above function is obtained as :

$$M_d = kR$$

Now in order to compare his ideas with Fisher he assumed that R (the resources) had some relationship to Py or PT

$$M_d = kPT$$

$M_d = kPy$ is the Cambridge equation in income terms.

It must be remembered that any change in r_k and r_c shall change M_d but from the above equation k is easily seen as a fraction or proportion of money income P (or say PT) which people desire to hold as cash balances.

The analytical implication should be made clear now. In an equilibrium situation demand for money (M_d) and money supply (M_s) must be equal. If from an initial equilibrium position, money supply is increased then either k or Py must increase. This means either people change their desire and begin to hold more money as cash balances (i.e., they change their expectations from r_k & r_c that way) or prices must increase. With given constant k , an increase in M_s must result in the increase in the price level. Thus, as a price level theory we may put the equation finally as $M = k Py$.

More generally, price level (or the value of money) depends upon the level of real output, the stock of money and the fraction of money income held in money form.

1.2.6 Comparison of Fisherian Approach and the Cambridge Approach

Like the equation of exchange, the Cambridge equation is also an identity. In fact, in a strictly mathematical sense, it is the same identity. But there are important differences between the two, as we will discuss now :

The equation of exchange is :-

$$MV = PT \dots\dots\dots (1)$$

or
$$M = \frac{PT}{V} \dots\dots\dots (2)$$

or
$$M = \frac{1}{V} \cdot PT \dots\dots\dots (3)$$

if we put $\frac{1}{V} = k$, then

$$M = kPT \dots\dots\dots (4)$$

[4] is the Cambridge equation.

Mathematically, of course, (1) and (4) are the same equations. But in terms of

economic analysis there are two substantial differences between these two equations. The first difference is that V in equation (1) denotes velocity, i.e., how many times per year the money supply turns over in order to accommodate the sales volume.

In equation (4) k , which is the reciprocal of V (i.e. $\frac{1}{k} = V$), will then denote that fraction of the annual sales volume which is held in the form of cash balances. Thus, whereas the transaction velocity approach asks the question, why do people SPEND money, the cash balance asks the question, why do people HOLD money.

The second significant economic difference between the equation of exchange and the Cambridge equation is that whereas V is on the left-hand side of the former equation, k is on the right hand side of the latter. Mathematically, this may be no difference at all, but in terms of economic analysis, the Cambridge version suggests a different approach in $M = kPT$.

The left-hand side of this equation is simply the supply of money. The right-hand side is that fraction of the annual sales volume in the economy which people are holding in the form of cash balances. It is, thus, the demand for money. This equation can be used to analyse the role played by the quantity of money in the economy. If quantity of money (M) is increased, it will cause PT to rise. If transactions T are at or near their maximum because of full employment, then most of the rise in PT will be caused by a rising P .

Self - Check Exercise

Q.1 How will you derive the Cambridge equation from Fisher's equation of exchange?

1.2.7 Criticism of Quantity Theory:

The traditional quantity theory came under severe criticism following the publication of Keynes General Theory. The criticisms focused on three issues.

(i) The empirical behaviour of k (or V): The quantity theorists generally concluded that V would be relatively stable since it depends on payments mechanism, spending habits etc. The same reasoning was applied to k . However, with the development of income version of the theory, k could be tested empirically, and was not found to be stable. Thus, it was argued that the whole theoretical apparatus was invalid.

(ii) The assumption of full employment: The traditional quantity theory assumed that a capitalist economy had its long run equilibrium at full employment level. Thus, it was concluded that a change in M had its primary effect on P . But with the great depression of 1930s, and the publication of Keynes' General Theory, the quantity theory became irrelevant.

(iii) The independence of M and k (or V): Keynes analysis of the rate of interest established that an increase in M will cause k to increase (in the Cambridge version M

= kPy) and P_y would be unaffected. This was opposite of what the traditional quantity theorists established that an increase in M will leave k unaffected, but increase P_y .

However, students should not confuse criticism of the quantity theory with criticisms of the equation of exchange ($MV = PT$). The equation of exchange $MV = PT$ is an identity and must be true always. It is the BEHAVIOUR of the various elements that make up the equation (M, P, T, V) that come under criticism and NOT THE EQUATION ITSELF

1.2.8 Key Notes:

- i. Velocity of money: It is a measurement of the rate at which money is exchanged in an economy.
- ii. Normal Rate of Interest: The rate of interest that will prevail in the bonds market under normal conditions. It is in relation to this normal rate that the current rate is judged high or low.

1.2.9 Suggested Readings:

1. Dudley G. Lockett: Money and Banking
2. R.D. Gupta: Keynes and Post-Keynesian Economics

1.2.9 Questions for Practice

1. Critically examine Fisher's Transactions Velocity Approach.
2. Discuss the Cambridge cash Balance version of Quantity theory of Money.
3. Compare the Cambridge and Fisherian approaches to Quantity Theory of Money.
4. Why is velocity considered to be stable in Fisher's version of Quantity Theory
5. Give the criticism of Quantity Theory of Money.

M.A. (ECONOMICS) SEMESTER-III

PAPER - ECO-304-305 (OPTION - III)

MONEY AND BANKING

LESSON NO. 1.3

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KEYNESIAN THEORY OF MONEY & CONTRIBUTION OF TOBIN

1.3.1 Introduction

1.3.2 Objectives

1.3.3 Keynesian Model

1.3.3.1 Price level and the Money Supply

1.3.4 Evaluation

1.3.5 Contribution of Tobin

1.3.6 Key Concepts

1.3.7 Suggested Readings

1.3.8 Questions for practice

1.3.1 Introduction

J.M. Keynes brought a revolution in Macroeconomics through his book "The General Theory of Employment, Interest and Money". His analysis of the behaviour of the economy threw new light on old conclusions, brought new answers to old questions and also developed new ideas mainly concerned with the determination of an equilibrium level of income, output and employment in the economy which are also very useful for studying the changes in the value of money or the price level.

Prices may be thought of as a link between money income and the real income. Price level will continue to remain stable if money income and real income change at the same rate. But if money income grows more than the real income, price level will rise and if money income falls faster than the real income, price level will fall too. Now money income is determined by the volume of spending. Higher expenditure by someone in the economy means, a naturally, higher money income to some other person in the economy. Income (i.e., money income) and spending are the same thing viewed from two different points.

1.3.2 Objectives

The objective of the lesson is to familiarize the student with the transmission mechanism through which a change in money supply effects the price level. Keynes has argued that the relation between supply of money and price level is not direct and rate of interest has an important role of play in it. Further, the contribution of Tobin and his theory of liquidity preference has also been discussed.

1.3.3 KEYNESIAN MODEL

In the simple Keynesian model aggregate expenditure is composed of consumption expenditure and the investment expenditure. Consumption expenditure mainly depends upon the level of income although many other influencing factors are

recognised. Similarly, investment expenditure depends mainly on the rate of interest although many other factors do affect it. Thus, we can have the consumption function relating the level of interest to the level of investment. Consumption and the investment curves are the geometrical counterparts of the above relations. The shift in these curves depends upon the influencing factors like the expectations in the case of investment function, and the Govt.'s taxation policy in the case of consumption function. The sphere of these curves and the elasticities depends upon the various propensities of the general habits of the people expressed in a uniform behaviour. The rate of interest that determines the level of investment is itself determined by the demand and supply of money. Given the supply of money, it is the demand for money that alone determines the rate of interest. The demand for money is composed of (i) precautionary demand to save and have money for a rainy day (ii) transactions demand to have cash for discharging day to day economic transactions, of sale and purchase of goods (iii) and speculative demand to have money for buying financial assets, mainly shares and securities in the hope that rate of interest shall change thereby changing the value of these assets. Given a level of income, money is demanded more or less for the speculative purpose only. Thus, the demand for money is related directly-to the rate of interest only, and given a fixed level of money supply, rate of interest is directly determined.

Now, an equilibrium level of income in an economy is that where aggregate expenditure made up of consumption and investment expenditure, is exactly equal to the income or output which is measured by the number of persons employed, multiplied by their average productivity. Productivity of labour is given by long term technological factors. And the number employed itself depends on the aggregate demand or the demand for consumption and investment goods which again means consumption and investment expenditure. Thus, ultimately income, output, employment, consumption, investment, rate of interest and demand for money are inter-related and mutually determined.

An analysis of these relationships shows that the equilibrium level of income, output and employment may not be the full-employment level. There can, thus, be the possibility of under employment, acute unemployment or full employment. The condition of equilibrium flowing from the requirement of aggregate income is that the shortfall of consumption (amount of saving) be filled up (or must be equal to) by the expenditure on investment in the economy. Underemployment equilibrium implies that at full employment level of income the amount people save is more than the investment expenditure that they are prepared to make. Hence, income and employment have to come down to a level where the desired savings are exactly equal to the desired investment or where expenditure is exactly equal to total income.

There are many complications in the simple Keynesian model which we have not pointed out and discussed. Besides, there is a more comprehensive Keynesian model where rate of interest is purely a monetary phenomenon nor consumption purely dependent on income. There are also extensions of Keynesian model that incorporate government and export and import sectors too. Our purpose here is not to explain at length the Keynesian system as such, but simply to refresh it in the minds of the students so that the value of money can be better explained in the Keynesian system and it may be contrasted and compared with the explanation as given in the quantity theory. In the course of our explanations, where necessary, we shall point out the underlying assumptions, details and complications in the functional relationship that Keynes has put forward in his model of the economy.

1.3.3.1 Price Level and the Money Supply

We have seen above that changes in the price level flow from the difference in the rates

of change between money income or real output. Money income can be influenced only through effective demand. Hence, we should analyse the influence of money supply on aggregate demand. Next we should see the influence of changed effective demand on the real output.

Before we analyse the effect of increased or decreased money supply on effective demand let us see how can the government increase the money supply. There can be two ways :

(a) The government may spend more than its revenue or may simply increase its expenditure than previously. Increased money expenditure may be financed by printing and issuing of more notes and coins or the government may borrow from the banking system. The new government expenditure directly becomes the income of some people, say contractors, manufacturers and suppliers and government employees. This increases the money income in the economy forthwith.

(b) Supply of money can also be increased by "open market operations" or by a reduction in the bank rate. A reduction in the bank rate means for practical purpose a general reduction in the structure of rates of interest and inducement to borrowers to borrow more from the banks and thereby an increase in the credit money created by banks. Government can increase money supply by purchasing securities from the banks and paying them currency which again comes through more printing of notes and issue of coins. These operations of the government to increase (change) the quantity of money collectively are known as monetary policy.

If money supply is increased through monetary policy additional money is in the form of new or increased bank deposits. They do not become money income immediately.

An increased money supply normally should lead to a fall in the rate of interest given the demand curve for the money. But Keynesian demand schedule of money is depicted as being parallel to the X-axis at a certain rate of interest which may be termed the floor rate. At this rate the demand for money is unlimited or there is infinite demand for liquid money or cash. An increased money supply is simply absorbed by the people who are already willing to hold additional cash balances. In figure I, an increase of money supply from M_0 to M_1 does not lead to any decrease in the rate of interest as depicted by horizontal or perfectly elastic portion of the liquidity preference curve termed as "Liquidity trap". Hence, it is the floor rate of interest. (r_f)

Gail E. Makinen believes that this happens in the case of 'deep unemployment'.

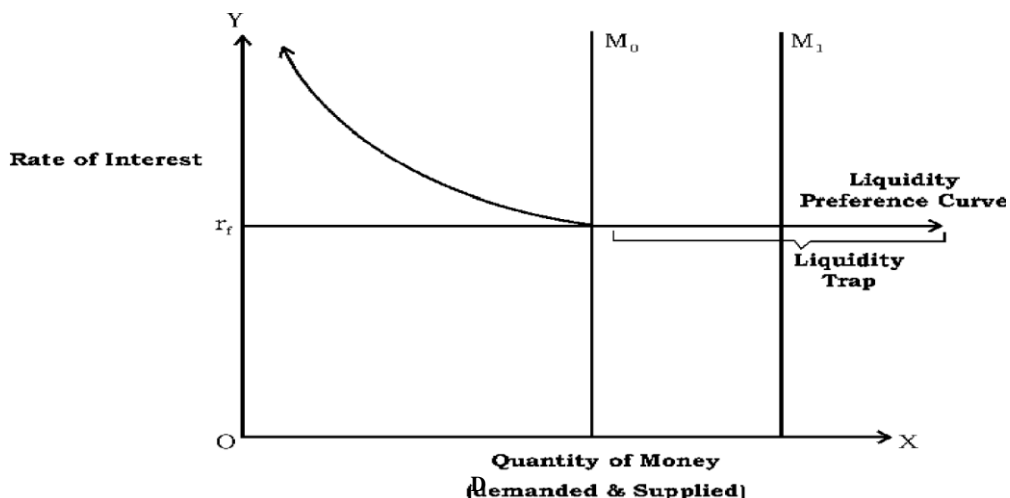
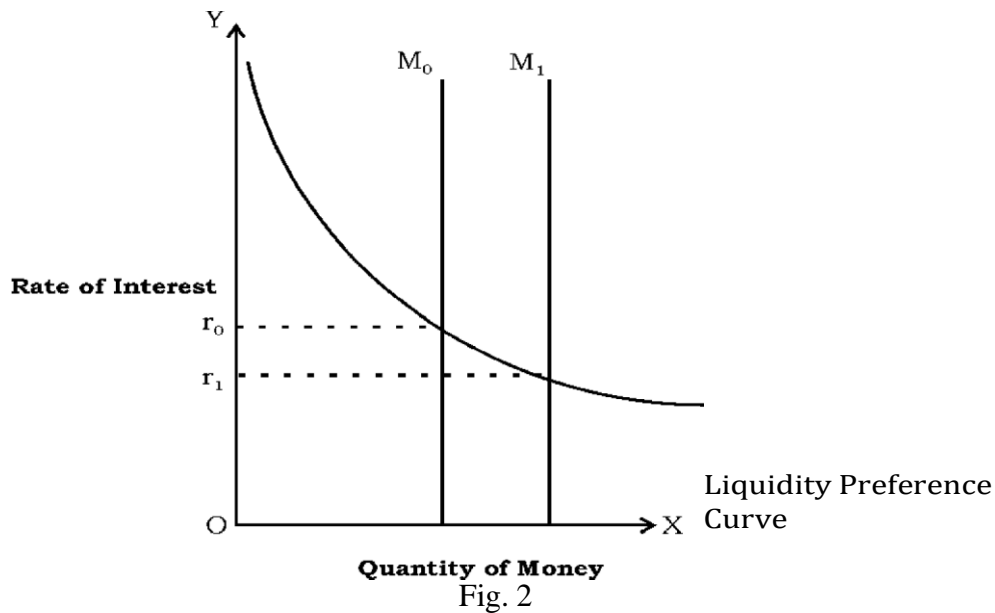


Fig. 1

People do not want to invest money, they simply hold on to it. Alternatively, one could say that people are ready to surrender unlimited quantities of bonds or money at the price indicated by the market rate of interest. Thus, increase of money supply from M_0 to M_1 or a further increase in M shall not alter the rate of interest. There will be no effect on investment demand, and increased money supply shall not become money expenditure or money income. In this case, there is no influence on price level whatsoever. Change in money supply remains confined to monetary sector. It does not transfer itself to the real sector of transaction in consumption and investment goods whose prices are actually reflective of the value of money.

“Liquidity trap” position is a special case but very much possible. Let us suppose the normal course where increase in money supply leads to a fall in the rate of interest as depicted in the diagram 2 below :-



With the increase of money supply from M_0 to M_1 the rate of interest falls to r_1 from the original position of r_0 . Now a fall in the rate or interest should normally lead to an increase in the investment demand function. But the important question should be the degree of response of investment expenditures to changes in the rate of interest. This is called the interest-elasticity of the investment demand schedule. Because of greater emphasis on self-financing or a plough back of earned profits and because of increasing progression of tax of company incomes, many people believe that the investment demand schedule is a highly inelastic schedule especially at lower rates of interest.

Thus, a substantial decrease in the rate of interest from the monetary sector may not appreciably change the investment demand. This is shown in figure 3.

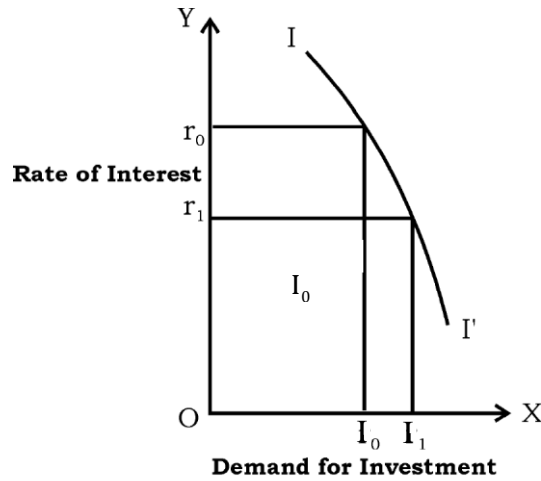


Fig. 3

A substantial decrease of rate of investment from r_0 to r_1 causes only a small increase in the demand for investment from I_0 to I_1 . The direct 'interest-incentive' effect is not very strong here. It is possible, therefore, that even with increase in money supply, money income is increased very little or not at all. This is one of the major differences found between Keynesian and the quantity theory analyses. Under Keynesian theory, because of liquidity trap or interest inelasticity of the investment demand schedule the link between price level and the money supply is broken at the primary stage itself. This is, of course, only one of the possibilities. But analytically it is very important. It shows as a very first step how price level is affected by money supply. The impact and the degree of the impact depends on the interest elasticity of the liquidity preference curve and investment demand curve. We may, therefore, state as Prof. A.H. Hansen interprets Keynes that the price level is affected, by the elasticity of aggregate demand in response to changes in quantity of money. The quantity theory conclusion of direct proportional effect of the quantity of money on price level is at once and easily rejected.

Professor Milton Friedman has stated that the influence of money on economic activity consists of three different effects. One is the liquidity effect which we have discussed above. Liquidity effect is felt only on the rate of interest. Second is income effect which consists of impact of (lower) rate of interest on expenditures and income and their backward effect on rate of interest itself. We have discussed yet only initial income effect as expressed in the investment demand schedule. Friedman lists price expectation effect as the third effect which he believes Keynes and Keynesian economists have ignored. Let us now take the secondary effects after the liquidity effect.

Let us suppose the economy is not working under the liquidity trap nor is the investment demand schedule very inelastic. According to the analysis already developed, an increase in money supply will lead to a lower rate of interest and thereby a higher level of the demand for investment. Keynes has examined in detail this aspect by examining the effect of changes in aggregate demand on output on one side and on prices on the other. We have to consider the elasticities of supply at different output levels.

Keynes analyses the phenomenon by going to the very basis of the price level. This, he says, depends on the wage rates (and remuneration to other factors) and the scale of output as a whole. Wage rates are taken as proxy for all factor costs because other costs move, more or less, in proportion to the changes in the wage costs. Thus, changes in quantity of money working through aggregate demand affect the prices through the effect on wage rates and on output.

As the aggregate demand increases it may lead to an increase in output depending upon the elasticity of supply or output curve. If the elasticity of supply is zero, that is output cannot be increased at all, then the marginal costs and prices would not rise and the real output would rise. But this would not happen if law of diminishing returns operates so that costs rise with an increase in output. Thus, the change in price level depends upon the elasticity of output and wage rates. Quantity theory relationship is only one limiting case of the general relationship between aggregate demand and the supply output. But we should remember that, as explained above, Keynes does not say that aggregate demand shall rise in proportion to the increase in the quantity of money.

We have been talking of aggregate supply as if the whole economy was one industry. This is not so. And elasticities of output are different for different industries. Now the direction of demand is also important. If increased demand is directed towards industries with high elasticity of output and employment in one case, and toward industries with lower elasticities in the other case then the same amount of increased demand has different effect for the economy as a whole.

If an industry has no surplus labour at all then increased demand shall raise only prices and wages and profits but not employment or output. In fact, prices may rise in exact proportion to the increase in the demand. From here we can generalise that in an economy where there is full increase in money supply, then the increased money supply

shall raise the price level in an exact proportion. Here again quantity theory explanation is depicted as one of a limiting case, not an impossible situation theoretically, but highly unlikely to occur actually.

The general conclusion of Keynes is that “supply price will increase as output from a given equipment is increased.” Both increased money wage rates and the law of diminishing returns are possible for it. But as long as there are unemployed resources in the country, “general level of prices will not rise very much as output increases.” Output elasticity shall be high in the case of underemployment of resources and labour shall not be in a strong bargaining position to have higher money wages. To the extent money wages do not rise and the prices rise, or the former rise less than the latter, there is a fall in the real wages. But if labour is not working under conditions of diminishing returns and output curve is very elastic then both wage rates and the price level would stay unchanged. This again is rather a limiting case on the other extreme. In such a limiting case (we had explained earlier too) where either due to liquidity trap or due to interest inelasticity of investment curve, aggregate demand and price do not change at all.

We may now conclude the discussion on price level under Keynesian system. Methodologically and analytically the increased money supply affects the price level or the value of money through its effect on aggregate demand. This effect works out through liquidity preference function and the investment demand function. Given a certain change in the demand or expenditure the impact on price level depends on the elasticity of supply or output curve and the elasticity of wages. In general, prices may increase with an increase in the quantity of money but there is “many a slip, between the cup and lip”. These slips relate to the elasticities of the liquidity function, investment proportional relationship between money and prices except under extreme case of rare possibility of full employment of all resources and of proportionate increase in demand due to increase of money supply. Value of money is, therefore, determined not by its supply alone but as a part of the working of the economic system and as a result of action and interaction of various behaviours and institutional relationships. Keynes, in fact, avoids any exact or definite equation that may determine the price level.

Self - Check Exercise

What is the effect of an increase in money supply on the rate of interest and investment? Depict this with the help of a diagram also.

1.3.4 Evaluation

Theory of money and prices, under Keynes, is a part of his macro-economic system. He introduces the concepts of elasticities within the theory of money, a dimension which quantity theorists had completely neglected. In this way Keynes brings the theory of money nearer the theory of value.

Although his macro theory is the theory of aggregates but in his theory of value of money he has clearly stated that employment is not simply a function of change in the aggregate demand. Quite a lot depends on what happens to the individual industries- and the direction of the change in the demand.

Liquidity demand for money and liquidity trap are his singular contribution to theory of money and prices. He has very carefully examined the motives that lead to demand for holding cash balances and it is primarily on the basis of this analysis that he is able to smash the proportionality thesis of the quantity theorists.

The conclusions of Keynes are also more realistic because his theory is more comprehensive. It is often alleged that Keynesian analysis confines itself to the situation of underemployment but in this theory of prices he clearly discusses the situation of acute depression, full employment and general employment. In fact, Keynes presents Keynesian theory of prices separately in each of three situations. Keynes is able to show that quantity theory analysis is only a special case, an improbable one of the general relationship that determines the value of money.

But Keynes is not without his critics and recently many extensions of his analysis are put forward by those who claim to be Keynesian. On the other hand, many have cast serious doubts on his analysis and conclusions. Some economists have tried to extend Keynesian analysis by making transaction demand for money depend on rate of interest also. New definition of money is sought to include the time deposits also, though this blurs the definition of liquidity as given by Keynes.

Prof. Friedman has criticized Keynes on the ground that he confines himself to liquidity effect while income and price expectation effect are neglected. Keynesians refute this charge. We shall have better appreciation of Keynes when we discuss Friedman's theory.

1.3.5 CONTRIBUTION OF TOBIN

1.3.5.1 INTRODUCTION

Tobin demonstrated that the criticism raised against the Keynesian theory (regarding the speculative demand for money) could be overcome merely by using a more sophisticated analysis. Tobin, like Keynes, established a universal relationship between the demand for cash and the rate of interest, but unlike Keynes, he did not use the highly unrealistic assumption that individuals keep their financial assets either in bonds or only in money.

The Liquidity Preference Theory of interest rate determination as given by Keynes provided an aggregate Demand Function for money balances involving an inverse relationship between the interest rate and money demand. In Keynesian analysis every individual would want to hold all of his speculative wealth either in money, expecting bond prices to fall, or in bonds, expecting bond prices to rise, never part in each.

But this kind of behaviour is reasonable only if individuals feel certain regarding the future path of movement of the interest rate (bond prices). However, we all know that in the real world individuals cannot hold expectations about the future with certainty. The presence of this uncertainty regarding future prompts individuals to hold wealth in both money and securities. In other words, an individual diversifies his portfolio.

James Tobin, in his article, "Liquidity Preference as Behaviour Towards Risk", published in the Review of Economic Studies (February, 1958) explained uncertainty in subjective terms of risk involved in the exercise of different investment options by the investors. He thus transformed Keynes' Liquidity Preference Theory from a theory of uncertainty to a theory of risk.

We are well aware of the theory of the speculative demand for money as developed by Keynes. No doubt, his theory was a radical departure from the orthodox theory of his days but it did not go unchallenged. One of the criticisms raised against this theory was that the speculative demand for money derived by Keynes was dependent upon the difference between the current rate of interest and normal rate of interest, and if the current rate of interest were to remain constant for sufficiently long period of time, the difference between the two rates of interest would disappear, and so would the speculative demand for money. Secondly, it was argued that empirical evidence showed that individuals do not keep their financial assets in either bonds or money, but in some combination of the two. It was James Tobin who demonstrated that these two criticisms can be overcome. According to Tobin, "What needs to be explained is not only the existence of demand for cash when its yield is less than the yield on alternative assets, but an inverse relationship between the aggregate demand for cash and the

size of this differential in yields.”

1.3.5.2 Tobin's Theory of Liquidity Preference

Tobin has demonstrated in his analysis that an individual behaving rationally would hold a portfolio comprising both bonds and money, unlike in Keynesian analysis where an individual was motivated to hold either bonds or money.

We assume that at the beginning of some period an individual has a given portfolio of size W . It is also assumed that the individual prefers more wealth to less and because of this, he is faced with the problem of deciding what fraction of his portfolio should be placed in consols (which is the only type of bond assumed available) and what fraction in money. Now according to Keynes, this led to either all money or all consols being held because the individual was very certain about the value of the future rate of interest. But according to Tobin, a wealth holder is uncertain about the rate of interest, so that after many years, his average capital gain is zero, whereas the expected capital gain or loss may be zero, it is likely that in any given period a capital loss or gain will occur and the extent to which it does is determined by the amount of uncertainty associated with the future rate of interest. Tobin showed that for a given uncertainty concerning future rate of interest, as greater proportion of the wealth holder's portfolio is placed in consols, the individual assumes greater risk.

Accordingly, when a wealth holder places his entire portfolio in consols, he is maximising his expected growth of wealth, but at the same time he is also assuming the maximum risk of a possible capital loss or gain. On the other hand, if he holds all his wealth in the form of money/cash, he has a portfolio with zero risk and zero growth. We assume that the wealth holder is a risk averter rather than a risk lover, i.e., he prefers less risk to more at a given rate of return. In other words, he will not be satisfied to accept more risk unless he can also expect greater return. Thus, his decision as to what fraction of his portfolio should be placed in consols hinges upon his attitude towards the trade off between certainty with no growth and risk with growth.

The individual's attitude towards risk and portfolio growth is depicted in Figure 4.1, where we have used indifference curves. Indifference curve I_2 is preferred to I_1 , and I_1 is preferred to I_0 . On the vertical axis is measured the expected value of the portfolio at the end of the time period in question and the horizontal axis measures the amount of portfolio risk. Increasing portfolio risk means that an increasing fraction of the portfolio is being held in consols and less in money. The slope of the indifference curve is positive as a result of our assumption that: for a given level of wealth at the end of the period, increased risk is not desired; and for a given level of portfolio risk, greater growth of wealth is preferred.

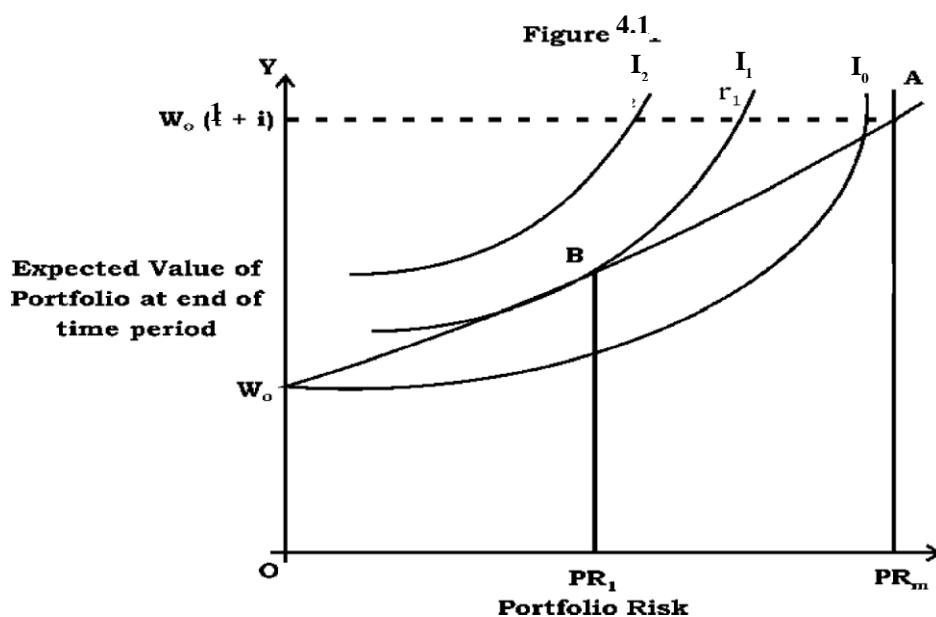
The reason why the curves are drawn concave from above, is due to the assumption that as the wealth of the individual increases the marginal utility of wealth declines and

hence he will be less willing to bear greater risk to increase his stock of wealth.

If an individual does not take any risk at all and keeps all his initial stock of money W_0 in money, at the end of the time period his stock of wealth will remain at W_0 only. He remains on indifference curve I_0 as before, so his welfare also remains constant. And if he places all his wealth in consols, then his expected wealth at the end of the time period will be $W_0 (1 + i)$ where i indicates the rate of return on consols. However, the expected wealth is not what he will have at the end of his time period, rather it will be what his average wealth would be at the end of many similar time periods. The wealth holder, since he is a risk averter, considers the marginal utility of a rupee's worth of capital gain to be worth less than the absolute value of the marginal disutility of a rupee's worth of capital loss.

For a given amount of uncertainty about the future rate of interest, the maximum amount of risk occurs when all wealth is in the form of consols. This is shown by PR_m in the diagram. For a given interest rate, the expected gain in wealth from all possible portfolio combinations between holding only money (W_0) and holding only consols (A) can be represented by the straight line drawn between points W_0 and A. We can call this line as the budget constraint line. The wealth holder wants to obtain the highest level of indifference subject to the constraint of budget line W_0A . This is achieved at point B and here the portfolio of the wealth holder is diversified between money and consols.

We can analyse the effect that varying the rate of interest will have on the individual wealth holder's portfolio. This is done in figure, 4.2.



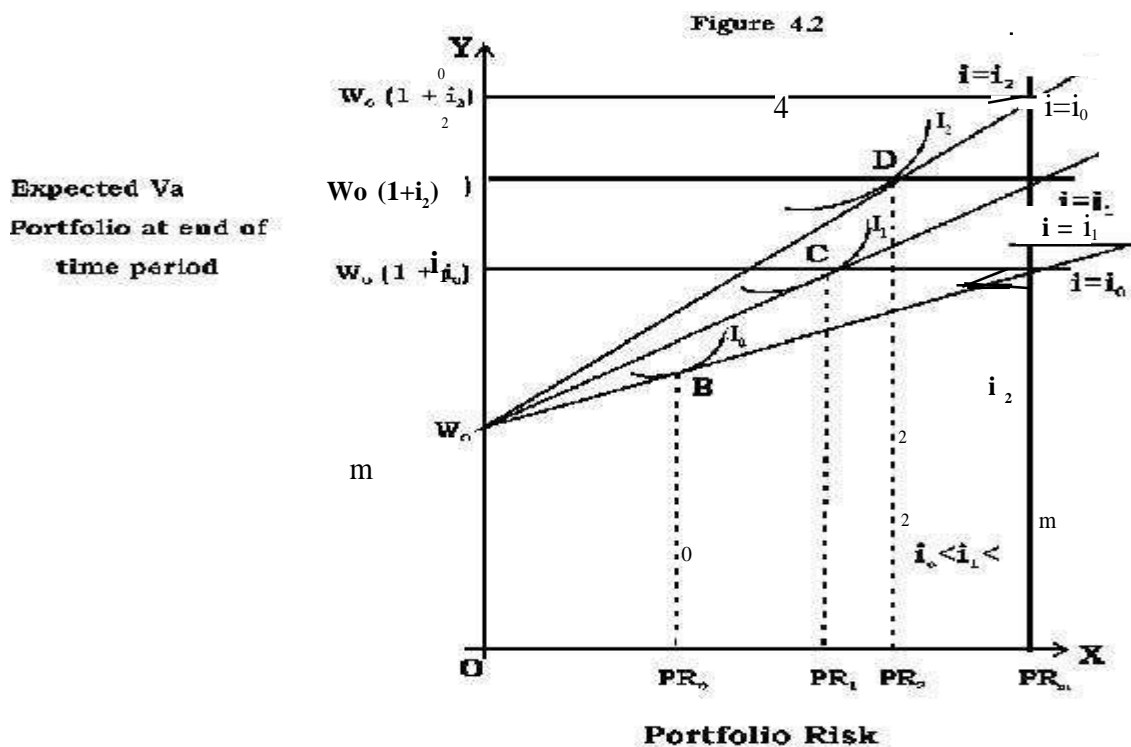
We assume the same original endowment of wealth (W_0) and the same uncertainty about the future rate of interest as before, thus giving the maximum portfolio risk of PR_m . The vertical intercept of budget constraint line is W_0A and its slope is given by.

$$\frac{W_0 (1+i) - W_0}{PR_m} = \frac{iW_0}{PR_m}$$

Now, W_0 and PR_m are constants, hence the slope of the budget constraint line will increase as i increases (i is the rate of interest expected to be paid on consols)

We draw in figure 4.2 three budget constraint lines for three different rates of interest i_0 , i_1 and i_2 . When we increase the rate of interest from i_0 to i_1 and then i_2 the individual wealth holder maximizing utility moves from point B to C to D as his welfare increases. The increase in welfare is obviously accompanied by increase in portfolio risk. Thus, as interest rate rises, the wealth holder's demand for money falls. The liquidity preference curve will be a continuous downward sloping curve as shown in figure 4.3.

Tobin thus believed that his theory is essentially the original Keynesian explanation. However, Fred R. Glahe feels that everything is not as simple as depicted above. He says that if the portfolio risk decreases as the rates of interest rise, then the liquidity preference curve will be upward sloping. Now which of these conditions, both of which are consistent with the theory, is best, can be determined only by empirical research. Since many studies have been made to measure the interest elasticity of demand and money and all of them have concluded that the aggregated liquidity preference curve is negatively sloped, thus we can safely conclude that most individuals have downward sloping liquidity preference curves.



Tobin's theory is not limited to the simple case discussed above. It can be extended to cover the problem of asset choice when there are more than two alternatives.

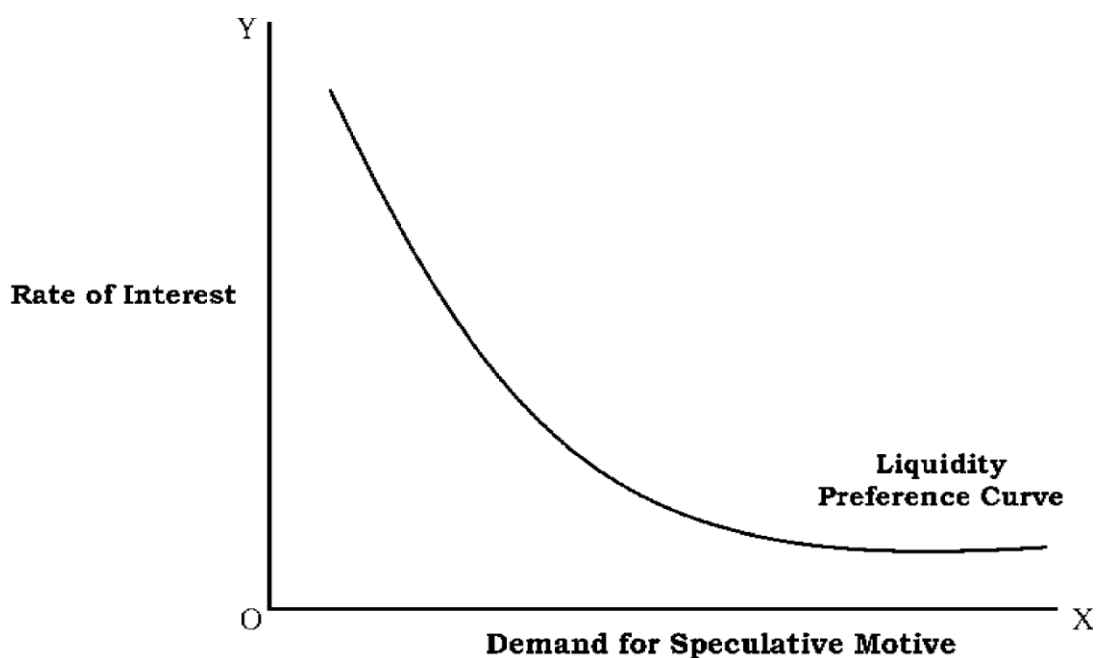


Fig. 4.3

1.3.5.3 Concluding Remarks

The theory as given by Tobin has been shown to provide a basis for liquidity preference and for an inverse relationship between the demand and cash and the rate of interest. This theory does not depend on inelasticity of expectation of future interest rates, but can proceed from the assumption that the expected value of capital gain or loss from holding interest-bearing asset is always zero. In this respect, it is a logically more satisfactory foundation for liquidity preference than the Keynesian theory. Moreover, it has the empirical advantage of explaining diversification that the same individual holds both cash and consols, while the Keynesian theory implies that each investor will hold only one asset-either cash or consols.

The theory is, however, somewhat ambiguous concerning the direction of relationship between the rate of interest and the demand for cash. For low interest rates, the theory implies a negative elasticity of demand and larger in absolute value as the rate approaches zero. This implication is in accord with the usual assumptions about liquidity preference. But for high interest rates, and especially for individuals whose estimates of the risk of capital gain or loss on consols are low, the demand for cash may be an increasing, rather than decreasing- function of the interest rate. However, the force of this reversal of direction is diluted by recognition that the size of investment balance is not independent of the current rate of interest. An increase in the rate of interest may lead an investor to desire to shift towards cash, but to the extent that the increase in interest also reduces the values of the investor's consol holdings, it automatically gratifies this desire, at least in part.

1.3.6 Key Concepts:

- i. Precautionary Demand for Money: The amount of money demanded for meeting unforeseen increases in expenditures or delays in payments.
- ii. Speculative Demand for Money: Money demanded by the speculators to speculate in bonds so as to make capital gains by buying bonds when their prices fall and selling them when their prices rise.
- iii. Transaction Demand for Money: Money held to meet day-to-day or current transactions.

1.3.7 Suggested Readings:

- i. R.D. Gupta: Keynes and Post- Keynesian Economics.
- ii. Fred R. Glahe: Macroeconomics
- iii. Suraj B. Gupta: Monetary Economics: Theory Institutions and Policy
- iv. Fred R. Glahe: Macroeconomics
- v. R.D. Gupta: Keynes and Post- Keynesian Economics.

1.3.8 Questions for Practice:

- i. Critically examine Keynes theory of money and prices.
- ii. Give the impact on rate of interest and investment when the supply of money increases.
- iii. What do you understand by liquidity trap?
- iv. What is demand for money for 'precautionary motive'?
- v. Examine Tobin's Theory of Liquidity Preference. How is it an improvement over the Keynesian Theory?
- vi. What is the effect on the slope of the budget line as rate of interest increases?

**MODERN QUANTITY THEORY OF MONEY
(FRIEDMAN'S RESTATEMENT OF THE QUANTITY THEORY)**

- 1.4.1 Introduction
- 1.4.2 Objectives
- 1.4.3 Friedman's Restatement
- 1.4.4 Special Features of Friedman's Theory
- 1.4.5 Critique of the New Quantity Theory
- 1.4.6 Comparison of Quantity theory with Keynesian Theory of Money and Prices.
- 1.4.7 Summary
- 1.4.8 Key Concepts
- 1.4.9 Suggested Readings
- 1.4.10 Questions for practice

1.4.1 INTRODUCTION

The Classical Quantity Theory of Money and Prices was strongly criticized by J.M. Keynes. His criticism was mainly based upon two points. In the first place, he pointed out that the assumption of constant velocity of money was unrealistic. Keynes and his followers were able to demonstrate that the velocity of money in a real-world economy fluctuates and sometimes fluctuates violently. Secondly, he also pointed out that change in the price level is not a direct one but it comes about indirectly through changes in the rate of interest. In consequence of the Keynesian criticism the Classical Quantity Theory had come under a cloud like so much else of the classical and neo-classical economics. However, a very important and interesting development in the monetary theory has been the restatement of the Quantity Theory by Milton Friedman in his now famous paper, "The Quantity Theory of Money: A Restatement". In this paper, he has tried to rehabilitate the Quantity Theory of Money by making a distinction between the velocity of money and the velocity of money function. While he concedes the Keynesian contention of money being not constant and stable, he nevertheless, holds that the velocity of money function is much more stable than the Keynesian consumption function which is said to be the corner-stone of the Keynesian multiplier theory of income and employment.

1.4.2 Objectives

The objective of the lesson is to explain how Friedman arrives at what he describes as the velocity of money function which is, in fact, a type of money demand function and how he makes use of it to arrive at a conclusion similar to that of the Classical Quantity Theory.

Although Friedman's statement of the quantity theory can be presented as an alternative to the Keynesian model, yet, in a sense, it represents refinement of a trend which was started by Keynes. It is because Keynes was perhaps the first economist to approach the analysis of the demand for money in terms of the capital theory and Friedman's approach in his Restatement is along the same line of the capital theory.

1.4.3 FRIEDMAN'S RESTATEMENT

Friedman first analyses the individual household's demand for money in order to discover its determinants. He observes that the demand for money of a wealth owning

unit depends on the following factors:-

1.5 The total wealth of the wealth owning unit which is similar to the income or expenditure constraint of theory of consumer's demand; (B) the relative prices of the alternative assets in which wealth can be kept and relative yields from these alternative assets; (C) the preference scale of the wealth-owning unit. The usual neo-classical assumption of maximising behaviour is made which implies that the wealth-owning unit will distribute his total wealth among alternative types of assets in a manner so as to maximise its "utility" which, unlike in the case of a consumer, is not wholly subjective. Since money can be kept in various forms, the demand for money, according to Friedman, depends on these considerations.

- (A) According to Friedman, total wealth includes all sources of income or consumable services. The rate of interest expresses the relation between the stock which is wealth and the flow which is income. Thus, if Y is the total flow of income, and r, the interest rate, total wealth is

$$W = \frac{Y}{r}$$

As already mentioned, this wealth can be held in numerous forms, and the ultimate wealth owning unit is to be regarded as dividing his wealth among them so as to maximize utility. This implies that he will seek an apportionment of his wealth such that the rate at which he can substitute one form of wealth for another is equal to the rate at which he is just willing to do so. The rate at which one form can be substituted for another is then simply \$1.00 worth for \$1.00 worth, regardless of the forms involved. But then, the holding of one form of wealth instead of another involves a difference in the composition of the income stream. Thus, to describe fully the alternative combinations of forms of wealth available to an individual, we have to take into account not only their market prices, but also of the form and size of the income streams they yield.

Friedman has identified five different forms in which wealth can be held :

- (i) money (M), i.e. the claims or commodity units that are accepted in payment of debts at a fixed nominal value ;
 - (ii) bonds (B), i.e. claims to time streams of payments that are fixed in nominal units;
 - (iii) equities (E), i.e. claims to stated pro-rata shares of the returns of enterprises;
 - (iv) physical non-human goods (G);
 - (v) human capital (H).
- (B) Let us now consider the yield from each form.

- (i) Money (M) :- Although money can yield a return in the form of interest on demand deposits, yet Friedman chose to simplify his analysis by considering that money yields its returns solely in the form of convenience and security, the real magnitude of

this return thus depends on the volume of goods that unit (of money) corresponds to, i.e. on the general price level. This is designated by P.

(ii) Bonds (B) :- Let us suppose that \$1.00 worth of a bond yields r_b per year, where r_b is simply the coupon sum divided by the market price of the bond. So $1/r_b$ is the price of the bond promising to pay \$1.00 per year. Thus Friedman designated the market bond interest rate as r_b . However, in case of expected change in price, the yield must take into account the return in the form of expected appreciation or depreciation of the bond. The nominal income stream purchased for \$1.00 at time zero then can be written in a simplified manner as

$$r_b - \frac{1}{r_b} \cdot \frac{dr_b}{dt}$$

(iii) Equity (E) :- The standard unit of equity can be taken to be a claim to a perpetual income stream of constant 'real' amount. The nominal return to the holder of the equity can be regarded as taking three forms: the constant nominal amount the equity holder would receive per year in the absence of any change in P; the increment or decrement to this nominal amount to adjust for changes in P; and any change in the nominal price of the equity over time, which may arise from changes either in interest rates or in price levels.

Friedman defined r_e as the market interest rate on equities, so $\frac{1}{r_e}$ is the price of an equity promising to pay \$1.00 per year if the price level does not change, or to pay $\frac{P(t)}{P(0)} \cdot 1$ if the price level varies according to P(t).

The nominal stream purchased for \$1.00 at time zero can be written in a simplified manner as :

$$r_e + \frac{1}{P} \cdot \frac{dP}{dt} - \frac{1}{r_e} \cdot \frac{dr_e}{dt}$$

(iv) Physical goods (G) :- Physical goods yield on annual stream in kind rather than in money. This return depends on the behaviour of prices. Thus, at time zero,

$\frac{1}{P} \cdot \frac{dP}{dt}$ is the size of this nominal returns per \$1.00 of physical goods.

(v) Human Capital (H) :- In the present non-slave societies, there is only a limited market in human capital. Friedman opined that it was therefore, difficult to define in market prices the terms of substitution of human capital for other forms of capital. He was of the view that although there were some possibilities of substituting non-human capital for human capital in an individual's wealth holdings, but mainly,

shifts between human capital and other forms must take place through direct investment and disinvestment in the human agent. At any one point in time, according to Friedman, there is some division between human and non-human wealth in an individual's portfolio of assets. Let w be the ratio of non-human to human wealth, or equivalently of income from non-human wealth to income from human wealth. Thus, this variable needs to be taken into account so far as human wealth is concerned.

(C) The tastes and preferences of wealth owning units for the service streams arising from different forms of wealth must simply be taken for granted as determining the form of the demand function. Friedman considered that tastes are constant over significant stretches of space and time. However, he made allowance for some changes in tastes in so far as such changes are linked with objective circumstances.

Let us suppose u stands for any such variables that can be expected to affect tastes and preferences.

Friedman then combined (A), (B) and (C) to arrive at the following demand function for money :

$$M = f \left(P, r_b - \frac{1}{r_b} \frac{dr_b}{dt}; r_e + \frac{1}{P} \frac{dP}{dt} - \frac{1}{r_e} \frac{dr_e}{dt}; \frac{1}{P} \frac{dP}{dt}; W; \frac{Y}{r}; u \right)$$

In this function, Friedman then dropped r as an additional explicit variable, treating its influence as fully taken into account by the inclusion of r_b and r_e . He further simplified the function as :

$$M = f \left(P, r_b, r_e, \frac{1}{P} \cdot \frac{dP}{dt}, w, y, u \right) \dots \dots \dots (1)$$

Thus, according to Friedman, how much of its total wealth a wealth-owning unit will prefer to hold in the form of nominal cash balances depends on the variables mentioned within the brackets on the right-hand side of the above equation (1). It may be noted that Friedman's money demand function as given in equation (1) is a form of the liquidity preference function that Keynes had given.

It is interesting as well as important to note that Friedman's money demand function implies the absence of "money illusion" and, therefore, the wealth-owning units are assumed to be guided by the real values of the variables and not by the monetary values of the variables as such. An important result follows from it which is that a change in the monetary unit alone will not change the demand for real balances; however, it will change the demand for nominal balances in the same direction and the same proportion as the change in the monetary unit. In other words, Friedman's money demand function is homogeneous of the first degree in money prices and incomes. This means that if the monetary unit changes by a given proportion, say then Friedman's money demand function as contained in equation [1] above will take on the following form :

$$\lambda M = f \left(\lambda P, r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, \lambda Y, U \right) \dots\dots\dots (2)$$

If we put $\lambda = 1/P$, then equation (2) will be transformed as follows :

$$\frac{M}{P} = f \left\{ r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, \frac{Y}{P}, U \right\} \dots\dots\dots (3)$$

Now M/P is real balances. Therefore, equation (3) demonstrates what we have already stated above as a special attribute of Friedman’s money demand function, namely, the demand for real balance remains unaffected by a change in the monetary unit; it is determined by the real variables in the monetary unit which will change the demand for nominal money denoted by M in the same direction and in the same proportion.

If we put $\lambda = 1/Y$ in equation (2), we have

$$\frac{M}{Y} = f \left(r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, \frac{P}{Y}, U \right) \dots\dots\dots (4)$$

Which is but a form of the familiar quantity theory of money. How is it a form of Quantity Theory ? It can be demonstrated as follows :

We can rearrange equation (4) as

$$M = f \left(r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, P, U \right) \frac{P}{Y} \dots\dots\dots (5)$$

Which is similar to the Cambridge form of the Quantity Theory as expressed in the following equation :

$$M = kPY \dots\dots\dots (6)$$

Lest there should be any confusion, it should be remembered that Y in equation (5) and equation (6) does not denote the same variable. Y in (5) is money income while, in (6) it is real income. Therefore, Y in (5) equals PY in (6). That makes the two equations (5) and (6) similar, though not identical. It is because for k (in (6)) we have an elaborate function $f(r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, \frac{P}{Y}, U)$ in (5), while k of the Cambridge Quantity

Theory is the so-called Marshallian proportionality coefficient which is assumed to be determined by institutional factors and is; therefore; constant. The latter is the elaborate money demand function which depends on economic variables, even though it is similar to k .

In fact, as mentioned earlier k is the reciprocal of the income velocity V , of the Fisher’s version. Therefore, we can rewrite equation (5) as follows :-

$$M = \frac{1}{f \left(r_b, r_e, \frac{1}{P} \frac{dP}{dt}, W, \frac{Y}{P}, U \right)} Y \dots\dots\dots (7)$$

This is similar to Fisher’s version of the Quantity Theory as contained in the following equation :-

$$M = k Py \dots\dots\dots (8.1)$$

or $M = 1/V.Py \dots\dots\dots (8.2)$

Here too, we should remember that Y in (7) is money income while y in (8.1) and (8.2) is real income so that Y in (7) equals Py in (8.1) or (8.2).

We may mention here that the money demand function of Friedman as derived above does not take note of the demand of firm's money, based as it is on analysis of the money demand of the "ultimate" wealth-owning units or the households owning wealth. However, Friedman believed that introducing of business demand for money will not change the form of his money demand function significantly. Therefore, Friedman's money function as stated above in the equation (1) may be regarded as valid even for the economy as a whole, provided we interpret $1/P \cdot dP/dt$, as an average expected rate of change in prices ; W as the ratio of total income from non-human wealth to total income from human wealth for the economy as a whole and Y as the aggregate national money income.

Self-Check Exercise

What conclusions does Friedman derive from his demand for money function?

1.4.4 Special Features of Friedman's Theory

We have explained above the Quantity Theory as it has been reformulated by Friedman. We can now try to pinpoint some of its special features which makes it different from the Traditional Quantity Theory.

In the first place, the modern Quantity Theory of Friedman makes a meaningful distinction between the demand for money and the "demand function" for money (or, alternatively, between "velocity of money and the "velocity of money function") Secondly, Friedman and his followers believe that their money demand function or its inverse, the velocity of money function, is stable. Infact, they believe it to be much more stable than the consumption function which is the key function in the rival Keynesian model. Thirdly, this reformulation of the Quantity Theory has also led the modern monetarist to assert the stability of the money demand function, or its inverse the velocity of money function need not imply that the real quantity of money demanded per unit of output that is, the value of Marshallian constant k or of Fisher's constant V does not fluctuate in a short period. On the other hand, they affirm that while the velocity-of-money function of money demand function is stable, the velocity of the money as such may fluctuate and even rise violently in times of hyper inflation. Fourthly, the followers of new Quantity Theory also believe that putting in additional variables in the money demand function will not be rewarding, for in their opinion, "to expand the number of variables regarded as significant is to empty the hypothesis of its empirical content." Fifthly, the new quantity theorists also believe that their money demand function is of vital importance in determining the variables which are of great importance for the economy as a whole, viz. level of

income and prices. Sixthly, the new Quantity Theory assumes that the money demand function and money supply functions are independent of each other, otherwise Friedman's money demand function will fail to predict the consequences of changes in the supply of money on income and prices in the economy. Seventhly, even though Friedman asserted that the Quantity Theory of Money is neither an income determination nor a theory of the general price level but merely a theory of the demand of money, yet it has become a firm foundation of an alternative theoretical structure for analysing the determination of income and prices.

1.4.5 Critique of the New Quantity Theory

Friedman's reformulation of the Quantity Theory, no doubt, has a lot of refinement to show. But it need not imply that it has no drawbacks. The various critiques of it have highlighted the following deficiencies in it.

It has been pointed out that the money demand function, which is the hallmark of the new Quantity Theory takes an explicit note of the asset demand for money. Only the transactions demand for money has not been adequately analysed. This makes the theory rather incomplete.

Secondly, Friedman's theory is based on the assumption that the different forms of assets considered by him are close substitutes of one another. But the basis of this strong assumption is not spelt out. How the transaction cost, different holding periods for wealth and desire for risk avoidance may affect the degree of substitutability between different assets and how this, in turn, may effect the demand for money are some of the matters which have not been analysed.

Thirdly, Friedman has not followed any scientific procedure for selecting and dropping out the independent variables for arriving at his money demand function. Two scientific criteria for it, each supplementing the other, could be the degree of elasticity of money demand with respect to the various independent variables and the degree of the variability of the variables themselves. But none of such scientific procedures was followed by Friedman.

Fourthly, the assertion of Friedman and his followers that his money demand function was much more stable than the Keynesian consumption function has not been demonstrated beyond doubt. While the empirical study of Friedman and Meiselman, "The Relative Stability of Monetary Velocity and the Investment Multiplier in the United States, 1897-1958" lent support to Friedman's thesis, another empirical study of Ando and Modigliani, "The Relative Stability of Monetary Velocity and the Investment Multiplier", did not lend support to it.

Fifthly, the contention of the new quantity theorist that there is a very regular and strong relation between the supply of money income and prices has also been challenged.

Lastly, on the very strong policy implications derived by the quantity theorists, namely, the control of money supply as the only effective method of controlling money income and prices, there is hardly any agreement among the economists. The economists

belonging to the Liquidity School such as R.S. Sayers and the authors of the Radcliffe Report are highly critical of this contention of the new quantity theorists. In their view, the emergence of non-banking financial intermediaries and near money has completely changed the picture. We will study more about it in the next lesson.

1.4.6 COMPARISON OF QUANTITY THEORY WITH KEYNESIAN THEORY OF MONEY AND PRICES

Before we are able to compare the Keynesian Theory of Money and Prices with the Quantity Theory of Money, old and new, we should first have at least a bird's eye view of the Keynesian Theory.

At a very simple level, Keynes' Theory of Money and Prices holds that an increase in the quantity of money will have no effect on the prices in a situation of general excess capacity and unemployment. It is because even though an increase in the supply of money may lead to a proportionate increase in the aggregate effective demand yet it need not lead to a rise in prices, for the increased demand for goods will be met by the increased supply of goods at constant prices. In such a situation excess productive capacity is available and increased supply of labour at the current wage rate is also available. Hence the aggregate output is perfectly elastic.

However, as soon as full employment is reached, the situation completely changes and there is no excess capacity. In this situation, an increase in the quantity of money will lead to a proportionate rise in the price level. Keynes assumed that in the full employment situation, an increase in the quantity will normally cause a proportionate increase in aggregate effective demand implying unit elasticity of aggregate effective demand with respect to change in the quantity of money. It was also assumed that the output elasticity with respect to change in the aggregate effective demand is zero. Thus, Keynes did indicate that the Quantity Theory might begin to operate, once the full employment was reached.

Keynes theory of money and prices is obviously superior to the old quantity theory. Due to the unrealistic assumption of the classical Quantity Theory that the economic system is in equilibrium only at the full employment level, it arrived at the wrong conclusion that every increase in the supply of money causes rise in prices. Keynes' theory denies this conclusion. It, on the other hand, shows that during depression when a lot of excess capital and labour supplies are available, an increase in money supply will not raise prices.

Another difference between the two approaches is that while the quantity theorists believe that a change in the money supply has a direct impact on prices of goods, the Keynesian theorists believe this relationship to be indirect. In fact, in Keynesian model a change in money supply first affects the rate of interest which in turn, influences the investment. Then the change in investment affects the income through the multiplier effect which further affects the aggregate demand for goods and this, in turn, influences the level of prices. The quantity theorists, old or new, do not depend, on this indirect

mechanism and pay no heed to the structure and level of interest rates.

A further point of difference between the Keynesian approach and specially the new quantity theorists approach is that while the former relies on the investment or income multiplier, the latter rely on the monetary multiplier which relates the changes in money income to changes in the money supply, Consequently, while the validity of the Keynesian theory depends on the stability of the consumption function, the validity of new quantity theory depends on the stability of the money demand function or the velocity of money function.

Still another difference between the two schools of thought which accounts for the quantity theorists neglect of interest rate mechanism is that the quantity theorists believe that income, wages and interest rate are determined by real factors alone and monetary factors affect only the money values of these variables. But for Keynesians, rate of interest is a monetary phenomenon which is influenced by changes in the supply of money. A change in the supply of money causes a change in the rate of interest which, in turn, changes investment and consequently the level of income through the multiplier effect. Thus, in the Keynesian mode, the level of income is not determined by real factors alone, money also matters.

In terms of policy implications, the quantity theorists stress the need to control the stock of money in order to control prices, while the Keynesian approach focuses on the interest rate policy as, in the Keynesian view, changes in money stock do not affect aggregate expenditure directly, but they affect it indirectly through changes in the interest rate. However, the Keynesian approach also emphasises that at a certain critical minimum rate of interest the demand for money stock will not lower the rate of interest further. This is what is known as Liquidity Trap Hypothesis. This is the situation that is common during economic depression. Hence, according to this view, monetary policy is ineffective in such situations. But the monetarists have no doubts, with regard to the efficacy of monetary policy as a remedy for even economic depression.

1.4.7 Summary

Friedman's application to monetary theory of the basic principle of capital theory—that is the yield on capital, and capital the present value of income—is probably the most important development in monetary theory since Keynes's General Theory. Its theoretical significance lies in the conceptual integration of wealth and income as influences on behaviour."

1.4.8 Key Concepts

- i. Human Wealth: The skill and abilities possessed by individuals of a society by which it generates income.
- ii. Real Income: Income measured in terms of the real goods and services it can buy.
- iii. Normal Rate of Interest: The rate of interest that will prevail in the bonds market under normal conditions. It is in relation to this normal rate that the current rate is judged high or low.

1.4.9 Suggested Readings:

- (i) M.G. Mueller: Readings in Macroeconomics
- (ii) R.W. Clower: Monetary Theory

1.4.10 Questions for practice:

- (i) Critically examine Milton Friedman's Restatement of the Quantity Theory.
- (ii) According to Friedman, which are the five forms in which wealth can be kept?
- (iii) Write a brief note on Friedman's interpretation of returns from human capital.

THE LIQUIDITY THEORY OF MONEY

1.5.1 Objectives

1.5.2 Introduction

1.5.3 Liquidity

1.5.4 Near Money

1.5.5 Non-Bank Financial Intermediaries

1.5.6 Radcliffe-Sayers Thesis

1.5.7 Policy Implication of Radcliffe Thesis

1.5.8 Gurley Shaw Theory

1.5.9 Summary

1.5.10 Key Concepts

1.5.11 Suggested Readings

1.5.12 Questions for practice

1.5.1 Objectives

In this lesson, we will study the concept of liquidity and the role of non-bank financial intermediaries. Further, we will discuss the Radcliffe-Sayers Thesis and its policy implications which is significantly different from the monetarists which relies on the control of money supply in order to control income and prices. We will also throw a light on the Gurley-Shaw approach Gurley and Shaw which analyse certain aspects of money supply in an economy where economic development is accompanied by development of financial instruments.

1.5.2 INTRODUCTION

We have learnt that according to the monetarists, the level of prices and therefore, the value of money are determined by the stock of money, while according to Keynes and his followers, they are determined by the aggregate demand in conjunction with the aggregate supply. While the monetarists believe that both depressions (falling output and prices, and rising values of money) and booms (rising prices and falling value of money) can be controlled by controlling the stock of money, the Keynesians believe that such a policy will be completely ineffective during depressions, while it can be a useful supplement to the fiscal policy during booms.

During the post-war period, a new school of thought has been developed. It has given a different approach to the problem of monetary theory and policy which is now described as the Liquidity Theory of Money. The objective of the lesson is to understand and analyze.

The thesis underlying the theory is that it is neither stock of money (currency plus demand

deposits, and even when we, like Friedman, include in it the time deposits) nor aggregate income/expenditure as such which determines the economic activity and prices. But, instead, it is the general liquidity of the economic system which determines economic activity and general prices. Before we study the Liquidity Theory, it is important to have clarity regarding certain concepts. Let us see what these concepts are.

1.5.3 LIQUIDITY

Liquidity in an economic system depends on the amount of the liquid assets in it. The liquidity of an asset may roughly be defined as that attribute of an asset by virtue of

which it can be converted into any other form of asset easily and quickly without loss in its value. Considered thus, money is the only asset that possesses perfect liquidity and, therefore, is described as a perfectly liquid asset. That is why liquidity is also defined as “moneyness” that is, the attribute of being able to be transformed into any other form without loss of value and time.

However, while money is a perfectly liquid asset, there are, in a modern economy, quite a number of other financial assets which can be converted into money and, therefore, into any other form, without too much loss of either time or value. For example, a treasury bill can be sold in the market at any time without much loss of time or value. Thus, there are usually quite a number of such financial assets or claims on financial institutions, in a modern economy, which possesses the attributes of liquidity to a smaller or a larger extent. Such assets are described as “near money” or “quasi-money”.

1.5.4 NEAR MONEY

How can we then, distinguish between money proper and near money? We have already said that the special feature of money is that it is a perfectly liquid asset and this attribute of it is linked to its attributes by virtue of which it acts as the universally acceptable means of payment within a given national economy. In this sense, currency and demand deposits of the banking system are proper money. But all other financial assets which are convertible into money, even though at the cost of little or more loss of time or value are near moneys or quasi money. They do possess liquidity though they are not perfectly liquid. Thus, they are not generally accepted as a means of payment.

Thus, the dividing line between money proper and near-money or quasi-money is the ability of the former to act as the means of payments. Therefore, we can define ‘near money’ or quasi money as any financial asset held by the public as individual or institutions, which is not normally used as direct means of payment but which is regarded by the asset holder as a close substitute of money.

The near-money are, for example, time deposits, various forms of money market instruments like bills of exchange, banker’s acceptance, gilt-edged securities, treasury bills etc., all redeemable and marketable securities, repurchased shares of saving societies, building societies, etc., cash surrender value of the Unit Trust of India, debentures and so on. They are all claims, other than deposits on financial institutions and the Government.

1.5.5 NON-BANK FINANCIAL INTERMEDIARIES

It should be understood that the various types of liquid assets are created by the Government or by the financial institutions like banks, companies, investment trusts, finance corporations, saving and mutual aid societies, chit funds, etc. The currency part of money is created by the Government while the demand deposits part of it is created by the commercial banks.

A substantial portion of the liquid assets is created outside by the banking sector. All such institutions other than the government and the banks which create financial claims

on themselves by issuing redeemable or repurchased saleable securities, debentures, shares, etc., are known as non-banking financial intermediaries (NBFI). The essential difference is that, the NBFI cannot create any such security which can act as a means of payment. The main function of financial intermediaries is to purchase primary securities from the ultimate borrowers, like the shares and debentures of the joint-stock companies and issue indirect securities to the ultimate lenders.

The activities of financial intermediaries, in so far as they mobilize the surpluses or saving of the "surplus" units for the use of "deficit" units which are usually in the business sector, increase the liquidity in the economy. In fact, financial intermediaries manufacture liquidity. They create claims which are more liquid than the securities they buy. They do this by creating what we have described above as near-moneys".

The significance of emergence of non-bank financial intermediaries and near moneys for the theory of money and monetary policy lies in this that it has increased the liquidity of the economic system and by doing so, it tends to increase the velocity of money which, in turn, affects the level of income and price.

Self-Check Exercise

Q1. Define Near Money. How is it different from money?

1.5.6 RADCLIFFE-SAYERS THESIS

The liquidity theory of money came into the limelight consequent upon the publication of the Radcliffe Committee Report in Great Britain. Although the Radcliffe Committee Report highlighted and examined the policy implications of the liquidity approach, yet much of the theoretical spadework for the propounding of this approach was done by the British monetary economist, R.S. Sayers. We have in our minds the views of Sayers as well as the Radcliffe Committee when we speak of the Radcliffe Sayers Thesis.

The basic idea of this thesis is that the control of the supply of money as such cannot serve as the main lever of monetary policy aiming at controlling the level of economic activity and prices. Thus, this is an approach which is significantly different from the monetarists which almost wholly relies on the control of money supply in order to control income and prices.

The common argument of the monetarist approach used to be that any increase in the supply of money, when it comes into the hands of the public, makes them realize that they are holding more real balances than they want to hold. The aggregate demand in the goods market begins to rise. If excess productive capacity in the economy is available, as is the case during depression, it will encourage the utilization of the capacity so long as there is less than full employment. Once full employment is reached, an increase in the money supply will push up prices through increased money expenditure. On the other hand, a decrease in the money supply reduces aggregate money expenditure and, therefore, the aggregate demand. Consequently, the level of economic activity and prices will tend to fall.

The contention of the Radcliffe-Sayers thesis is that due to the emergence of near-moneys which are close, though not perfect, substitutes of money, the link between money income and expenditure had weakened. A part of the money income may be used to accumulate near-money assets instead of being spent on goods. On the other hand, any reduction in money coming through a reduction in the supply of money need not reduce expenditure on goods. For in such a situation, shortage of money can be made up by converting near money assets into proper money.

It follows from the above argument that the spending decisions of the public do not critically depend on the supply of the money, even though it is conceded that the supply of money is an important factor determining it. The spending decisions of the public are influenced not merely by the supply of money but also by the possibility of raising funds through alternative sources such as by converting a near-money asset into money proper or by borrowing. This possibility depends on the degree of liquidity of the assets possessed by the spending units, on the one hand, and the liquidity position of the financial institutions, banking and non-banking, on the other hand. As Radcliffe Committee Report sums up the argument, "decision to spend on goods and services, decisions that determine the level of total demand are influenced by the liquidity of the spenders."

The crucial factor which influences aggregate expenditure in the economy, and therefore, the income and prices, is not the supply of money as such but the liquidity of the whole economy which is the aggregate of the liquidity of the individuals, banks, non-banking financial institutions, non-financial business and the government. The point to take note of is that the liquidity theory approach looks upon money as only a part of the wider structure of liquidity in the economy as a whole. As the Radcliffe Committee Report puts it, "The spending is not limited by the amount of money in existence, but it is related to the amount of money people think they can get hold of, whether by receipts of income, by disposal of capital assets or by borrowing."

1.5.7 Policy Implications of Radcliffe Thesis

Radcliffe Committee drew important conclusions from the argument explained above. The all important conclusion having a great bearing on policy formulation was that in order to control the level of income and prices, it was not enough to control the supply of money, it is necessary to control the whole liquidity structure of the economy.

The need to control the whole liquidity structure of the economy leads to the necessity of bringing under control the level and the whole structure of interest rates in the economy. It is because interest rate changes affect the liquidity of the various types of financial institutions which, in turn, affects the liquidity of others. Thus, the whole liquidity structure is affected by a change in the level and structure of interest rates. Therefore, the policy conclusion of the Radcliffe Committee was that the enterprise of the monetary policy should be the structure of interest rates of the general liquidity rather than the supply of money as such.

As we have observed earlier also, the policy conclusion, in no way, denies the importance of money. What it emphasizes is that control of level and supply is just incidental to interest rate policy, while the control of level and structure of interest rates is of primary importance.

They have argued that a rise in the structure of interest rates would reduce the lending business of the financial institutions, as the rise in the interest rates would increase their capital losses on their assets holdings which, in turn, would reduce their liquidity.

Thus, the Radcliffe-Sayers thesis leads to two policy alternatives as regards the monetary policy. One of these is to impose liquidity controls over a wide range of financial institutions. The other alternative is to rely on the "liquidity effect" of change in interest rate structure. However, the Radcliffe Committee as well as Prof. Sayers found that neither of the two alternatives may prove to be practical. The first alternative (i.e. imposing liquidity controls) will not work in practice because most of the financial intermediaries, other than the commercial banks, are beyond the control of the central bank of a country. Prof. Sayers is of the opinion that even if the existing non-bank financial intermediaries (NBFIs) are somehow brought under the central banking control, still newer varieties of NBFIs may crop up. Changes in interest rate structure will also be impractical in as much as it may result in severely disruptive changes in the financial markets.

On account of the above said practical limitations of the policy alternatives implied in the liquidity theory of money, the Radcliffe-Sayers thesis concludes that monetary policy should be subordinated to fiscal policy in normal times. However, a more prominent role to it may be assigned in abnormal situations like, for example, when there is a runaway inflation or an acute depression.

In that case, the Radcliffe Committee Report, recommends that the central bank adopt appropriate measures to bring the NBFIs within the pale of its control, otherwise the liquidity of the economy as a whole cannot be kept under check.

Self-Check Exercise

What, according to Radcliffe-Sayers are the policy alternatives with regard to monetary policy and why these alternatives are not practical?

1.5.8 GURLEY-SHAW THEORY

Gurley and Shaw in their famous work, *Money in a Theory of Finance*, analysed certain aspects of money supply in an economy where economic development is accompanied by development of financial instruments. In fact, their thesis has, for its starting point the assumption that real economic development is accompanied by a process of financial development. In this process, the primary securities (that is, the debts of non-financial spending units) gradually become differentiated and take on a variety of forms, such as bonds, to different forms of financial institutions of

which commercial banks are but one particular type. Commercial banks and the non-banking financial intermediaries like insurance companies, saving societies, investment trusts, etc., enable the asset holders to hold primary securities indirectly in the form of financial intermediaries.

Gurley-Shaw thus highlight the difference that the growth and differentiation of non-monetary financial assets make to monetary theory and monetary policy.

Gurley and Shaw point out that within the neoclassical framework, money is neutral in its effect on the real variables. But when we allow for a variety of non-monetary financial assets, changes in nominal money may result in changes in the real variables like the real rate of interest, the real wage rate, real income etc., even when all money is of the 'inside' variety. "Inside" money is the money which is based on private domestic primary securities so that in its case every private debt is exactly balanced by an equivalent private credit. According to Gurley and Shaw, this is so because the composition of spending units portfolio deal in only one of the several types of primary securities. For example, if the monetary system creates nominal money by purchasing only bonds, it can reduce the average maturity of spending units portfolio. Consequently, their demand for balances will change.

According to Gurley and Shaw, monetary policy is neutral in its effect on the real variables of the economy, within the neoclassical framework, if the monetary system and non-monetary intermediaries (i.e., NBFIs) hold only private domestic debt and money behind their issues of money and non-monetary indirect debt (i.e., indirect securities). In that case any increase in money by open market purchases of private domestic debt by the monetary system leaves spending units in the same real position after money prices and money wage rates have risen in the same proportion. But, if any monetary or non-monetary liabilities of the NBFIs are backed by "outside" securities, monetary policy is not neutral. "Outside" securities refer to the foreign or government securities. The monetary policy is not neutral. "Outside" securities refer to the foreign or government securities. The important point made out by Gurley and Shaw in this context is that a combination of "inside" and "outside" non-monetary indirect assets also does the same.

Gurley-Shaw thesis stresses the need to recognise the full import of the impact of the growth of NBFIs and the diversification and proliferation of the non-monetary financial assets that accompany real economic development, if the monetary theory and monetary policy are to be based on real facts. The policy implication of their thesis is that the conventional approach to monetary policy (which works in terms of controls on the monetary stock or money supply, interpreting money as currency plus demand deposits of the banks) is unrealistic and consequently ineffective. Therefore, what is required is a broad based monetary policy which extends the controlling powers of the central bank to cover the operations of the non-banking financial intermediaries also and which does not confine its control to commercial banks only.

The conventional theory of monetary control was based on the assumption that while the commercial banks create loanable funds, the non-bank financial intermediaries (NBFIs) do not create loanable funds but act only as brokers. Gurley and Shaw opine that the assumption of this dichotomy of functions, between banks and

NBFIs is unwarranted as, according to them, every category of financial institutions can create loanable funds. Therefore, they observed that the present methods of credit control used by the central bank are unduly discriminatory against the banks. Moreover, in so far as the NBFIs do not fall within the purview of central banking controls, the conventional monetary policy is bound to be ineffective. Hence Gurley and Shaw plead for the extension of the regulatory powers of central bank to the NBFIs also. They have, in fact, suggested that the minimum reserve requirement which applies to the commercial banks should be applied to NBFIs also in order to make monetary policy more effective. The crux of the argument in this context is that the general liquidity of the system cannot be brought under control unless NBFIs are also brought under the central banking controls.

It is obvious, then, that Gurley and Shaw thesis suggests the necessity of making the monetary policy wider in scope. Like the Radcliffe-Sayers thesis, it too brings out the importance of the development of “near moneys” and NBFIs for monetary theory and policy. But unlike Sayers and Radcliffe Committee, they assign an important role to monetary policy instead of subordinating it to fiscal policy. It should be widened in scope so as to bring the NBFIs within the purview of central banking controls.

1.5.9 Summary

It can be said in conclusion that the Liquidity Theory of Money denies the contention of the quantity theorists that the level of economic activity and money prices can be controlled simply by controlling the quantity or supply of money where it is taken to mean currency plus demand deposits of commercial banks. It is because what is important for the buying and investment decisions of the spending units is not the quantity of money as such but the over-all liquidity position. And the over all liquidity does not depend merely on the quantity of money. It is also determined by the availability of near money assets. The emergence of NBFIs and the growth and proliferation of non-monetary financial securities which are very close, though not perfect substitutes of money (“near money”, as they are called) have increased this availability very significantly. A realistic and relevant monetary theory must take note of this development.

The analysis of the Liquidity Theory, therefore, naturally leads to the policy conclusion that the objective of the monetary policy should be not simply to regulate the supply of money proper (currency plus demand deposits) but to control the general liquidity of the economic system as a whole. And, for this, it is necessary to bring the NBFIs also under regulatory powers of the central banks.

1.5.10 Key Concepts

- i. Human capital: refers to the economic value of a worker's experience and skills. Human capital includes assets like education, training, intelligence, skills, health, and other things employers value such as loyalty and punctuality.
- ii. Non-Bank Financial Institutions: provide services that are not necessarily suited to banks, serve as competition to banks, and specialize in sectors or groups.
- iii. Liquidity: is a measure of the cash and other assets banks have available to quickly pay bills and meet short-term business and financial obligations.
- iv. Near money: is a term in financial economics, describing highly liquid non-cash assets that are easily convertible into cash. Also, near-money can be called quasi-money or cash equivalents.

1.5.11 SUGGESTED READINGS

1. R.D. Gupta : Keynes and Post Keynesian Economics

ii. J.G. Gurley and E.S.Shaw: Money in a Theory of Finance

1.5.11 Questions for Practice:

i. Compare Radcliff Committee's version of Liquidity Theory with the Gurley Shaw Theory.

ii. Define: a) Near Money b) Non Bank Financial Intermediaries c) Liquidity

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MEASURES OF MONEY SUPPLY

- 1.6.1 Objectives
- 1.6.2 Introduction
- 1.6.3 Currency Systems
 - 1.6.3.1 Indian Currency System Today
- 1.6.4 Money Supply and Its Measures
- 1.6.5 Reserve Money M_0 and Its Sources
- 1.6.6 Summary
- 1.6.7 Key Concepts
- 1.6.8 Suggested Readings
- 1.6.9 Questions for Practice

1.6.1 OBJECTIVES

Currency system of any country is directly or indirectly linked to other variables. Thus, an efficient currency system is very necessary for any country. The objective of this lesson is to discuss the present currency system and from where it emerged. After giving a brief idea of the currency system, this lesson will also give an idea of the measures of money supply, i.e. how is money supply computed.

1.6.2 INTRODUCTION

Monetary organisation of a country plays an important role in its economic structure and growth. The monetary system of a country contributes to or hinders the progress of its internal and foreign trade. The countries which have poorly developed currency face many problems, since the entire banking structure, credit and financial structure of a country ultimately emerges out of it.

1.6.3 CURRENCY SYSTEMS

By the beginning of the 20th century India had evolved a peculiar currency system known as the gold exchange standard. Under this system, the rupee was convertible into pound sterling, which in turn was convertible into gold. The currency system consisted of token money consisting of silver rupee and currency notes. The coins and currency notes were not convertible into gold within the country but were convertible into gold for external purposes. The government had set up two currency reserves—one in London, known as gold reserves and the other in India, known as the rupee reserves. In this way Indian currency system was linked with British currency system. The Gold Exchange standard worked till 1917, when it broke down mainly because of the rise in the price of silver and consequent rise in the value of rupee. The government

could not maintain the rate of exchange, therefore, abandoned the gold exchange standard. Gold Bullion standard was adopted in 1927, but could not work successfully. Indian Government gave up this system completely in 1931 when England gave up the gold standard.

The Reserve Bank of India came into existence on April 1, 1935 and this imparted a new and coordinated approach to the management of the currency and credit problem of our country. It brought the task of credit control and issue of currency in the hands of a single authority. This helps in the proper co-ordination of the two. But RBI itself worked under certain limitations. When the govt. of India runs into a deficit, it may meet the same by borrowing from the RBI against the sale of treasury bills*. When this happens, the bank acquires treasury bills on the side of assets and deposit balances are created in favour of the govt. When the govt. pays out of these balances for meeting its expenditure, the RBI is forced to pay cash to the public. This results in the reduction of govt. balances with the bank but it leads to an increase in its liabilities to the public by way of notes in circulation and a reduction in its holding of coins and notes. Similarly, the issue of currency to the public is affected by the country's international transactions. Since RBI is the custodian of foreign exchange reserves, a person who receives foreign exchange tenders it to RBI and in exchange receives rupees from it. On the other hand a person who is to pay abroad in terms of foreign currency, tenders rupees to the RBI and the bank pays out if its foreign exchange reserves.

The second world war had a stimulating effect after a long period of great depression. Indian export balance was put on the path of continuous improvement which strengthened the sterling value of rupee. But on the other hand there was a weakening of public confidence in Indian currency by the middle of 1940 when the allies suffered a setback in war. The result was heavy demand on the RBI for the encashment which in turn went into hoarding. Ordinance of June 24, 1940 enabled the govt. to print other rupee notes and issue through the RBI. These notes were not encashable. In this way, India had switched over to the paper standard. The issue of rupee not only relieved the shortage of rupee coins but were also not chosen by the public for hoarding.

The establishment of RBI, the conversion of coins into token ones and the growing circulation of paper notes relieve the country from a number of perennial problem. Thus, the paper standard came into existence completely.

The paper currency standard consists of paper money which is unlimited legal tender and token coins of cheap metals. Paper money may be either convertible or inconvertible. The convertible paper money is convertible into gold or silver coins. Generally, paper money is inconvertible. People accept it because it is a legal tender. Since it has the

* This system has been replaced, since 1997, with Ways and Means Advances about which we will learn in another lesson.

command of the government, people have to accept it. That is why it is also known as fiat money. It is also referred to as managed standard because the issue of paper and token coins is managed by the Central Bank of the country.

Over the years different countries have evolved various methods of note issue. These are discussed below :

- i. Simple Deposit System : Under this system the monetary authority is required to keep 100 percent of bullion (gold or silver) for every note issued. This is also known as Full Reserve System. The main advantage of this system is that it leads to public confidence in the currency. There is no over issue of currency. However, the system is impracticable and lacks elasticity, which can prove to be harmful in financial emergencies.
- ii. Fixed Fiduciary* System : Under this system, a fixed amount of notes are issued by a central bank against reserves of government securities. Such amount is issued on the faith of fiduciary of the central bank and is called the fiduciary limit. The central bank is required to keep 100% gold reserves beyond the fiduciary limit. The fiduciary limit is raised from time to time with the expansion of trade and industry. This system has certain disadvantages, as in need of financial emergency, notes cannot be issued without keeping cent per cent gold in reserves. The system is inconvenient because in the event of a fall in gold reserves, the Central Bank has to withdraw notes from circulation with the result that the quality of money is reduced in the country with its adverse impact on prices, trade and industry. But this system ensures security, inspires public confidence, and is without any danger of mismanaging the currency through the over-issue of notes by the central bank.
 - a. Maximum Fiduciary Limit : Under this system there is a maximum limit up to which the Central Bank is authorised to issue notes without any gold reserves. But there has to be full backing of gold reserves beyond this limit. The Central Bank is authorised to raise or lower the maximum fiduciary limit and to fix the amount to gold reserves. Thus the system is not rigid but is elastic. But in case the Central Bank fixes the fiduciary limit very high, there may be excess of notes in circulation thereby leading to inflation.
 - b. Proportional Reserve System : In this system, a certain percentage of the total notes issued by the Central Bank should have the backing of gold reserves and the remaining of government securities. Generally, this percentage varied between 25 to 40 percent. This system is simple and elastic. The supply can be changed with changes in the percentage of gold reserves. Still, this system has certain drawbacks. It is uneconomical because large quantities of gold reserves have to be kept which cannot

* Fiduciary means held or given in trust, depending for its value on public confidence or securities. Fiduciary issue thus means paper money not backed by gold or silver.

be issued for productive purposes. If the gold reserves fall, the reduction in the currency in circulation may be more than in proportion to the fall in reserves. This may lead to deflationary tendencies. The opposite may happen when gold reserves increase. In India this system operated from 1927-1956.

c. Minimum Reserve System : Under the minimum reserve system, the Central Bank is authorised to issue notes upto any extent but it must keep a statutory minimum reserve of gold and foreign securities. This system is highly useful for developing countries because they can meet their financial requirements by printing more notes. They can also reduce the money supply to check inflation. It is very economical because only a small and fixed amount of gold is required to be kept in reserve. But this system is a dangerous tool in the hands of monetary authority. It can print any number of notes, thereby, creating inflationary pressure within the economy.

It can be concluded from the discussion of the various systems of note issue that an ideal system should fulfil the criteria of elasticity, economy, stability, convenience and safety. Every country tries to adopt that system which is flexible enough to meet its needs of growth and development.

1.6.3.1 INDIAN CURRENCY SYSTEM TODAY

Indian currency system today managed by the RBI is based on the inconvertible paper currency. For internal purposes there are rupee coins and currency notes, for external purposes the rupee is convertible into currencies of the world.

Rupee is the monetary unit of India and is based on the decimal system. The rupee consists of 100 paise. The rupee coin is a token coin made up of nickel and its face value is higher than its real value. It was also printed on paper by the Finance Ministry of the government of India but not any more. The rupee as well as the half rupee coins are unlimited legal tender but the subsidiary coins are only limited legal tender.

The printing of currency notes above rupee one is the monopoly of the RBI which is owned and managed by the Government. The RBI can print and issue currency notes of different denominations up to one thousand rupee notes. RBI maintains separate issue department to look after the currency issue. This department maintains reserves against the currency notes. At one time the assets of the issue department consisted of two parts (a) at least 40% of the total assets would consist of gold coins, gold bullion or sterling* securities (b) 60% of the assets could be in rupee coins, rupee securities of the Government of India, eligible bills of exchange or promissory notes payable in India. These provisions, originally known as proportional reserve system (discussed earlier), were modified many times and at present the assets of the issue department consist of

* Sterling means the UK pound as distinguished from the pounds of other countries (Egypt, Lebanon, Syria, Sudan etc.)

minimum of gold and foreign securities to the extent of Rs. 200 crores (or which gold should be of the value of Rs. 115 crores and the balance in rupee securities). The present system is known as the minimum reserve system of note issue.

Self-Check Exercise

Q. Distinguish between Proportional Reserve System and Minimum Reserve System.

1.6.4 MONEY SUPPLY AND ITS MEASURES

The choice of monetary policy instruments for regulating the money stock in the economy is dependent on the appropriate definition of money, and the money supply process i.e. the process by which the stock of money gets created and the impact is on output and prices.

Money has been traditionally defined as the sum of currency with the public and the portion of the deposits held by the public with the banks which are withdrawable on demand. Money so defined is referred as M_1 or narrow money. A broader concept of money includes, apart from currency, all deposits held by the public with the banks irrespective of whether they are withdrawable on demand or not. Broad money is referred as M_3 . The concept of money supply has undergone changes over the years reflecting the trend of economic thinking in this regard.

The Working Group on Money Supply set up by the Reserve Bank in 1961 provided the framework for the definition and analysis of money supply in India. Money supply with public was defined as consisting of (i) currency notes and coins with the public (ii) demand deposits (excluding inter-bank demand deposits) of scheduled and reporting non-scheduled and state co-operative banks and (iii) deposits held with RBI, in current account of Central banks of other countries, financial institutions and quasi financial bodies other than banks. The Working Group also suggested that money supply with the public as defined by them together with time deposits (other than inter-bank time deposits) with banks, gave a more meaningful indication of the role of money in economic activity. The RBI started publishing M_3 from 1967 under the head 'Aggregate Monetary Resource.'

The second working group on money supply was setup by RBI in 1977 to examine the suitability of various concepts and definitions of money supply, suggest methodological changes for compilation so as to bring out the significance and implication of these data for policy formulation, and depending on the results of the examination of the various issues involved, to prepare a revised time series of money supply as well as factors affecting it. To improve the data base of the monetary sectors in terms of both coverage and sophistication, the Group suggested M_2 & M_4 as additional measures. M_2 consists of saving deposits with Post Office Saving Bank in addition to M_1 . The broadest definition of money supply defined by second working group was M_4 which consists of M_3 and

total deposits with post office saving organisation, (Excluding National Saving Certificate). M_1 and M_3 are published on a fortnightly basis, while M_2 and M_4 are made available on a monthly basis.

M_1 , M_2 , M_3 and M_4 in brief :-

M_1 =Currency with the public+ Demand Deposits with the banking system
+Other deposits with RBI

M_2 = M_1 +Saving deposits of the Post Office Saving Bank

M_3 = M_1 +time deposits with banks

M_4 = M_3 +all deposits* with Post Office Saving Organisation (excluding National Saving Certificate)

Out of the four concepts of money supply, the RBI lays emphasis only on M_1 and M_3 . Whereas M_1 is known as narrow money, M_3 is called broad money. However, it does not attach much importance to the M_2 and M_4 concepts of money supply. In fact, it has not updated the figures for these two for a long time. So we will concentrate on M_1 and M_3 only.

The basic difference between M_1 and M_3 is the treatment of time deposits with banks- these are excluded from M_1 but are included in M_3 . Time deposits are income earning assets, and as such, not regarded as cash proper, but as part of the total monetary resources of the public.

So far as calculation of M_1 is concerned, it has already been mentioned that M_1 consists of currency with the public (C) and deposit money with the public (D). Currency with the public is composed of notes in circulation, circulation of rupee coins and small coins. Coins and currency notes (i.e. cash) held by commercial banks (also known as cash reserves of banks) are excluded from C, since these are not held by the public. The deposit money with the public (D) is composed of demand deposits of the people in banks and other deposits with the RBI (certain individuals, such as ex-governors of RBI are permitted to use RBI like any other commercial bank). Hence in D we include demand deposits of people with commercial banks and with RBI. Also, demand deposits now mean not only current deposits, but also that portion of savings deposits which are subject to the cheque system (but the portion of saving deposits not subject to the cheque system is excluded, for it is counted as part of time deposits).

In the calculation of M_3 (or sources of M_3) the RBI has identified five sources which contribute to M_3 . These are :

1. Net Bank Credit to government (A+B) :-
 - (A) RBI's net credit to government.
 - (B) Other Bank's credit to government.
2. Bank credit to commercial sector (A+B) :-
 - (A) RBI's credit to commercial sector

* Total deposits with Post Office include fixed deposits of various maturities with post offices, apart from savings deposits.

- (B) Other bank's credit to commercial sector.
3. Net Foreign exchange assets of Banking Sector (A+B) :-
- (A) RBI's net foreign exchange assets
- (B) Other banks's net foreign exchange assets.
4. Government's currency liabilities to the public.
5. Net Non-Monetary liabilities of the banking sector (A+B) :-
- (A) Net Non-Monetary liabilities of RBI.
- (B) Net non-monetary liabilities of banks.

Hence,

$$M_3 = 1 + 2 + 3 + 4 - 5$$

Let us study these sources in greater detail :

So far as net bank credit to the government is concerned, the RBI as well as other banks extend credit to the central and State Government. The Government borrows from banks and RBI against its own securities. It is against these securities that RBI prints and issues currency notes, while commercial banks create demand deposits in the name of the government. In both cases, volume of money supply increases. Also, the central and State Governments keep their cash balances with RBI as deposits. Hence, net RBI credit to the government would be calculated as RBI's claims on govts. MINUS (exclusive of) deposits of govts with the RBI.

In bank credit to the commercial sector, commercial sector stands for all types of production and trade. In lending to this sector, the banks create credit (the process of which we have already studied in a previous lesson).

So far as net foreign exchange assets is concerned, whenever RBI or any other bank acquires foreign exchange (or asset), it will have to distribute equivalent amount of rupees within India. And whenever Indian importers make payments by buying foreign exchange from RBI, not only does the foreign exchange with the Indian banking system decline, but the volume of money supply in the country will also decline.

Thus, net foreign exchange assets of the banking system would involve deducting the foreign liabilities of the banking system from the gross foreign exchange assets.

The next source of M_3 is govt's currency liabilities to the public. The rupee notes and coins, and small coins minted by the govt. of India constitute government's currency liabilities to the public. Whenever the govt. mints these coins, the volume of money supply with the people increases.

The last item, i.e. non-monetary liabilities of the banking sector has to be deducted before we reach the figure of M_3 . The non-monetary liabilities of RBI comprise its paid up capital and reserves, RBI's employees' pension fund, provident fund etc. the non-monetary liabilities of other banks comprise mainly their capital and reserves, bills payable over other assets (premises, furnitures) of banks etc. Since these are liabilities of banks, these have to be deducted to arrive at M_3 . Of the given sources, bank credit

to govt. and to the commercial sector are the two most important sources of M_3 .

For a long time, the RBI continued to calculate money supply in the four forms, viz. M_1 , M_2 , M_3 and M_4 . RBI initiated publication of a new set of monetary and liquidity aggregates as per the recommendations of the Working Group on Money Supply (1998). The revised monetary measures are :

- NM_1 = Currency with the public+Demand Deposits with the Banking system+ Other Deposits with the RBI.
- NM_2 = NM_1 +Short Term Time Deposits of Residents (including and up to the contractual maturity of one year)
- NM_3 = NM_2 +Long-term Time Deposits of Residents+Call/Term Funding from Financial Institutions

The new M_3 can be designated as broad money.

In this new scheme, the conventional M_4 is excluded.

After the above revision, the RBI Working Group on Money Supply has introduced a new concept of liquid resources. These aggregates are calculated as follows :

- L_1 = NM_3 + All deposits with Post Office Saving Banks (excluding National Savings Certificates).
- L_2 = L_1 + Term Deposits with Term Lending Institutions and Refinancing Institutions(FIs) + Term borrowing by FIs + Certificates of Deposits issued by FIs.
- L_3 = L_2 + Public Deposits of Non-banking Financial Companies.

Thus, while the revised monetary aggregates (M_1 , M_2 , M_3) consider only bank deposits and bank borrowings, liquidity aggregates (L_1 , L_2 , L_3) also consider term deposits with the borrowings by financial institutions and non-bank financial companies. Data on M_1 and M_3 are available on fortnightly basis. Data on L_1 and L_2 are published monthly while those for L_3 are disseminated once in a quarter.

Self Check Exercise

- Que. i. What are the sources of M_3 (bread money)
- ii. Define M_1 (narrow money)
- iii. Give the revised monetary measure

1.6.5 RESERVE MONEY (M_0) AND ITS SOURCES

Reserve money represents certain liabilities of the central bank and the currency liabilities of the government. These liabilities arise in course of operation of these agencies, and are matched by assets shown as sources of reserve money. These are assets of the central bank, the currency liabilities of the government also appearing on the asset side.

The RBI is the sole agency issuing rupee coins and small coins to the public on behalf of the government.

The need for providing increasing quantities of money in a growing economy to support a greater volume of transactions is satisfied by RBI. In India, the main resources of reserve money as represented by the assets acquired by the RBI, and the government's currency liabilities to the public are the following :

$$\begin{aligned} \text{Reserve Money (M}_0\text{)} &= \text{Net RBI credit to Government} \\ &\quad + \text{RBI credit to Banks} \\ &\quad + \text{RBI credit to Commercial Sector} \\ &\quad + \text{Net Foreign Exchange Assets of RBI} \\ &\quad + \text{Government's Currency Liabilities to the Public} \\ &\quad - \text{Net non monetary liabilities of RBI} \end{aligned}$$

RBI credit to the Central Government and State Governments consist of RBI's holding of treasury bills, dated securities of the Central government and rupee coins and RBI's advances to state Governments. RBI's credit to banks is the credit provided by it to commercial and co-operative banks by way of accommodation provided by against the security of government securities, usance bills or promissory notes and through the rediscounting of bills. The RBI's credit to commercial sector is the aggregate of (a) Reserve Bank's investment in shares/bonds of financial institutions (b) Loans and advances to financial institutions such as IDBI, NABARD and (c) Internal Bills purchased and discounted. Net foreign exchange assets of the RBI are net holdings of the RBI and represent RBC (Reserve Bank Credit) to the foreign sector because these are financial liabilities of the foreign sector. When RBI buys foreign exchange, it pays for it in terms of its own money and the supply of high powered money in the economy increases; when the RBI sells foreign exchange, it receives payment from the buyer in foreign exchange or its bank in the form of 'H' and the supply of the high powered money (H) goes down.

The net Reserve Bank Credit to various sectors that we have talked under the above four points is financed by the RBI partly by creating its monetary liabilities (Reserve Bank Money) and partly by its net non monetary liabilities (NNML). The NNML are owned funds of the RBI and compulsory deposits of the public. Obviously, the larger these non monetary resources of the RBI, the less it has to depend upon the creation of new high powered money to finance its credit to various sectors. Hence this factor is entered in the equation of reserve money with a negative sign. Data on M_0 are published by RBI on a weekly basis.

1.6.6 Summary:

In the end we can say that management of money supply in any economy is very necessary. RBI should use its monetary policy according to the requirements of the economy. While formulating its monetary policy, the money multiplier process should be watched carefully.

1.6.7 Key Concepts

- i. Broad Money: M3 is a measure of broad money and includes currency with the public and deposits.
- ii. Reserve Money: includes required reserve and the excess reserves of the banking system.

1.6.8 Suggested Readings:

- i. Suraj B. Gupta: Monetary Economics: Theory, Institutions and Policy
- ii. Gaurav Datt and Ashwani Mahajan: Datt and Sundharam Indian Economy

1.6.9 Questions for practice:

- i. Discuss the various methods of note issue.
- ii. How is money supply measured?
- iii. What is meant by Reserve Money? What are its sources?

M.A. (ECONOMICS) PART-II
Semester-III

PAPER - 304-305 (OPTION - III)
MONEY AND BANKING

LESSON NO. 1.7

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H-THEORY OF MONEY SUPPLY

1.7.1 Objectives

1.7.2 Introduction: High powered money

1.7.3 Money Multiplier Process

1.7.3.1 When Public behaviour is constant

1.7.3.2 When Public behaviour is also taken into account.

1.7.4 Factors Affecting High Powered Money

1.7.5 Summary

1.7.6 Key Concepts

1.7.7 Suggested Readings

1.7.8 Questions for practice

1.7.1 Objectives

The objective of this lesson is to explain the process of money multiplier. High-powered money being the significant factor in the determination of money supply has also been discussed. Further, it identifies the factors affecting high powered money.

1.7.2 INTRODUCTION: HIGH POWERED MONEY

We are all familiar with the concept of money. Money can be defined to be anything that actually functions as a generally accepted medium of exchange for goods, services, assets and repayment of debts. Money can also serve as a store of wealth, a unit of account, and a standard of deferred payment. Various things ranging from shells, stones, goats, cows, gold, silver, paper currency etc. have served as money at different times and places. At present, in India, money comprises of coins, paper currency and demand deposits of banks.

Money supply is both an economic as well as a policy-controlled variable. As an economic variable both the public's and the bank's portfolio behaviour determine it. As a policy variable, it is the monetary authority which influences it.

It is important to distinguish between two kinds of money : ordinary money (M), and high powered money (H). Ordinary money is the money as it is generally understood. It is narrowly defined as the sum of currency and demand deposits of banks (including the Reserve Bank of India) held by the people. Other deposits of Reserve Bank of India (RBI) which are included in M are generally ignored, since they form a very small proportion of M.

$M = C + D$ (Currency + Deposits)

High-powered money (H) is money produced by the central bank (RBI in case of India) and the government and held by the public and banks. It is also known as "reserve

High powered money in India is the sum of total currency with the public and bankers deposits-with the Reserve Bank, cash with banks, and other deposits with the RBI which are liabilities of the RBI to the non-bank sector.

$$H = C + R \text{ (currency + reserves)}$$

Money supply is also defined as the product of the money multiplier and the reserve base (i.e. high-powered money). While money multiplier is determined by various factors, the high-powered money is more or less exogenously determined by the central bank/monetary authority.

$$\text{Symbolically :- } Ms = mH$$

Where Ms = money supply

m = money multiplier

H = high powered money

Now let us see why H is called “high powered money’.

We know that the central bank controls the issue of its liabilities. These liabilities, in turn, become the monetary assets that commercial banks use as reserves against their loans and investments. These assets are either currency or deposits of the commercial banks in the central bank, which are equivalent to and interchangeable with currency. The public also holds central bank stock because they comprise the base upon which the commercial banks are able to create demand deposits by the institution of fractional reserve banking. Changes in the quantity of central bank assets have the power to produce much larger changes in the volume of demand deposits, and for this reason they are called high-powered money. Thus, the quality of high-poweredness is the power of serving as the base for the multiple creation of demand deposits.

H, or high-powered money, is the single most important and dominant factor that determines the money supply. The theory of money supply is thus also called the H-theory of money supply. In the words of Suraj. B. Gupta, “ calling it the H-theory focuses attention on the key variables in the whole drama of money-supply changes. It also provides the theory the standard technique of demand-supply analysis.” It is also called the money-multiplier theory of money supply because money supply is the product of the money multiplier and the high powered money. While money multiplier is determined by various factors, the high powered money is more or less exogenous.

1.7.3 Money Multiplier Process

For our purposes, money supply under investigation is the narrowly defined concept of money supply $M = C + D$.

Where C = currency in the hands of public, D = demand deposits with the commercial banks.

To determine money supply (Ms) is to determine currency (C) and demand deposit (D), i.e. we are to know the factors determining C and D. Thus, we are to discuss the behaviour of the public (which determines C) and the behaviour of the banks (which determines D).

1.7.3.1 In the simple case, assuming behaviour of the public as constant, we will see how money is created by the commercial banks with the following assumptions :

1. Choice of the public between holding of currency and deposits remains same, i.e., currency ratio ($Cr = C/Ms$ remains constant.)

2. The bank lends all deposits upto the legal reserve requirement set by the central bank. In other words, excess reserves, i.e., reserves over and above the required reserves, get fully exhausted, (i.e. excess reserves=0).

3. The commercial banking system is composed of many banks* and that each of these banks is required by law to hold 20 percent cash reserves against its demand deposits. Cash reserves are the reserves of a bank held either as currency in its vaults or as deposit in the central bank. The bank assets are only in the form of reserve and loans, and its only liabilities are in demand deposits.

Let us suppose that there is a deposit of Rs. 1,000/- of currency in one of the banks in the system. This transaction increases both the demand deposits and the cash reserves of bank I which are shown by the T account in Table I(a).

Table I T- Account of Bank I	
Liabilities	Assets
(a) Demand Deposits + Rs. 1000	Cash Reserves + Rs. 1000
(b) Demand Deposits + Rs. 1000	Cash Reserves Rs. 200 Loans Rs. 800

As assumed the bank is required to hold 20 percent (= Rs. 200) of this new deposit in the form of cash reserves and by assumption the bank will put all of its excess reserves (Rs. 800) into earning loans. With this bank I's balance sheet is shown by T account in Table I-b.

Further, the borrower with Rs. 800 acts according to our assumption I. Accordingly, this amount takes the form of demand deposits with bank II (say). Bank II's balance sheet takes the form as given in table II-b. So with 20 percent of cash reserves ratio, Bank II keeps $800 \times 20/100 = 160$ in the form of cash reserves and excess reserves of Rs. 640 (800-160) in the form of loans.

Table II T-Account of Bank II	
Liabilities	Assets
(a) Demand Deposits Rs. 800	Cash Reserves Rs. 800
(b) Demand Deposits Rs. 800	Cash Reserves Rs. 160 Loans Rs. 640

* A banking system comprising many individual banks, each operating according to its own self-interest, will create the same amount of demand deposits (money) as a single monopoly bank, given our set of initial assumptions.

As in the previous case, the borrower with amount of Rs. 640, places his money with Bank III (say) in demand deposits. Following the same assumption T-accounts of Bank III are shown in Table III-(a) and (b).

Table III T-Account of Bank III		
Liabilities	Assets	
(a) Demand Deposits Rs. 640	Cash Reserves	Rs. 640
(b) Demand Deposits Rs. 640	Cash Reserves	Rs. 128
	Loans	Rs. 512

With the given assumption Rs. 512 will become deposits of another bank, and the process will continue. The total deposits of these three banks = Rs. 1000 + Rs. 800 + Rs. 640 = Rs. 2,400. Demand deposits have thus been created by the banking system.

Mathematically, total demand deposits created by all banks

$$= 1000 + 800 + 640 + \dots$$

Now, we can write

$$1000 = 1000$$

$$800 = \frac{4}{5} \times 1000$$

$$640 = \frac{4}{5} \times 800 = \frac{4}{5} \times \frac{4}{5} \times 1000 = \left(\frac{4}{5}\right)^2 \times 1000$$

.....and so on.

Symbolically,

Let ΔB = amount by which the reserve base of the banking system has increased (Rs. 1000/- in our example)

R_d = Reserve requirement on demand deposits.

(20% or 1/5 in our example)

let $r = 1 - R_d$ (80% or 4/5 in our example)

Thus, the sequence of numbers given above can be written as :

$$\Delta B + \Delta B r + \Delta B r^2 + \dots$$

Further, let there be n rounds of the process of deposit creation, i.e. there are n banks. Then sum of the total deposits (ΔD) of these banks work out to be

$$\Delta D = \Delta B + r \Delta B + r^2 \Delta B + \dots + r^{n-1} \Delta B$$

or $\Delta D = \Delta B (1 + r + r^2 + \dots + r^{n-1})$

or $\Delta D = \frac{1 - r^n}{1 - r} \cdot \Delta B$ (Sum to n terms of a G.P. with common ratio $r < 1$)

In the limiting case, when n becomes very large, i.e., $n \rightarrow \infty$ then $r^n \rightarrow 0$, the total deposits created by the banking system would be

$\Delta D = \frac{1}{1 - r} \Delta B$ (1)

But $r = 1 - R_d$

in (1), the expansion of deposits in the banking system is

$\Delta D = \Delta B \cdot \frac{1}{R_d}$ (2)

ΔD is the change in demand deposits. Thus with $\Delta B = \text{Rs. } 1000$ and $R_d = 20 \text{ percent} = 1/5$, equation (2) becomes

$\Delta D = \text{Rs. } 1000 \cdot \frac{1}{1/5} = \text{Rs. } 5000$

Equation (2) shows that D and R_d are inversely related. $1/R_d$ works out to be the money multiplier in a simplified model with unrealistic assumptions.

1.7.3.2 Below follows the process of money multiplier when the assumptions imposed on (i) the public's constant choice of currency and (ii) banks' excess reserves being zero, are relaxed.

Writing money supply as

$M_s = C + D$(3)

and $H = C + R$(4)

Where H is the high-powered money and R is nominal reserves of the commercial banks. Dividing both sides of (4) by M_s we have

$\frac{H}{M_s} = \frac{C}{M_s} + \frac{R}{M_s}$ (5)

Writing $\frac{R}{M_s} = \frac{R}{D} \cdot \frac{D}{M_s} + \frac{R}{M_s}$

Again $\frac{R}{M_s} = \frac{R}{D} \cdot \frac{M_s}{M_s} + \frac{RD}{M_s D}$
 $= \frac{R}{D} - \frac{R(M_s - D)}{M_s D}$ (6)

$= \frac{R}{D} - \frac{RC}{M_s D}$ (∵ $M_s - D = C$ from equation (3))

∴ $\frac{R}{M_s} = \frac{R}{D} - \frac{C}{M_s} \cdot \frac{R}{D}$ (7)

Substituting for $\frac{R}{M_s}$ from (7) into (5), we get

M_s

$$\frac{H}{M_s} = \frac{C}{M_s} + \frac{R}{D} - \frac{C}{M_{ss}} \cdot \frac{R}{D} \dots\dots\dots (8)$$

Now writing $\frac{C}{M_s} = C_r$ i.e. the currency ratio and $\frac{R}{D}$ as R_d i.e. the reserve deposit ratio, (8) becomes

$$\frac{H}{M_s} = C_r + R_d - C_r R_d$$

Taking reciprocal of both the sides, we get

$$\frac{M_s}{H} = \frac{1}{C_r + R_d - C_r R_d}$$

or $M_s = \frac{1}{C_r + R_d - C_r R_d} \cdot H \dots\dots\dots (9)$

i.e. $M = mH$ where $m = (\text{money multiplier}) = \frac{1}{C_r + R_d - C_r R_d}$

Now C_r, R_d are both ratios

$\therefore C_r \cdot R_d < 1$

It implies that H, i.e., high-powered money remaining constant, nominal money supply varies directly with m, i.e., the money multiplier whose value is :

$$\left[\frac{1}{C_r + R_d - C_r R_d} \right]$$

Further, m i.e. the money multiplier varies inversely with the currency and reserves ratios.

Now what are these ratios ?

The behaviour of the public is specified by the ratio of currency to the money supply, which is called currency ratio (C_r). By necessity, this ratio is less than one.

The behaviour of commercial banks is specified by the ratio of its reserves to its deposits. This is called the reserve ratio (R_d). In practice, this has always been less than one.

Now, if either of these ratios should increase, H remaining constant, then the nominal money stock will decrease.

On the other hand, given these ratios, which means given the behaviour of the public and commercial banks, the nominal money supply will vary directly with the nominal supply of H-the high-powered money.

In short, the nominal money supply will vary directly with the quantity of high-powered money, and inversely with the currency and reserves ratios. These three

variables do not completely explain variations in the nominal money supply, but they do serve as useful devices for analyzing such variations. For this reason, they are called the proximate determinants of money supply.

Economists who have studied monetary history have found that this classification of the channels through which changes in the money supply occur is a very useful approach. This is because the three determinants are not rigidly linked together by either accounting or institutional arrangements. Some interdependence does exist, no doubt, but this implies that it is the result of certain behaviour on the part of the central bank, the commercial banks and the public. By examining data that measures the actions of these three sectors, we can determine the nature of this interdependence among the determinants.

1.7.4 Factors Affecting High-Powered Money

Now, H-the high powered money is normally assumed to be policy determined, i.e., considered as exogenously-given. However, in real life, this is not so. We recall that H comprises of government currency plus the Reserve Bank Money-all held by the public and banks. In the case of India, government currency comprises one rupee notes and the coins. The Reserve Bank money comprises all currency notes other than one rupee notes and coins, deposits of banks with RBI and other deposits of RBI. Of the total stock of H, government currency constitutes a small proportion, and Reserve Bank money is its dominant component. Also, changes in government currency are determined by changes in Reserve Bank money, as they are governed by the public's demand for small coins in relation to currency of higher denomination which is issued by the RBI. It follows that changes in Reserve Bank Money are virtually responsible for all observable changes in H.

Therefore, to identify the proximate factors governing H, the transactions of RBI are divided into four sections :

1.8 the government (2) banks (3) development banks, and (4) the foreign sector. The RBI provides them its credit, acquires its financial assets, and creates Reserve bank money in the process.

$$\begin{aligned}
 \text{Reserve Bank Money} &= \text{Net RBI credit to govt.} \\
 &+ \text{RBI credit to banks} \\
 &+ \text{RBI credit to development financial institutions} \\
 &+ \text{RBI credit to commercial sectors} \\
 &+ \text{Net Foreign Exchange Assets of RBI} \\
 &- \text{Net non-monetary liabilities of RBI}
 \end{aligned}$$

Let us take these up one by one.

As banker to the government, the RBI provides credit to both the central and

state governments through investment in their securities and short-term advances. The Central and State governments also keep their deposits with the RBI. The value of these deposits is deducted from the gross RBI credit to government to arrive at the net figure. This factor is the most important factor affecting H, and is the main source of reserve money (H).

The RBI provides credit to banks through loans and advances against government securities, promissory notes, or through rediscounting of bills. However, the RBI does not regard its purchase or rediscounting of bills as a part of credit to the banks, but classifies it as Reserve Bank credit to the sector which issued these bills originally. Thus, a part of Reserve Bank accommodation provided directly to banks is not counted as such.

Development banks, now called development financial institutions, which generally provide long term finance, are also given assistance by the RBI through loans and investment in their securities. This also generates H.

Net foreign exchange assets represent Reserve Bank credit to the foreign sector, and are mostly held in the form of foreign securities and cash balances. It regularly buys and sells foreign currency. When it buys foreign currency, supply of H increases. When it sells foreign exchange, it receives payment in the form of H and supply of H goes down.

Lastly, the net non-monetary liabilities of the RBI are largely the owned funds of the RBI and compulsory deposits of public. The larger these resources, the less it has to depend upon creation of new reserve money to finance various sectors. Hence this factor is entered with a negative sign in the equation of Reserve Bank Money.

Also, the change in Cash Reserve Ratio (CRR) for bank affects the amount of disposable H available to the public and banks, given the amount of total H. When the CRR is revised upwards some reserves are impounded by the RBI and when the CRR is revised downwards, some reserves get released. This is to say, that impounding of reserves reduces, and release of it adds to, the amount of disposable H. Such disposable H is generally called adjusted H in the analysis of money supply. It is also denoted as H*. The policy of the RBI to revise its CRR downwards in a phased manner increases the amount of disposable H.

Lastly, the very important question as to whether H is really an autonomous, policy determined variable, i.e., whether H is exogenously determined by the monetary authority.

Now, first of all, the term monetary authority might be synonymous with the central bank for a country like U.S., but in India, we have to consider the fact that the RBI is not autonomous to the government. The RBI is obliged to lend the central government any amount that it chooses to borrow and has no control over the deficit financing of the government (Although the practice of Ways and Means Advances has put a check on it, to some extent). Thus, the government shares the monetary

authority of the RBI in a very active manner.

Secondly, H is not a fully policy determined variable because it is the decision of both the authority and the public as well as banks which lead to the generation or destruction of H. Banks and development banks can change H within narrow limits by varying their borrowing from the RBI; and net purchase/sales of foreign exchange by public can also change H.

Hence changes in H are autonomous as well as discretionary. Autonomous changes in H are determined directly by the policy-making authorities-the government and the RBI, while endogenous changes in H are decided by the public, banks, and development banks, given terms and conditions under which RBI is willing to produce such changes.

Thus, not all of H is an autonomous, policy-determined variable. However, in traditional economic analysis, it is taken as given.

Self-Check Exercise

Q1. Define High-Powered money.

1.7.5 Summary

Thus, money supply process is the outcome of the forces of the public, banks and the central bank-the public when it decides on its currency ratio, the banks when they decide on their excess reserve ratio, and the central bank when it sets reserve requirements on demand deposits. Thus, although the central bank is a major influence in determining m (money multiplier), it is certainly not the only influence. The size of the money multiplier is also the result of millions of decisions made by the banking system and the public. Although the central bank may exert a strong influence on m in the long run, it does not, and cannot, exercise short-run control.

1.7.6 Key Concepts

- i. Money Multiplier: the phenomenon in which money is created in the form of the creation of credits in the economy.
- ii. High Powered Money: is the sum of commercial bank reserves and currency (notes and coins) held by the Public and is the base for the expansion of Bank deposits and creation of money supply.

1.7.7 Suggested Reading:

- i. Fred R. Glahe: Macroeconomics
- ii. Suraj B. Gupta: Monetary Economic: Theory, Institutions and Policy

1.7.8 Questions for practice:

- i. Define High-powered money.
- ii. Explain the money multiplier process
- iii. Give the factors affecting High-Powered money
- iv. What is Adjusted-H?

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